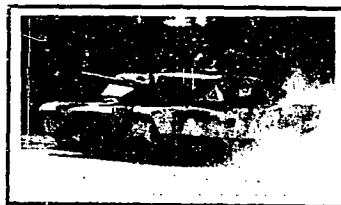


## Weapons and Equipment

# Another Assessment of the M1A1

by Maj Robert B. Neller



I've got some good news and some bad news.

First the good news. The recent article on the M1A1 Main Battle Tank (MBT) by Capt Besch (*MCG*, Aug87) accurately portrays the awesome capabilities of this weapon. Based on the facts he presents and my own personal experience, I strongly believe in the abilities of the M1A1, and look forward to its introduction into the Fleet Marine Force. It is a quantum leap forward from the M60 family of tanks and will provide Marines with a world-class tank for many years to come.

Now the bad news. Like any weapon or weapon system, the M1A1 has its drawbacks. As professionals, we must know the strengths as well as the weaknesses of our own weapons in order to properly employ them. Capt Besch fails to discuss many of the limiting factors of the M1A1 and, in so doing, paints an unrealistic picture that tells only part of the story. The purpose of this article is to discuss some of the drawbacks or operational realities that were ignored in Capt Besch's article.

**Armament.** The firepower of any MBT is tremendous. The 120mm smooth-bore cannon on the M1A1 provides accurate and deadly fire against a variety of targets. A quick glance at the list of rounds available, however, should leave all Marines concerned. Conspicuously absent from the list are two USMC favorites—white phosphorus (WP) and beehive. WP is currently not carried on the M1A1. This apparently is due to several different reasons. All ammunition on the M1A1 is stowed horizontally in a protected compartment in the rear of the turret. This method of ammunition stowage adds to the survivability of the tank and the crew by keeping any sympathetic detonations away from the crew compartment. The semiliquid state of the WP round, which requires the round be

stored vertically as in the M60 series tanks, was probably an important factor in that decision. Storing it horizontally might also make the round unstable when fired. The incendiary properties of the round and the danger it posed the crew were also factors. Finally, with a reduced total ammo capacity on the M1A1, WP may have been dropped due to a perceived lack of importance in relation to other types of rounds. In my opinion, WP is an invaluable round. It is the fastest and most reliable mark for close air support and has excellent screening capabilities.

While attending the Advanced Armor Officer's Course at Fort Knox, I made these observations about the nonavailability of WP on the M1A1 in class and was greeted with blank stares from my Army classmates and looks of disgust from the Air Force officers teaching that particular block of instruction. Suffice it to say, the Marine view of close air support and the mechanics of an immediate air strike requiring an accurate mark are foreign to the other Services—but that is another story. The bottom line is we have a valid need for this round, and if at all possible it should be added to the inventory, even at the expense of storing it vertically within the crew compartment. Failing that, alternate procedures of some sort will have to be developed.

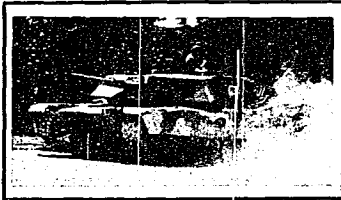
As for the beehive round, detractors would probably point out the redundancy of carrying the beehive antipersonnel round when the M1A1 already has three machineguns for protection against infantry. I agree, but there is something comforting about the thought of all those flechettes going off on muzzle action. The beehive round provides just a little added insurance against infantry attacks or that Sagger or Spigot gunner going for the maximum-range shot.

My last comment on armament deals with the ammunition capacity of the

new MBT. The total ammunition stowage capacity of the M1A1 is 44 rounds. The M60 can carry 63 rounds. This is almost one-third more ammo per tank for the M60. During the 1973 Yom Kippur War, Israeli M60 tanks on the Golan Heights took advantage of their larger ammo capacity against their Soviet-equipped foes. Many Syrian T-62s with only a 40-round capacity ran out of ammo and withdrew or became casualties. In today's world of having to "fight outnumbered and win," the reduced ammo load takes on even greater significance. This should sound the alarm for our logisticians, as the M1A1 will require much more support and more frequent ammo resupply.

**Fire Control.** The fire control system on the M1A1 is without a doubt a first-rate piece of gear. With its laser range finder, thermal optics, and digital fire control computer, it would be the envy of any shopping center video arcade. If this system fails, a 105D ballistic periscope is the backup. The inherent danger here is a tendency to become overly reliant on technology, resulting in the loss of basic gunnery skills, such as round sensing and range estimation. The double-edged sword of technology strikes again.

**Mobility.** The speed and cross-country mobility of the M1A1 must be seen to be believed. Comparing it and the M60 in these areas would be comparable to a road race between a Porsche Turbo and a VW Beetle—no contest. The M1A1 is truly that good. With this performance, however, come some trade-offs. The turbine engine that generates all that horsepower is a real gas hog. The M60 uses about 2 to 2.5 gallons of fuel to the mile in all-around driving and has a cruising range of 310 miles with a fuel capacity of 385 gallons. The M1A1, in comparison, uses about 3.5 to 6.9 gallons of fuel to the mile in cross-country/tactical driving (figures will vary depending on who you talk



to) and has a cruising range of 280 to 310 miles with a fuel capacity of 498 gallons. Although you gain a tremendous improvement in performance with the M1A1, this marked increase in fuel consumption creates another serious logistical problem. Not only ammo but fuel will have to be provided more frequently.

Nor are fuel and ammo the only logistical considerations to be taken into account with the M1A1. The speed and mobility of the vehicle will create definite compatibility problems with all of our existing rolling stock. The simple fact is nothing else in our inventory that travels across the ground can keep up with the M1A1. I'm not just talking about support vehicles, but also our amphibious assault vehicles and light armored vehicles. The end result will be either slowing down of the M1A1s so the other vehicles can keep up, thereby negating one of their greatest advantages, or having the M1A1 move independently of other supporting forces, such as mechanized infantry and self-propelled artillery. In either case, M1A1 forces will always have to be conscious of not outrunning their support. This is one reason the Army was forced into developing the M2 Bradley infantry vehicle. It can keep up with the M1A1 and provide infantry support to the armored force.

A final comment on mobility. As Besch points out, due to the tremendous suspension system on the M1A1, the track life on the tank has been shorter than the design specifications indicate, thus necessitating more frequent replacement and maintenance of the track. The vehicle is so fast and the suspension so efficient that the track takes a tremendous beating and wears out much faster than the M60 track. Here, again, is another logistical consideration.

**Powerplant.** Though Capt Besch doesn't cover this area, the novelty of a turbine engine on the M1A1 is worthy of further discussion. This powerpack is what gives the tank such a good horse-

power-to-weight ratio, and its tremendous speed and acceleration. It also is extremely quiet, making location of the vehicle without visual spotting much more difficult than with a diesel-powered tank. The turbine does have its drawbacks, however. The thermal signature is tremendous. The heat generated by the engine is so great that positioning a tank-infantry phone on the back is not practicable. Adopting an entirely new powerplant will also require retraining for all our mechanics and the acquisition of a new parts block. Additionally, some critics have voiced doubts about the turbine's capability to operate in a desert environment. Only time will tell.

□ I read with some dismay in the August *Gazette* that the Marine Corps has elected to delete the tank-infantry (T-I) phone on the M1A1, choosing instead to rely entirely on radio communications with the forces the vehicle is supporting. I feel that this is a mistake that will take away a great deal of flexibility from combined arms operations and forfeit the advantages that the T-I phone has to offer.

For instance, T-I phones provide a secure, unjammable means of communication with a weapon system able to provide direct, overwhelming support for an infantry squad that probably doesn't have a radio. Further, T-I phones also provide infantry Marines with the ability to communicate with the tank crew while they are providing security for the vehicle and allow the grunts to take advantage of the tank's laser range-finder, optics, radio, and night vision devices, increasing the interdependence between the two. Without a T-I phone, the tank's ability to move, shoot, and communicate is impaired, to the detriment of all. Let's figure out a way to keep the T-I phone, and let the Army carry the radios.

**Cpl John R. Murphy**

**Future Needs.** In the last section of his article, Capt Besch beats the drum for an increased emphasis on armor forces in the Corps. It is not my intention to debate this in this article, but his narrow advocacy of this viewpoint seriously clouds some of the valid points he makes. His final comment, for example, implores the Corps to shed its

"infantry support" concept for using armored vehicles. This is an old line, worn thin by the maneuver warfare advocates who gloss over the changes Marines have made in our employment of armor formations. I believe Marines have made great strides in this area, though some have been tough converts. The desire and real need for a tank infantry phone on the M1A1, nevertheless, does not imply that Marines don't know what they are doing. On the contrary, it shows their knowledge of combined arms and appreciation for the total value of the tank in all types of combat—from combat in urban terrain to desert warfare. All too often, Capt Besch and his supporters paint an idyllic picture of large tank formations roaming freely across the countryside. All warfare, but especially armored warfare, is a combined arms operation. Armor needs infantry just as infantry needs armor. Both can take the objectives, but only infantry can hold it. Infantry is the shield to hold the ground and blunt the attacker, while armor is the rapier that slashes and cuts deep into the enemy. Armor advocates who feel they can malign infantry support will find that foot infantry, hiding in the woods and behind hills, will badly hurt them if tanks move arrogantly without infantry support.

Despite these disagreements with Capt Besch, his basic point of praise for the M1A1 is on solid ground. Given all the available options, the procurement of the M1A1 was a good choice. It is far and away superior to the M60A1, and its speed, mobility, and fire control system put it in a class by itself. As long as Marines are cognizant of the vehicle's particular needs and plan accordingly for its support, the Corps will come out ahead. Marines have, in my mind, come a long way in their doctrine concerning armor/mechanized forces. It is highly unlikely they will ever be as heavy in armor as Capt Besch would like, simply due to amphibious lift requirements needed to get to the objective area. They must improve their ability to execute and continue to be, as Gen A.M. Gray has said, "light enough to get there quickly, and heavy enough to win when we arrive."

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