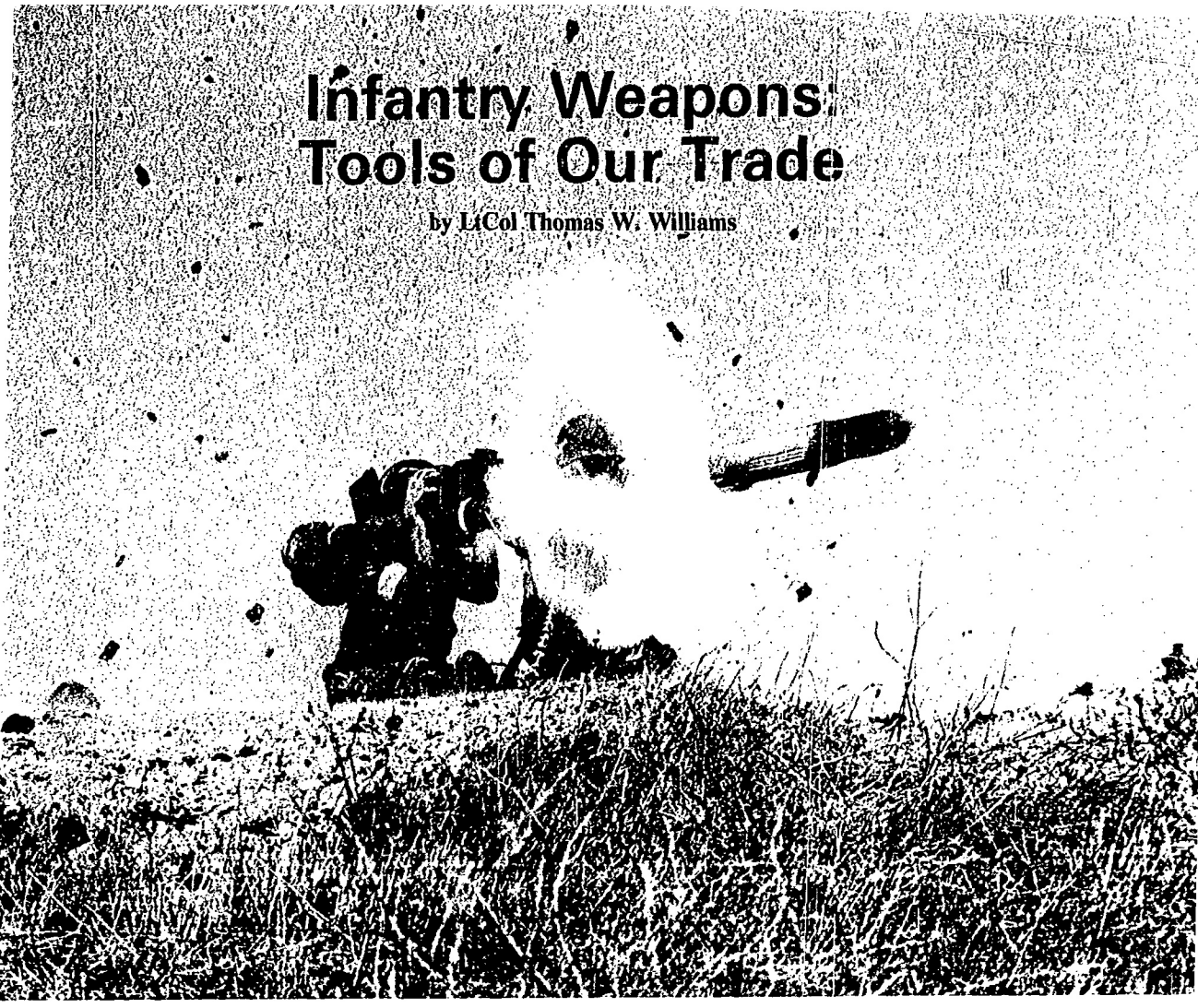
Infantry Weapons: Tools of Our Trade

by LtCol Thomas W. Williams



To meet a more sophisticated threat on future battlefields, the Marine Corps is providing new and improved "tools" for the individual Marine.

Proficiency in arms is a trademark of Marines. Traditionally, the individual Marine has been closely associated with the rifle and bayonet, but future battles will be more complex, requiring the Marine to be not only proficient with his rifle but also possess additional firepower to meet a more sophisticated threat. To win these battles the Marine Corps is providing new and improved "tools of the trade."

Historically, the Marine Corps has relied on the developmental efforts of the other Services to satisfy its need for weapons development. Amphibious vehicles and a small number of weapons to support that unique maritime mission have, in the past, been the only exceptions to this policy. But that situation has changed. The proliferation of emerging technologies and new weapon systems development have provided the Marine Corps with the opportunity to be more aggressive in some areas of weapons development.

One of the primary motivations for recent weapons procurements was the Commandant's desire for an integrated examination of infantry weapons requirements, taking into account the interactions among the various weapons and weapons systems. As a consequence, a mission area analysis was done in 1980 that defined the re-

Battle Firepower Enhancements

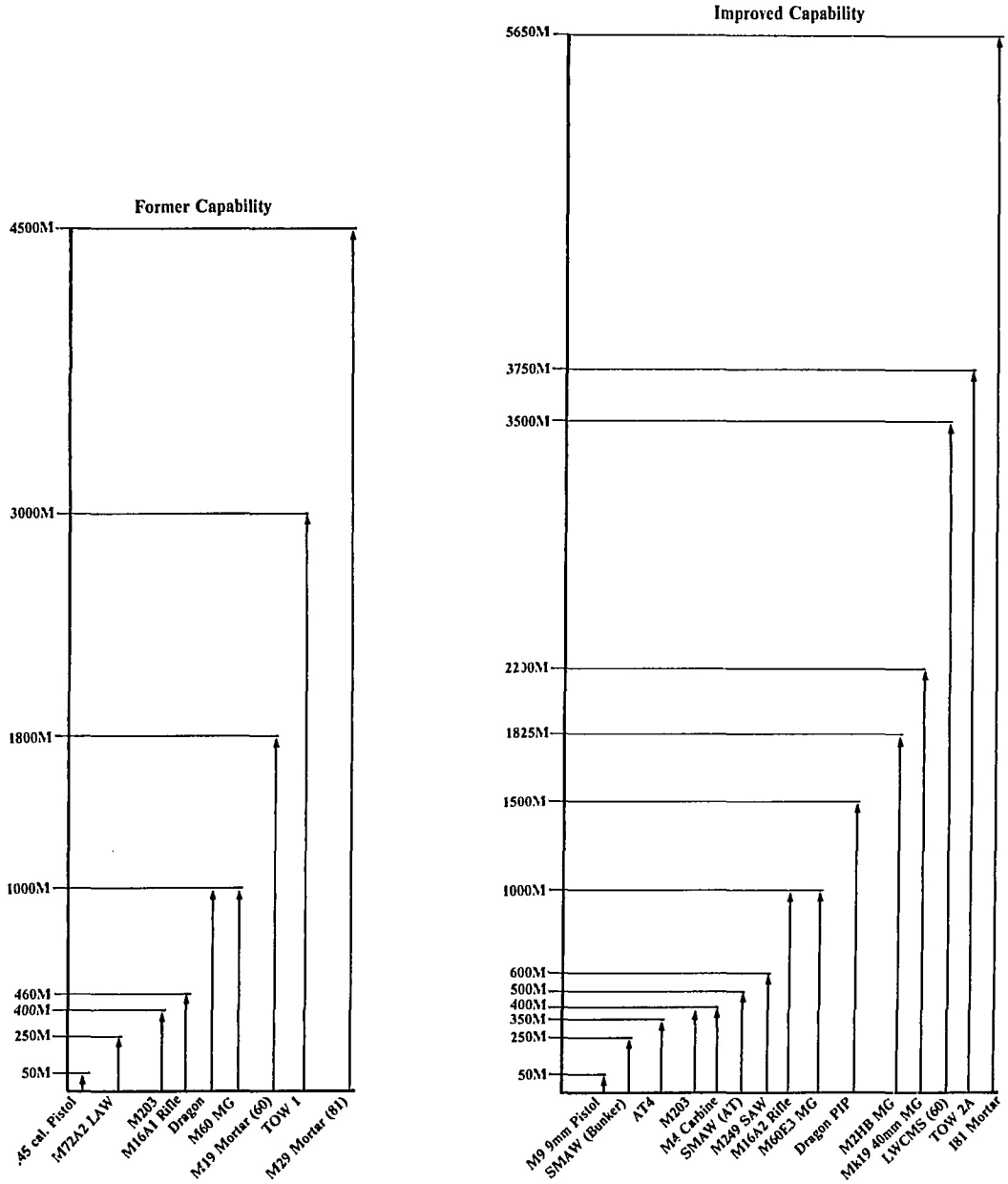


Figure 1

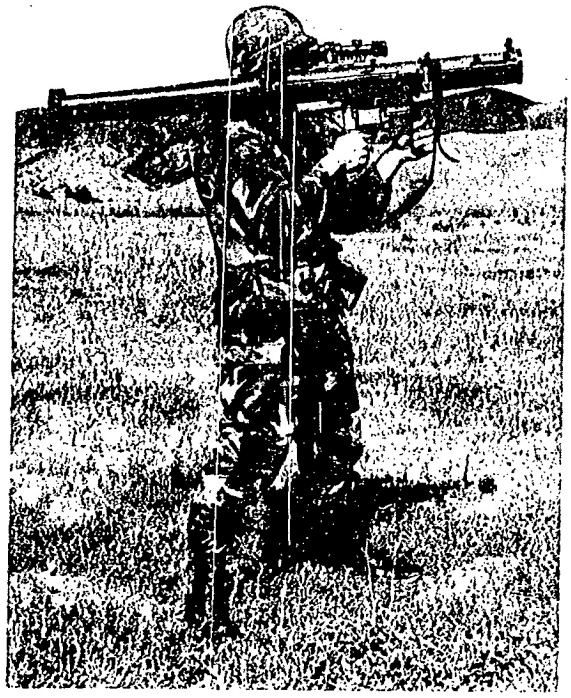
quirements for all weapons in terms of the proper mix and battlefield roles. Many of the recommendations from this analysis have gone full cycle through the development/procurement system and are in the hands of our Marines. Figure 1 reflects a graphic comparison of the overall improvements in the battlefield firepower provided by those weapons that have been fielded and those on the way.

Those returning to the Fleet Marine Force (FMF) today will find Marines armed and equipped in an altogether different way. Their weapons now include a 9mm pistol that replaces all Marine Corps .45 caliber pistols and .38 caliber revolvers. Congress has been urging the Department of Defense (DOD) to standardize handguns and their ammunition since a survey conducted by the House Appropriations Committee in 1978 identified more than 25 different types of handguns within the Services. The logistical support required of such a wide variety of handguns was immense: spare parts, maintenance, training of

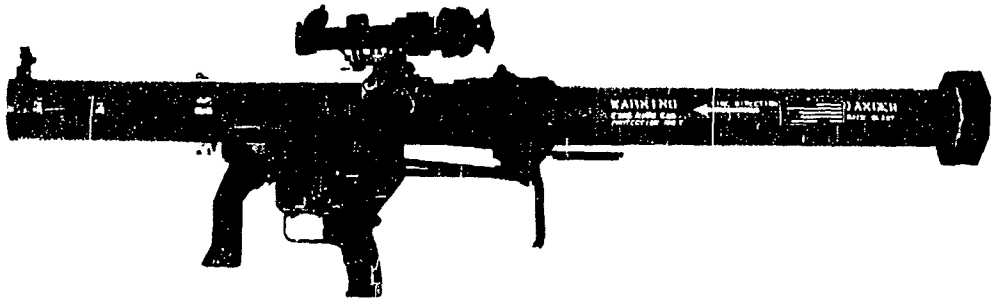
handgun repairmen, ammunition, and strict inventory control of all the handguns were huge tasks. The first test and evaluation program (1981-1982) to select a replacement for the service pistols failed since none of the candidates met the requirements. However, the second evaluation resulted in selection of the Beretta 92SB-F. On 10 April 1985, Beretta U.S.A. of Accokeek, MD, was awarded a five-year contract to provide 315,930 pistols to all four Services. Although some of the Services did not consider this procurement a high priority, the Marine Corps was faced with a shortage of 30,000 pistols because of defective and worn gear. The Marine Corps bought its last .45 caliber pistol in 1945; since then, almost every pistol has been rebuilt, some as many as four times.

The Marine Corps started fielding the 9mm Beretta in 1986 and will continue through 1989. The pistol will come with two 15-round magazines and a hip holster, which may be worn on the left or right side. A cleaning rod is attached to the holster. The new pistol features less weight, greater volume of fire, improved lethality, ambidextrous safety devices, and double-action (semiautomatic) firing.

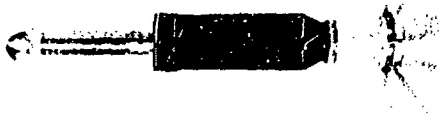
The selection of the Beretta 9mm pistol has caused some consternation in the small arms



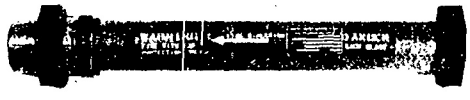
SMAW System



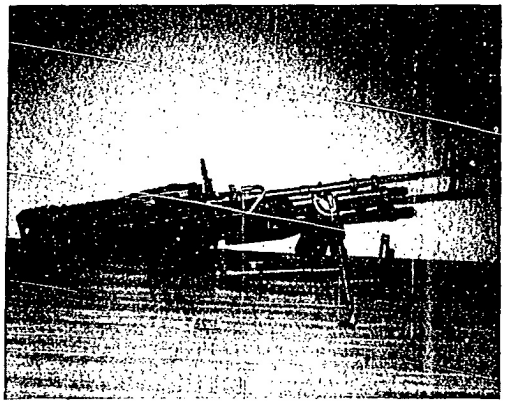
Ready To Fire



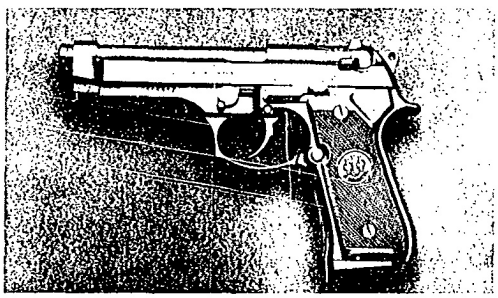
Dual Mode Rocket



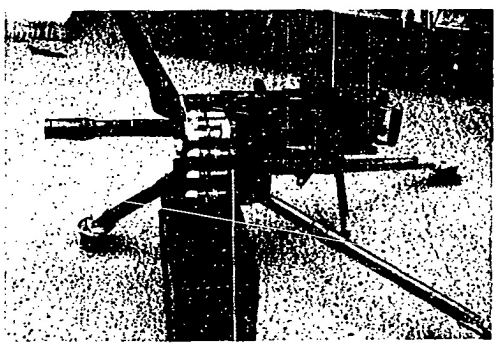
Encased SMAW Assault Rocket



The most prolific machinegun in service since 1960, the M60 medium 7.62mm machinegun has been product improved by its manufacturer and redesignated M60E3.



The Marine Corps acquired its first 9mm Beretta in 1986 and will continue issuing the pistol through 1989. It comes with two 15-round magazines and a hip holster.



The Mk19 machinegun, earlier models of which were battle-tested in Vietnam, fills several critical needs.

community, primarily because of the controversy over .45 caliber versus 9mm ammunition stopping/knockdown power. Yet, an examination of the test results demonstrates that the best weapon was the winner of the competition.

All Marines returning to the FMF will also find a new service rifle. Now being fielded, the M16A2 service rifle is an example of a very successful product improvement program (PIP). This program was initially an unilateral Marine Corps evaluation, which ultimately received considerable attention from the other Services. The Marine Corps' purpose for improving the M16A1 rifle was to provide a near-term solution for existing deficiencies while also supporting the development of a future rifle for long-term needs. Some of the improvements incorporated in the new rifle are a more durable handguard, stock, and barrel; a new rifling twist, sight system and muzzle brake, and burst control. The initial operating capability (IOC) was achieved in 1984 and already significantly improved performance has been measured. Rifle durability and improved range scores are the two most visible effects. Rifle range scores have improved 6 percent across the board.

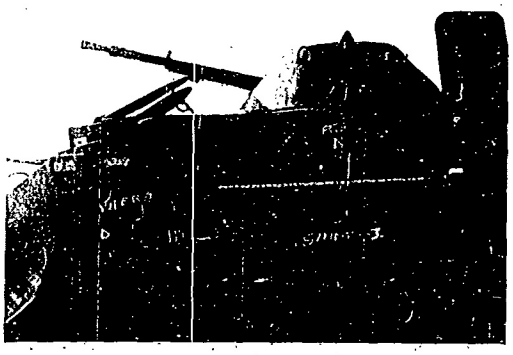
Coincident with the fielding of both the new rifle and pistol, the Marine Corps is examining the possibility of selectively replacing some pistols with a carbine. This enhancement is directed at improving personal defense against an increased enemy threat, especially to rear areas, command and control elements, and combat service support units. Specifically, the carbine would provide greater personal protection because of its increased range, lethality, and volume of fire. It would also enhance the commonality of ammunition within units and would provide greater commonality of repair parts with the M16A2. Though some object to issuing a carbine to officers as a replacement for pistols, this is a matter for our top leaders to decide before fielding.

In addition to the complementary relationship shared among the M9 pistol, M16A2 rifle, and the carbine, the M249 squad automatic weapon (SAW) also has a connection as it relates to firepower enhancements. When the procurement decision for the M16A2 three-round burst control feature was made, concurrently, the procurement decision was also made for the SAW. Limiting the M16A2 to burst firing left the SAW as the only weapon capable of full automatic fire in the Marine rifle squad. The acquisition and fielding of both the new M16A2 rifle and the SAW are therefore operationally interrelated. The SAW is a multi-Service procurement program led by the Army. It is a manportable, gas-operated, air-cooled 5.56mm light machinegun that weighs 14.2

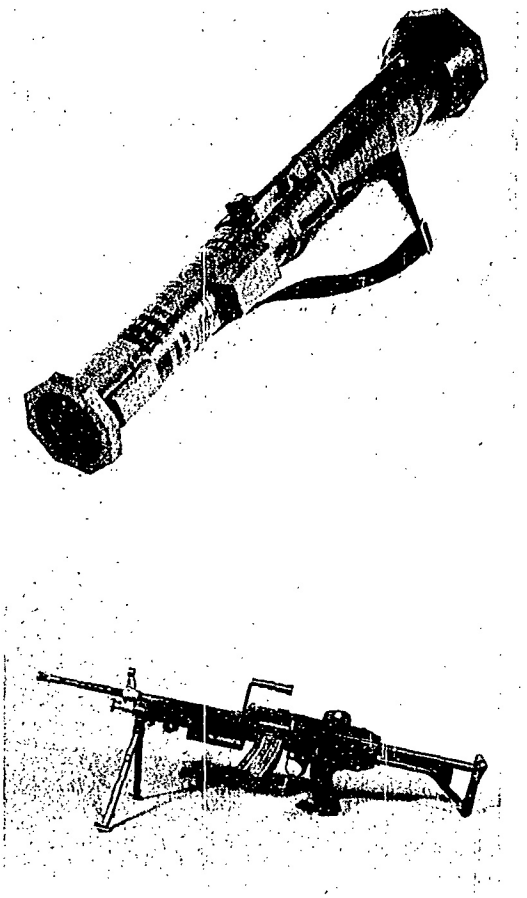
pounds. The SAW and M16A2 both fire the new NATO standard 5.56mm round, which increases the effective range well beyond 400m and provides greater penetration. The SAW is also capable of firing from a 200-round magazine of belted ammunition, a standard 30-round M16 magazine, or from a 400-round can of belted ammunition.

In addition to the lightweight SAW, three other types of machineguns are being procured for use within Marine units. Since 1960, the most prolific machinegun in service has been the M60 medium 7.62mm machinegun. However, since many of these guns were old and in need of repair, a rework program was begun. At approximately the same time, Maremont Corporation, the original manufacturer of the M60, developed a product improved M60E3, which the Marine Corps envisioned as a replacement for the M60. Following successful developmental and operational testing, the M60E3 was approved for procurement. The Marine Corps is the lead Service in this program, and the beauty of this particular improvement is that many of the current M60s can be converted to M60E3s by the application of a modification kit. Modification and new procurements of the M60-E3 began in 1985 and all M60s were replaced by the end of 1986. While maintaining the reliability and performance of the earlier M60, the M60E3 is 25 percent lighter (18.5 vice 23 pounds), has twin vertical pistol grips, reversible gas piston, a bipod mounted on the receiver instead of the barrel, and a carrying handle on the barrel, which makes barrel changes easier, eliminating the need for a glove.

The final two machineguns being added to the inventory will be issued to the heavy machinegun platoon of the weapons company. They are the M2HB .50 caliber and the Mark 19 Mod 3 (Mk19) 40mm machineguns. Six M2 .50 caliber machineguns have already been in the platoon since 1983. This was reduced from the original plan to issue eight guns as part of the Ground Force Structure Enhancements Program, which in part, was designed to lighten the logistics burden. The 1980 mission area analysis identified the .50 caliber machinegun as one of several near-term options for eliminating deficiencies in the ability of infantry units to engage lightly armored vehicles. As a secondary mission, the M2 .50 caliber machinegun will be employed in the antiaircraft gunnery role. An M36 antiaircraft mount is provided for this purpose. An improved armor piercing round has also been developed for use against enemy light armor. The saboted light armor penetrator (SLAP) comes in both .50 caliber and 7.62mm rounds. The SLAP round can penetrate most of the known light armor vehicles.



A Soviet BTR-60 captured by Marines in Grenada was used as a target for test firing the SMAW. Note comparative hits by other missiles, such as the AT4 LAW (below).



The M249 squad automatic weapon (SAW) is the only fully automatic weapon in the Marine rifle squad.

Old Infantry Antiarmor Capabilities

Threat Vehicles / Weapons	BTR-60	BDRM-2	BMP-1	BMP-1981	PT-76	T-62	T-64	T-72	T-80
LAW M72A2	X	X	X	X	X				
SMAW (Bunker)	X	X	X	X	X				
Dragon	X	X	X	X	X	X			
I-TOW	X	X	X	X	X	X	X	X	

New Infantry Antiarmor Capabilities

	BTR-60	BDRM-2	BMP-1	BMP-1981	PT-76	T-62	T-64	T-72	T-80
7.62mm SLAP	X	X							
Cal .50 SLAP	X	X	X	X					
Mk19 (M430 Rd)	X	X	X	X	X				
SMAW (Bunker)	X	X	X	X	X				
AT4*	X	X	X	X	X	X			
SMAW (AT)	X	X	X	X	X	X	X	X	
Dragon PIP	X	X	X	X	X	X	X	X	
TOW2A	X	X	X	X	X	X	X	X	X

* Replaces LAW

Figure 2

Six Mk19 40mm machineguns (sometimes called automatic grenade launchers) are also found in the heavy machinegun platoon. The 1980 mission area analysis found that the Mk19 with a maximum range of 2,200 meters proved to be the most versatile weapon available against the array of expected targets. It totally satisfies the range, penetration, and lethality deficiencies for mobility and firepower kills against light armored vehicles and fulfills most of the requirements for automatic fragmentation capability against personnel. Still the Mk19 has several disadvantages: it is a heavy system requiring a dedicated vehicle; it is manpower-intensive; and it generates new ammunition resupply problems. Nevertheless, this weapon began fielding in 1986 and is being well received in infantry, artillery, and engineer units.

Throughout the recent history of warfare, armored vehicles have become increasingly threatening. The Marine Corps' concept for armor/antiarmor operations, using present day weaponry and tactics, involves the employment of naval surface fire support and air power, coordinated to produce a synergistic effect. With this defense in depth philosophy in mind, the Marine Corps is presently adding a number of new antiarmor weapons systems to its quiver of infantry weapons. Figure 2 reflects the improved array of antiarmor weapons and the threat they are capable of defeating.

Heretofore, the only infantry antiarmor weapon system capable of engagement at ranges beyond 1,000 meters was the tube-launched optically-tracked, wire-guided missile (TOW). However, the TOW density was not great enough to cope with the expected number and types of enemy armored vehicles. This limitation has been remedied through product improvements and additive systems. The TOW now has greater range and greater penetration of rolled homogeneous armor (RHA). TOW 2A, which was first fielded in 1986, features a 40mm tandem warhead located in the probe to detonate first and strip away reactive armor and expose the RHA hull, thus allowing the TOW 2 main warhead to penetrate the hull.

The advanced antiarmor weapons system-medium (AAWS-M) is the Army's development program to replace Dragon. While supporting AAWS-M, the Marine Corps needs an interim system, better than the current Dragon system and available before AAWS-M is fielded (10 years away). Therefore, the Marine Corps initiated its Dragon PIP, which will begin fielding in 1988. Dragon PIP will represent an 86 percent improvement in penetration (*MCG*, News, Dec86), provide a faster, longer range missile, and will have an improved tracker for enhanced accuracy and gunner survivability.

This said, the most available antiarmor weapon continues to be the light antiarmor weapon

(LAW) M72A2. Due to the many deficiencies of the current LAW, a recent joint Service evaluation program has selected the AT4 as the new LAW. The AT4, so named for its 84mm missile, which produces almost twice the penetration of the M72A2, is a 14.6- pound system compared to the 5-pound M72A2. The AT4 will replace the M72A2 as a readily available round of ordnance. Phase-in of AT4 training will begin in mid-1987 and will reach peak cycle by late 1989. Concurrently, M72A2 training will continue until 1990, at which time AT4 training will be completely phased in and the system fully deployed.

Although the improvements to TOW, Dragon, and LAW represent a quantum jump in the performance of antiarmor weapons, it is significant to note that the performance of the shoulder-launched multipurpose assault weapon (SMAW) is equally impressive. The Marine Corps has long had an urgent requirement for an assault weapon system capable of defeating earthen and concrete defensive positions or bunkers during military operations on urban terrain (MOUT). The SMAW, with its dual mode warhead and fuze, provides an incredible destructive capability. Consider some of the targets it can destroy:

- 7 feet of reinforced sandbagged bunker
- 12 inches of brick wall
- 8 inches of reinforced concrete
- .75 inches of RHA

Notwithstanding the SMAW's primary mission of bunker busting, it is also extremely effective against light armored vehicles, as evidenced by the 36-inch hole it produced in tests against the BTR-60. To further enhance the SMAW's capability against armor, a new antiarmor round will be fielded in 1988. It is already producing 30 percent better penetration than the AT4, and once fielded, the technology represented in the new round may also be applied to other antiarmor systems.

The SMAW was first fielded in 1984 and is unique to the Marine Corps. There are 18 launchers per infantry battalion with 6 per rifle company. The SMAW is also found in the combat engineer battalion, with 27 per battalion, 9 per company.

The .50 caliber machinegun loaded with SLAP rounds and the Mk19 using M430 ammunition should also be included in the array of weapons effective against armor. The .50 caliber SLAP round is capable of defeating .75 inches of RHA beyond 1,000 meters, while the Mk19's M430 ammunition can defeat 2.5 inches of RHA at 2,200 meters. An impressive design characteristic of the M430 ammunition is the dual functioning fuze. Upon impact, the fuze simultaneously functions both as a fragmentation grenade and a shaped charge. This generates both fragments to produce casualties and a high speed jet that can penetrate light armored targets.

The Marine Corps and Army are also making great strides in the development and procurement of mortars. The M19 60mm company level mortar, with a maximum range of 1,800 meters, was replaced in 1982 by the M224 lightweight company mortar system (LWCMS), which increases range to 3,500 meters. It also improves lethality and reduces the weight of the 60mm mortar. To date, only a high explosive round with extended range ammunition has been fielded with the mortar, though development continues on extended range smoke and illumination rounds, which will be fielded in 1988-1989. The battalion level M29 81mm mortar will be replaced by the M252 improved 81mm mortar (I81) in 1987. It, too, will feature improved lethality ammunition, which extends the range of the 81mm mortar from 4,500 meters to 5,600 meters. The light armored vehicle mortar variant (LAV-M) was the first to receive the I81 when it was fielded in 1986. Although the Marine Corps has shown some interest in a 120mm mortar, the operational requirement has not been approved. Before a decision is rendered on the 120mm mortar, three questions must be answered: Is it an infantry system or will it be with the artillery? Where will the manpower come from in a level-strength Marine Corps? How will the logistics burden be managed? Headquarters Marine Corps is currently analyzing these and other fire support issues.

Finally, Marines returning to the FMF will find many improvements in the Corps' ability to move and fight at night. The AN/PVS-4 replaces the AN/PVS-2 on a one-for-one basis for use on individual weapons such as the M16A2, SMAW, M60E3, and M249. The AN/TVS-5 replaces the AN/TVS-2 as the crew-served night sight for use on the Mk19 and .50 caliber machinegun, as well as for use on a tripod to replace the night observation device.

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It is clear from all this that the work begun in 1980 defining the requirements and best mix of Marine infantry weapons is well underway. The reader can be assured that should he be called to make a combat assault across a distant beach or from a helicopter, the tools of his trade have undergone much improvement. In the last analysis, it is the infantryman who remains the final arbiter of the battlefield. Every effort is being made to put the best possible weapons in his hands.

USMC