# Assault Guns Assessed

LIEUTENANT COLONEL RAYMOND MILLEN AND MAJOR (RETIRED) RICHARD L. LAVOSKY

One of the most powerful, versatile, and effective weapon systems of World War II is also the least known and certainly the least understood by Americans. To the casual observer, the German assault gun looks like just another tank or tank destroyer, and these two roles encapsulate the American Soldier's main experience with assault guns. The German army's original intent for the assault gun was far different.

Whatever their value during World War II, the larger question is whether assault guns have utility in modern combat, particularly in counterinsurgency operations. The validation of assault guns depends largely on weapon system design, doctrinal incorporation, and recognition of the psychological impact assault guns bring to the battlefield.

A host of specifications influence its design. Its armor and hull must provide adequate crew protection. Assault guns must possess the tactical mobility to accompany dismounted infantry in complex terrain, in various weather conditions, and through natural and man-made obstacles. Finally, strategic and tactical airlift must be able to accommodate assault guns.

Doctrinal incorporation is the basis for justification. Assault guns must provide unique capabilities for which other weapon systems (e.g., tanks) are not well-suited or optimal, e.g., in support of infantry operations. Moreover, the assault gun must be regarded as a weapon system primarily in support of the infantry and not as a multi-purpose weapon. Assault gun units must be integral to infantry organizations, train with them, and understand infantry tactics intimately. Only in this way can infantry optimize their use for various tactical situations.

The psychological impact of assault guns cannot be overstated. Their appearance on the battlefield should strike fear and dread into the enemy while conversely elevating the morale and confidence of friendly troops. In this sense, the main gun must be of sufficient size and power to intimidate the enemy, particularly as it demonstrates the capability to destroy all manner of fortified positions with pinpoint accuracy.

This article will first review the German army's original intent for assault guns during World War II. It will also examine design specifications for modern assault guns so as to meet the needs of the military throughout the spectrum of conflict. Finally, it will assess the incorporation of assault gun battalions into infantry divisions. The conclusions will reveal that assault guns are perfectly suited for power projection ranging from low intensity to high intensity warfare.

### The German Experience

The genesis of the assault gun arose from the debate during the 1930's in Germany raging between the armor and infantry communities regarding the proper combat role of armor. In essence, the infantry community regarded the tank as an infantry support weapon for tactical operations, whereas the armor community viewed the tank as an independent arm for the swift attainment of campaign objectives. The dilemma for the German army was that both the armor and infantry communities were correct in their assessments. The infantry needed an armored weapon system with sufficient firepower and mobility to allow it to eliminate any enemy resistance quickly in order to permit a sustained advance. The armor needed infantry to secure its gains and protect its lines of communication. Both communities needed each other, but doctrinal accommodation was irreconcilable.

The German solution lay in the development of armored assault gun vehicles (*Sturmgeschütz* or *StuG* for short). During the rearmament of the Wehrmacht, a number of German officers, most notably Colonel Erich von Manstein, Colonel Walther Model, and Lieutenant General Ludwig Beck, proposed the need for self-propelled artillery to increase the offensive capabilities of the infantry to fill the void in armor support. In a 1935 memorandum to the chief of the general staff, von Manstein recommended that each infantry division have an organic assault gun

Courtesy of George Prada, www.achtungpanzer.com/stug.htm

***A Sturmgeschütz IV (Sd.Kfz.163/167) is presented to Field Marshal Albert Kesselring in Italy 1944. Note the added side armor panels for greater protection.***

battalion. Emphasizing their role as an infantry assault weapon, he made a clear distinction between tanks and assault guns, contending that assault guns were not to operate like armor. "They are not to attack like tanks, striving for a breakthrough, but are to assist the infantry maintain momentum by eliminating the most dangerous threats quickly with direct fire. They are not to fight like armor in massed formations but as a rule must operate in platoon formations." Von Manstein concluded that assault gun units must receive their training with the infantry rather than with armor. "A pure separation of the two arms is necessary to preclude each developing improper tactical principals."

**Had the U.S. Army experienced the combined effects of an infantry-assault gun attack, it would have gained a greater appreciation of its impact on the modern battlefield and likely adopted it.**

Initially mounted on a *Panzerkampfwagen III* chassis, the *Sturmgeschütz III A (StuG III)* had the following specifications: a crew of four; weight of 22 tons; a height of 1.8 meters (no taller than a man); a speed of 40 kph, and a driving range of 95-165 kilometers depending on its payload; a 75mm L/24 main gun with a traverse of 24 degrees and a degree of elevation from -10 to 20 degrees respectively; and a maximum effective range of 1000 meters), although a good crew could achieve good effects out to 2,000 meters. As the war progressed, the adoption of the larger *Panzerkampfwagen IV* chassis (*Sturmgeschütz IV*) permitted an increase in armor hull protection to 80mm, and eventual gun caliber to 88mm, matching the improvements in enemy armor capabilities. The main gun was installed directly into the chassis, which also gave the assault gun a lower silhouette and lower center of gravity. Of course, without a turret, the assault gun could not traverse its main gun quickly. Rather, the crew had to swing the entire vehicle around in the general direction of a target and then traverse the gun within its 24-degree arc to acquire the target. Despite this disadvantage, the crews were very proficient in acquiring and destroying targets with dispatch. Due to their gunnery skills, artillerymen became the natural choice as crewmen. As trained artillerymen, crews used fire bracketing to hit targets within three rounds. This method of engaging targets often proved quicker in practice than the tank method of tracking and engaging targets. Proportionally, assault guns destroyed more enemy tanks (20,000-30,000) than German armor could claim, and assault gun commanders attributed their domination of the battlefield to superior gunnery skills, often with first-shot kills.

During the war, the western allies had little opportunity to assess the attributes of the *StuG* as an infantry support weapon because it was used principally on the Eastern Front, where they distinguished themselves as high-value weapons. The infantry was quick to appreciate the offensive qualities of the *StuGs*, making them a high-demand weapon for eliminating of enemy bunkers, machine gun nests, strong points, and fortified lines. Moreover, when properly protected by infantry, they dominated the enemy in all types of terrain, whether in open, forested, mountainous, or urban.

Because of its effectiveness as a tank destroyer, greater survivability, and the high attrition of German tanks, LTG Heinz Guderian, newly appointed as the Inspector General of the Armored Corps, began diverting 75 percent of assault gun monthly production to select tank destroyer companies, armored battalions and special units in early 1943. Despite many battle reports decrying the use of assault guns in a tank role, Guderian's decision reflected the realities of Germany's flagging strategic position. Moreover, because the assault gun had no turret, it was cheaper and faster to produce than a tank.

By the time the U.S. Army engaged the main Wehrmacht forces from 1943 onward, American Soldiers saw assault guns employed mainly as tanks and tank destroyers, and not in their intended role. The Germans only deployed an average of three StuG brigades on the West Front from June to October 1944, and thereafter an average of six until the end of the war. Had the U.S. Army experienced the combined effects of an infantry-assault gun attack, it would have gained a greater appreciation of its impact on the modern battlefield and likely adopted it. Hence the force of circumstances obscured the role of the assault gun, and American Soldiers likely regarded them as just another tank, paying scant attention to one of the most effective combined armed teams of the war.

### Proposed Modern Assault Gun Design

In order to meet the full range of challenges in modern combat, the assault gun must meet certain specifications for protection, mobility, firepower, and airlift. The authors offer an assault gun design, which provides superior specifications. (See Figure 1).

Given the requirement for airlift, protection must balance weight with defensive armor. The assault gun's design can accommodate both using welded Rolled Homogeneous Armor (RHA), face-hardened steel for the entire hull and shaping the slope for superlative protection. The entire hull provides complete 12.7mm (.50-cal) ballistic protection, while the upper and lower front and the top deck provide 30mm ballistic protection. Moreover, the frontal 60-degree arc provides ballistic protection from 14.5 mm munitions. The bulkheads, front and rear, protect the crew and serve as an internal frame to stiffen and strengthen the chassis as well as to support the firing of the main gun. Finally, because of its proven durability, the drive train components were derived from the M113 family of vehicles.

The assault gun's compact size provides profound advantages. Its low silhouette of 8.7 feet allows it to exploit the protection of terrain and makes it more difficult for enemy forces to detect and engage. Since the upper turret assembly is unmanned, the crew compartment within the hull has a height of 5.5 feet, providing even greater protection. As a result, the assault gun can assume a hull defilade position with minimum danger to the crew. The assault gun's length of 24.5 feet and width of 8.3 feet permits greater maneuverability in complex terrain.

Tactical mobility is vital for meeting the full range of contingencies. Wherever the infantry goes, the assault gun must go as well. Assault guns must have the capability to traverse diverse terrain and in all types of weather. Soil strength, stickiness,

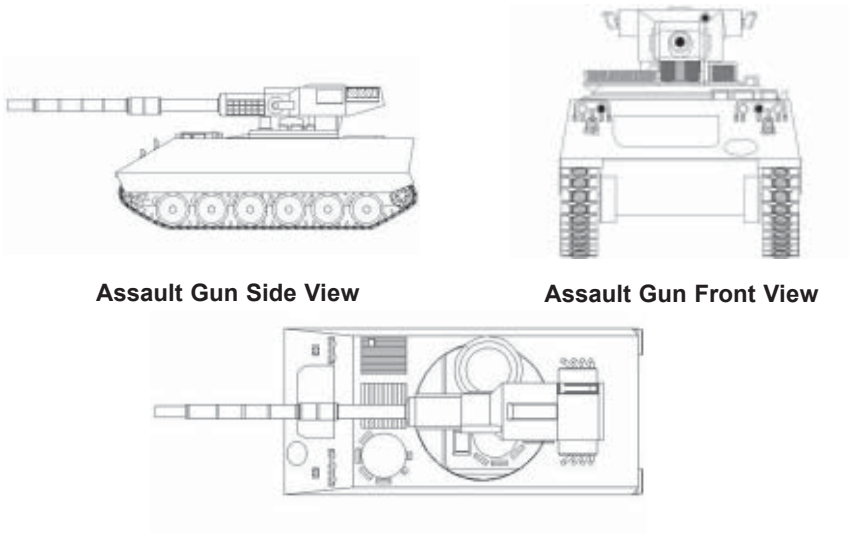



**Figure 1**

slipperiness, and weather all affect cross-country trafficability. Fine-grained soils, such as silts and clays, are highly susceptible to moisture, resulting in greater slipperiness and stickiness (mud clinging to the undercarriage), and decreased strength (the ability of the soil to remain firm). As more and more vehicles traverse the same area under these conditions, mobility becomes increasingly problematic.

In technical terms, the ability of a vehicle to pass over this terrain any number of times is called the vehicle cone index (VCI) with the number of passes noted subscripted (Figure 2). A VCI comparison with other vehicles illustrates the high degree of mobility of this assault gun. The lower the index, the greater the mobility.

**Figure 2 — Comparison of Vehicle Mobility Capabilities**

| Vehicle Type | $VCI_1$ | $VCI_{50}$ |
|---|---|---|
| Assault Gun | 19 | 45 |
| Tank, M1A2 | 28 | 64 |
| Carrier, M2 | 16 | 37 |
| Carrier, M113 | N/A | 49 |
| Carrier, Stryker LAV | 32 | 72 |

**Source:** U.S. Department of the Army, *Planning And Design Of Roads, Airfields, And Heliports In The Theater Of Operations—Road Design*, Field Manual 5-430-00-1 (Washington, D.C.: U.S. Government Printing Office, 1994), appendix D, Cone Index Requirements.

The capability to negotiate slopes, cross trenches, climb vertical walls, and pivot tightly is an absolute tactical requirement. This assault gun is designed to negotiate a 60-percent slope directly and move laterally along a 35-percent slope. Its ability to cross a 2.18-meter trench and climb a one-meter wall unassisted is matched by few other vehicles. Pivot steering within a 5.3-meter turning radius allows the assault gun to maneuver in tight places, such as narrow streets, mountain roads, and forest paths.

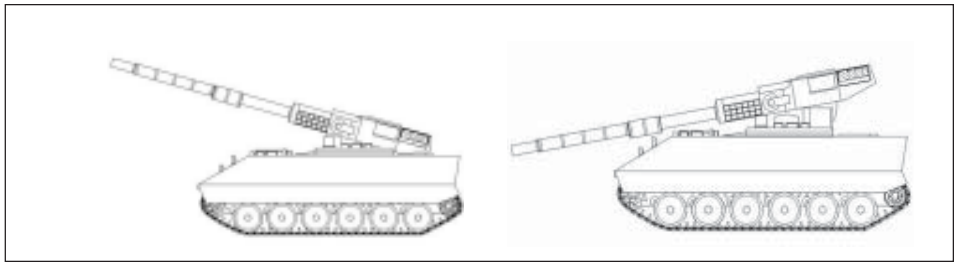
The 105mm main gun provides highly accurate and devastating fires for the infantry to eliminate the staunchest enemy positions, including fortified buildings, bunkers, and strong points. The main gun's maximum elevation of 20 degrees and maximum depression of 10 degrees provides superb engagement capabilities in urban and mountainous terrain (Figure 3). Even though a smaller caliber main gun may accomplish the same results, the 105mm provides an immediate psychological impact for both enemy and friendly troops. For the enemy, the dread and hopelessness generated from the destruction of even the most fortified positions without the ability to strike back prompts withdrawal or surrender. Conversely, the arrival of assault guns in friendly sectors provides an immediate lift in morale and perseverance. Often the appearance of such weapon systems during desperate moments is enough to bolster the infantry.

Additional enhancements on the basic assault gun permit greater versatility. A field phone with an IR source mounted on the rear panel permits infantry to talk directly with the crew without the encumbrance of a telephone wire. The main gun can fire munitions with colored markers to assist close air support and a mounted laser designator is effective for guiding smart munitions onto targets. A medium antitank missile (e.g., Javelin) mounted on the side provides immediate protection from enemy armor, but commanders should resist the temptation to turn assault guns into tank destroyers. The attachment of armor side panels, perhaps with reactive armor, would provide enhanced protection.

Different variants provide the infantry with a flexible mix of options. Flamethrower or thermobaric devices reduce hardened urban bunkers and mountain caves. For peacekeeping operations, crowd control devices (water cannon, tear gas, flash bang, sticky foam, acoustics, or rubber pellet canisters) combined with the psychological effect of the assault gun greatly assists in crowd control. A 120mm mortar variant with automatic loading capability would permit crews to render fire support while enjoying the protection and mobility of the carrier.

Lastly and most important, strategic and theater airlift capable assault guns provide

**Figure 3 — Main Gun Elevated and Depressed**



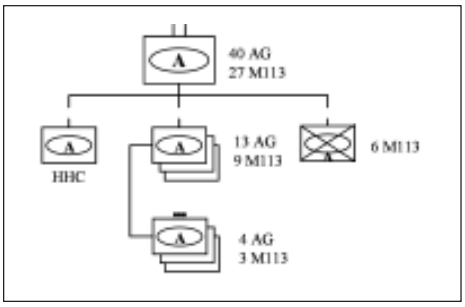



**Figure 4 — Assault Gun Battalion**

light infantry and airborne the immediate firepower for forced entry operations. The proposed assault gun has a C-130 compatible airlift weight of 37,089 pounds with no disassembly required. It drives on and off the aircraft immediately. Its combat weight of 39,715 pounds includes 18 ready rounds of 105mm for the main gun and 3,600 rounds of 7.62mm ammunition for the machine gun. The ammunition storage compartment in the hull behind the turret crew holds an additional 22 rounds of 105mm and 5,600 rounds of 7.62mm ammunition.

### The Modern Assault Gun Battalion

A divisional assault gun battalion provides the requisite firepower, mobility, and shock derived from combined arms to overwhelm enemy resistance with precision fires in diverse terrain and weather. Additionally, assault gun battalions permit armor units to focus on their primary doctrinal tasks without the constant distraction of providing support to the infantry. The biggest advantage over the tank is the reduced fuel and maintenance requirements of the assault gun, permitting it to operate in theater without creating a logistics burden. Whether deployed for a major combat operation or an insurgency, the assault gun is perfectly suitable.

The assault gun battalion comprises three assault gun companies, a headquarters and headquarters company, and an assault infantry company for a total of 40 assault guns including one command assault gun for the infantry battalion tactical operations center. Each assault gun company is organized into three platoons for a total of 13 assault guns including the company command vehicle. Each platoon consists of four assault guns including the platoon leader's vehicle. Moreover, each assault gun (excluding the platoon leader and command vehicles) has an ammunition resupply vehicle assigned to it. The basic M113 carrier makes an outstanding candidate for this role. It possesses sufficient protection and cargo room for immediate resupply of ammunition.

The assault gun crews are infantrymen with specialized advanced training in fire support and gunnery. Because of their background, 11C mortarmen possess the skills to conduct indirect and direct fire missions. Mortarmen also are trained infantrymen and understand infantry tactics.

The battalion has an organic assault infantry company, which provides security during halts and forms a combined arms team during attacks. The infantry rides on the assault guns during movement and dismounts prior to the assault. The infantry develops a close tactical relationship with the assault guns, developing assault tactics in differing types of terrain. The infantry's fundamental tasks are to pinpoint enemy fortified positions, guide the assault guns into support-by-fire positions, and provide immediate security of the assault guns in the process. The infantry is particularly vigilant to suppress enemy anti-tank weapons and infantry tank-killer teams. Finally, the infantry conducts the final assault on enemy positions that the assault guns have destroyed or suppressed. The assault infantry travels with the assault gun either mounted or dismounted, depending on the circumstances. Each platoon has two M113s for the transportation of baggage, rations, water, and additional ammunition.

### Conclusion

Assault gun battalions provide a significant combat multiplier for light and medium infantry units. They have a proven and effective historical record and deserve careful consideration for the Objective Force. Properly protected by infantry, assault guns perform superbly in urban, wooded, and mountainous terrain. Virtually no bunker, strongpoint, entrenched position, or light armored vehicle is a match for the assault gun. With its elevation and depression, the main gun can engage and destroy enemy positions on multiple storied buildings, ridges/hills and low-lying areas. In urban terrain, the main gun creates breach holes in walls and buildings for assaulting infantry to enter. Likewise, the main gun makes short work of wire obstacles, log cribs, abatis and so forth. The machine gun provides sufficient suppression of the enemy during the final assault. The mounted anti-tank missile is intended as a defense against immediate armor threats. Assault guns are not anti-tank guns and are used in this role only in emergencies. With their adoption in the U.S. arsenal, armor units may focus on operational objectives without fear of out-pacing the infantry. In this manner, both the infantry and armor communities become harmonized and more effectively doctrinally.

**Lieutenant Colonel Raymond A. Millen** is currently assigned as the director of European Security Studies at the Strategic Studies Institute. He graduated from the U.S. Military Academy in 1982, was commissioned as an infantry officer, and has held a variety of command and staff assignments in Germany and Continental United States. He has also served as the U.S. Army Infantry School Liaison Officer to the German Infantry School at Hammelburg, Germany; Battalion Executive Officer, 3-502d Infantry, Fort Campbell, Kentucky; and Chief of Intelligence Section and Balkans Team Chief, Survey Section, SHAPE, Belgium. He served in Kabul from July through November 2003 on the staff of the Office of Military Cooperation-Afghanistan, focusing on the Afghan National Army and the General Staff. Lieutenant Colonel Millen is a Foreign Area Officer for Western Europe. His book, *Command Legacy*, was published in April 2002. LTC Millen is a graduate of the U.S. Army's Command and General Staff College, and holds an master's degree in National Security Studies from Georgetown University. He is currently pursuing a Ph.D. in World Politics at Catholic University of America.

**Major (Retired) Richard L. Lavosky** is currently the president of Converting Solutions USA. He studied Advanced Weapons Systems Engineering at the U.S. Military Academy, graduated in 1982, and was commissioned as an infantry officer. He has held a variety of mechanized and light infantry assignments on both active duty and reserve component status.He held a variety of command and staff positions in the 8th Infantry Division in Germany and the 7th Infantry Division in the United States respectively. Additionally, he served as the operations officer and executive officer for the 415th Civil Affairs Battalion. He served in Bosnia-Herzegovina from January through May 1996 on the staff of Multi-National Division Southwest under the command of the 3rd UK Armored Division focusing on the integration of civil-military operations with operational and joint command functions.

A list of references in on file and available through *Infantry* Magazine.