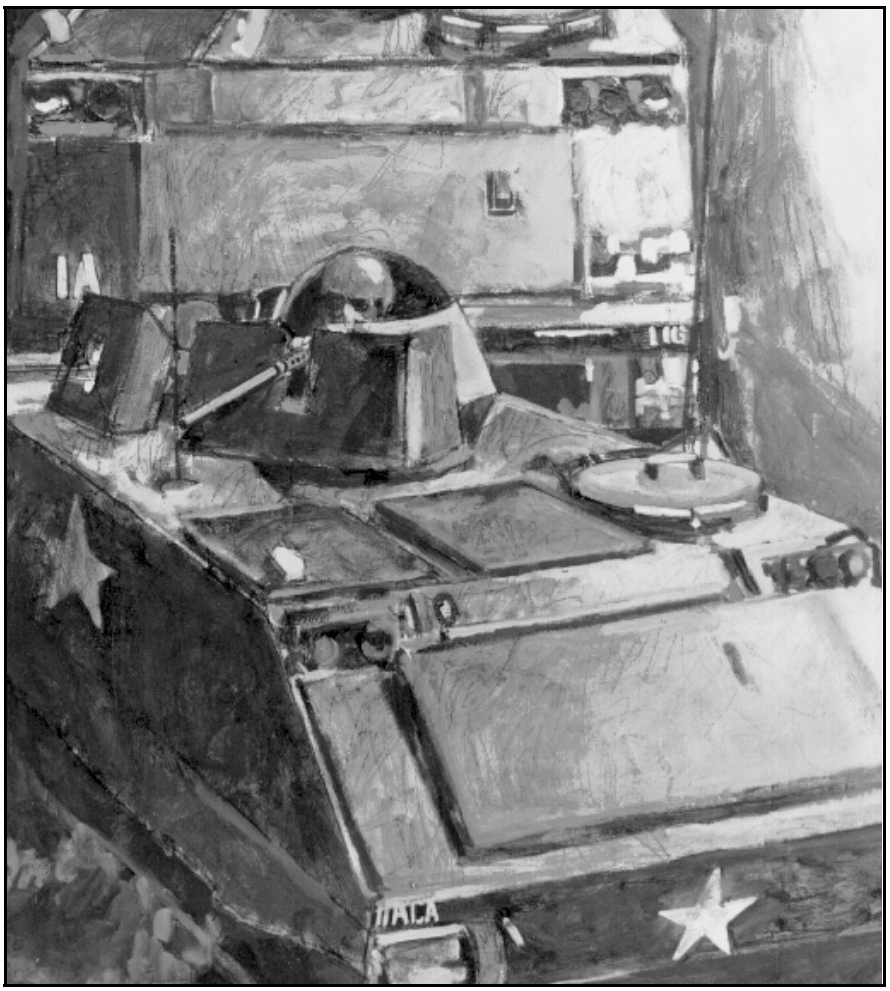
Why Convert "Enhanced Readiness" Guard Units to the Bradley?

M113s Maximize Mechanized Infantry Mobility and Firepower in Contingency Ops

by Mike Sparks

Talk is underway about converting the infantry units in the Enhanced Readiness 30th Mechanized Infantry Brigade ("Old Hickory") of the North Carolina U.S. Army National Guard from the M113A3 Armored Personnel Carrier (APC) to the M2 Bradley Infantry Fighting Vehicle (IFV). The intent is to improve combat capabilities to meet the unit's new strategic mission in the "Total Force." This conversion may also be made in other enhanced readiness mechanized infantry brigades in the U.S. Army National Guard.

Getting rid of all M113A3 infantry battalions in favor of M2 IFV units would be a serious mistake. Some of the M113A3's capabilities have yet to be fully exploited, and there are still nagging flaws in the M2. Moreover, future world conflicts will require infantry that is more rapidly deployable — and situation/terrain flexible — than units equipped with the M2 Bradley can be. We would be wise to keep at least one mechanized infantry battalion equipped with M113A3s — fully enhanced to be "Super M113A3s" — in order to meet the demands of modern, nonlinear combat.



Troopers of the 11th Armored Cavalry mount a search operation in Vietnam using ACAV versions of the M113. These included armored gun shields for the .50-caliber heavy machine gun and the side-mounted medium machine guns. The painting, by contemporary soldier-artist PFC Philip W. Jones, was selected in a soldier-art competition at the time.

COMPARISONS: M113A3 and M2

STRATEGIC MOBILITY

The M113A3 (22,000 lbs) can be easily airdropped from available C-130s ("H" models can carry 42,000 lbs), while the M2 is too heavy (basic A1 model is 49,138 lbs combat-loaded) and too large to be airdropped from any USAF aircraft except the new C-17. Only the C-17's rear ramp is high enough for an M2, rigged to an airdrop platform, to exit. In the past, the XVIII Airborne Corps has used several older-model M113A2s as Dragon Brigade headquarters vehicles.

M113A3s can be moved rapidly and easily to world conflicts in C-130s. The M2 is too heavy for this, and requires C-5Bs or structurally failing C-141Bs for air transport. Currently, there is not enough airlift to speed a large M2 force to a distant world trouble spot. In the Entebbe raid, the Israeli Defense Force used C-130s to airland M113s, an excellent example of this versatility.

MISSION FLEXIBILITY

The M113A3 can carry a complete 7-13 man infantry squad that can dismount to fight from the ground, while the M2 has space for only six dismounts. Units that convert to M2s will lose three dismounted fighters — the vehicle commander, driver, and gunner — robbing us of needed manpower to secure closed terrain adjacent to our own axis of movement.

Are our light infantry forces large and mobile enough to screen our own mechanized infantry's movements?

The M113A3 is spacious enough to carry wounded soldiers on stretchers, and is capable of extracting them under enemy fire; M113s did this in Panama. The Bradley is too cramped to accept litters.

The M113A3 has the legendary M2 Browning .50-caliber Heavy Machine Gun (HMG), which can be ground-mounted with its tripod and traverse and elevating mechanisms for accurate fire support, even indirect firing from defilade positions using gunnery tables. The M2 does not have a .50-caliber that can be ground mounted, only the less powerful and shorter range .30-caliber medium machine guns. The .50-caliber can kill enemy APCs and IFVs with Raufuss and SLAP ammunition. While the M2 can kill the same enemy vehicles with its 25-mm Chain Gun, it must maneuver the entire vehicle into position, exposing it to enemy fire. In some situations of terrain and vegetation, Bradley firepower will be unavailable because it cannot be detached from the vehicle for ground mounting. Units with M2s may actually have less organic firepower available than M113-equipped units.

The M113A3 can fight with its infantry standing upright from its rear troop hatches; this adds to the firepower hitting the enemy and gives the men a clear view of the battlefield before dismounting or fighting through mounted; the M2 does not have overhead hatches for soldiers to fight mounted, relying instead on narrow vision slots and firing point weapons. With the M2A2's improved armor, even these have been reduced to just two M231 firing port weapons in the rear for self-defense. The M2A2, for all practical purposes, is no longer capable of mounted combat by the infantry inside. Unless the Bradley's turret is facing the threat when it appears, there will be no suppressive fire to meet it. In contrast, the M113A3 has a man facing in every direction, ready to fire over 360-degrees, providing the all-around security vital to thwarting an ambush.

TACTICAL MOBILITY

The M113A3 (99 inches high, 208.5 inches long) is a smaller vehicle than the M2 (117 inches high, 254 inches long) and so it is harder to spot and hit. Given the improved power and suspension of the A3 model, the M113 has almost equivalent cross-country mobility and speed to the Bradley.

The M113A3 can easily swim across rivers and small bodies of water without preparation; the M2 requires a time-consuming delay to erect its swim skirt.

The M113A3 is more fuel-efficient and less costly to operate than the M2, easing logistics and keeping the M113A3 force combat effective longer than an M2 force. This is important in nonlinear warfare. Units with long and complex supply lines are vulnerable to enemy attack. Units that can operate with reduced supplies can operate without fear of their supply lines being threatened, and can more easily use air resupply if necessary.

Soldiers carry a wounded man to the safety of an M113 ACAV during fighting in Saigon in 1968. The vehicle's armament includes a pintle-mounted .50-caliber machine gun firing over the right side and a recoilless rifle in the front ACAV turret.

SURVIVABILITY

The M113A3 with enhanced armor is survivable up to 14.5-mm HMGs, the Bradley is proof up to 30-mm light cannon. While the Bradley is much more armored, the M113A3's armor is adequate if care is taken to employ it correctly, dismounting troops early on in defilade. The M2 can stay in the open fighting alongside the heavier M1A1 Abrams main battle tank, but even this must be done carefully to prevent MBT large caliber cannon fire and ATGMs from destroying the Bradley and the men inside.

FIREPOWER

The M113A3 does not have the antitank firepower of the Bradley's TOW II, which can kill most of the world's main battle tanks to a range of 3,750 meters — beyond the effective range of most tank main guns. But the M175 mount will interface the M47 Dragon Medium Antitank Weapon (MAW) to the M113A3 so a single soldier can kill threatening enemy vehicles without having to wait for the entire dismount squad to debark and get into firing positions. The Dragon will fire more accurately from a vehicle mount than from its rickety firing bipod out to at best 1,000 meters. One of the conclusions from the recent U.S. Marine Corps study of armored combat in Southwest Asia was the desirability of a vehicle-mounted M47 Dragon.

The Javelin ATGM, scheduled to replace the Dragon, will not have the M47's backblast problem, so it could be fired from the vehicle without need of a mount. Javelin will not require the gunner to track the missile to target; it will be "fire and forget," something even the Bradley cannot do. Bradleys have to stop and track their TOWs to target. The Javelin will have a 2,000-meter range — not as good as the TOW's range — but its shoot and scoot" capability makes the reduced range less of a factor. Because the Bradley has no top hatches to allow troops to stand and fire, they will have to leave the vehicle to fire Javelins.

Dismount TOW II ATGMs could be carried inside M113A3s, with Israeli-style manpack teams, to provide covering fires as other M113A3s/M2s maneuver. A well-emplaced, ground-mounted TOW — as proven at the NTC and by the Israelis in actual combat — can pick off enemy vehicles while friendly vehicles maneuver. These teams are more difficult to suppress than a vehicle-mounted TOW, which can only fire from more exposed positions accessible to the vehicle.

The M113A3 does not have the long-range infrared thermal night sights of the M2 Bradley, but AN/TAS-5 Dragon ATGM thermal sights are organic to all infantry units and could be carried for

use as a visibility aid for night driving, to detect ground disturbances that could reveal enemy mines, and to detect enemy heat signatures. The Dragon thermal sight is neglected because its weight, 22 pounds, makes it difficult to carry on foot, but this is not a problem if carried as a vehicle vision aid. M113A3 units could also benefit from the new family of uncooled, hand-held thermal sights that will be coming into Army service in 1995. These will provide improved thermal imaging at more reasonable carrying weights for M113A3 units.

While the M113A3's .50-caliber HMG, when vehicle mounted, is not as accurate or as powerful as the M2's stabilized 25-mm Bushmaster cannon, it does have a useful antiarmor capability with enhanced ammunition. The M2 Bradley does have advantages over the M113A3, especially in vehicle vs. vehicle combat where accurate firing-on-the-move is vital. The Bradley can also act as its own forward area air defense weapon, capable of shooting down helicopters and jets with its 25-mm high-rate-of-fire-cannon. But the M113A3's .50-caliber HMG, ground-mounted on an M3 air defense pedestal mount, can provide antiaircraft fire that does not originate from the vehicle, making enemy fire guiding on muzzles flashes or tracers less likely to destroy the vehicle.

The new U.S. Army Small Arms Common Module Fire Control System (SACMFCS) for the M60 MMG, MK 19, and M2 HMGs offers laser aiming for first-round impacts on target. Mounting these sights on the M113A3's .50-cal HMGs could lessen the Bradley's accuracy advantage.

The M113A3 has a clear advantage in mortar employment. With its overhead hatch, the M113A3 permits vehicle firing of 81-mm mortars (Carrier M125A1/A2), 107-mm mortars (4.2 inch-Carrier M106A1/A2), and 120-mm mortars (Carrier M121). The Bradley doesn't have a fully opening overhead hatch or space inside to mount mortars.

TRAINING

The M113A3 requires less time to train its crew and embarked soldiers than the complex M2. The M2 has elaborate storage plans which require much training and discipline to master. The M113A3 is spartan in its loading arrangements with much greater flexibility and potential. Unfortunately, this simplicity is often seen as a lack of sophistication and is abused to carry troop comfort items instead of mission-enhancing equipment. With IDF style external loading of troop rucksacks, field living gear, etc., the inside of the M113A3 can be freed to carry whatever mission gear is needed in a ready-to-go manner. In contrast, M2 Bradley crews require a keen knowledge of where everything is stowed.

EMPLOYMENT FLEXIBILITY

Because the number of infantry that can be carried in M2 Bradleys is so low, the infantry is only capable of supporting the survivability, security, and mobility of the vehicle itself. Seizing terrain and mobility corridors, or conducting dismounted infantry offensive operations in restrictive terrain, is no longer possible. M2 infantry will live or die close to its vehicles, surrendering difficult terrain to possible use by the enemy. This is evident time and time again at the National Training Center at Fort Irwin, California, where M2 Bradley units are decimated when they try to bypass infantry in ambush positions along restrictive terrain.

M2 units don't have enough dismounted infantry to clear mobility corridors of enemy foot infantry. As a result, M2 units must depend on indirect fire support and their own direct fire 25-mm and MMGs to suppress an infantry force, and at that, this force must be foolhardy enough to ambush from unprepared fighting positions along the forward slopes of nearby terrain rises. If the enemy infantry is well dug-in, or fights skillfully from the reverse slope, the men inside the Bradleys are semi-blind; they cannot see or stand upright through open roof hatches. This is the old lesson from Afghanistan, where road-bound Soviet infantry in BMPs were easily ambushed by irregular light infantry using restrictive terrain to hide and break contact. We will face the same challenge in the mountains of Korea.

If there is any doubt about this, reflect on the following M2 Bradley description from the October 1991 *Army* magazine almanac edition, pages 295-296:

"The characteristics of the IFV allow for ***mounted*** *combat and provide the infantry a means to* ***protect tanks*** *and* ***consolidate gains in the offensive***. The principal requirements for the Bradley were mobility equal to the most modern tanks, such as the M1, and main gun armament powerful enough to handle enemy light armor and support the infantry squad when dismounted..."

The emphasis is mine. Let's look at each underlined point. "Mounted" combat means fighting within the vehicle. With the side firing ports blocked, the only "fighting" that is going to take place is going to come from the Bradley cannon, machine gun, or missile armament. The infantry inside the Bradley are there then to "protect tanks" and "consolidate gains," which means the objectives the infantry is going to dismount for will have already been taken by the action of the vehicles, i.e., M1A1 main battle tanks and M2 Bradley IFVs. This is a classic description of armored infantry. So, will our handful of light infantry divisions be the only forces capable of infantry combat? Let's be intellectually and professionally honest here: M2 Bradley-equipped infantry is indeed armored infantry, which there is a need for, but we do need a vehicle-equipped force that supports infantry, not armor, missions. There are many times when infantry missions have nothing to do with facilitating the passage of armored fighting vehicles. In these missions — attacks, raids, ambushes...defenses where men on foot must do the job — the infantry must arrive in quantity and not be tied down defending its transport vehicles. Mechanized infantry is in-between armored infantry (few men, lots of vehicles) and light infantry (lots of men, few vehicles). Mechanized infantry should be a lot of men with a lot of vehicles.

In vehicle-vs.-vehicle combat, the M2 fares better, but this is armored warfare. What's happened is that we have turned the M2 Bradley into a light tank that can carry a few infantry scouts, or more accurately an armored infantry fighting vehicle.

One of the key dynamics of mechanized infantry is that it can truly fight as foot infantry and can prevail in restrictive, closed terrain if it doesn't get lazy in training from being transported by vehicles. This is a force-wide leadership problem that only gets worse with the M2's enhanced armor protection; the troops inside don't want to get out of their "armored cocoon" and fight. Now, with the latest Bradley A2 armor protection, the infantry itself can no longer fight mounted **from** the vehicle. M2/M3 Bradleys are actually infantry fire support scout/vehicles that fight the enemy with 25-mm cannon and TOW ATGM fires. To keep ar-

mored vehicles survivable in open terrain, the only real solution is the tank fighting vehicle (TFV) — a tank that can carry some infantry to screen its own movements, which is what the IDF does with its Merkava main battle tanks. They have space in the rear for infantry or extra ammunition. M113A3s are actually closer to being infantry fighting vehicles. Without infantry in M113A3s or a large number of M2s to carry an adequate dismount force for full-fledged infantry missions, M2-only units are indeed armored infantry.

In open terrain, fighting alongside main battle tanks (MBTs) like the M1A1 Abrams against a linear opponent, infantry is better off moving with armor protection than walking at three miles per hour. In DESERT STORM, soldiers stayed inside most of the time until after the vehicles had done the fighting. The Bradley's protection has lulled many active-duty units into letting their dismount infantry skills erode or never develop, which is very dangerous. Soldiers that use M113s often measure themselves by their vehicles, as civilians would compare a "sports car" to a "pick-up-truck," and wrongly conclude that they are inferior to M2 units. The truth is that a "pick-up-truck" like the M113 can perform some missions the M2 cannot; especially the mobile infantry mission currently referred to as "mechanized infantry." This unique mission is not centered around supporting the advance of armored fighting vehicles but the missions that must be done by men on foot due to restrictive terrain, enemy situation, etc. But until this mentality is corrected, it constitutes an eroding influence, or a "disease" to the fighting spirit. "If I can ride, why do I need to walk?" We must change this.

The Best of Both Worlds: Units with M2s and M113A3s

While it is true that M2 Bradley-only equipped units would be better termed "armored infantry," the 30th Infantry Brigade (Enhanced Readiness) (and other brigades facing the same problems) should have both armored infantry and mechanized infantry battalions — the ability to fight in the open or in closed terrain. This is not without precedent; the German Army has a mix of "Marder" IFVs and M113s in its force structure. Hopefully, this flexibility and balance could lead all mechanized infantry brigades in the regular Army to follow suit and fully exploit the potential of the M113A3. "Enhanced readiness" would mean a proper balance of M2- and M113-equipped units; armored and mechanized infantry. Perhaps the National Guard could exchange **some** of its M113A3s for the M2 Bradleys it needs to get the needed balance, and vice versa for the active Army units. If foot-intensive infantry operations are needed, the M113A3 units will be available. Extra M113A3s, maintained by the U.S. Army National Guard nation-wide, would be available for expedient use by light infantry forces on a case-by-case basis.

If we plan on continuing to send M2 Bradleys into nonlinear conflicts like Somalia, we need to make it possible for the infantry inside to stand up and contribute their increased vigilance and firepower, instead of sitting blind and cooking like turkeys in an oven. Under the present setup, the only eyes looking for the enemy belong to the driver (who is busy looking at road conditions), the gunner (who sees through the narrow field of view of his sight, and only where the turret is facing), or the vehicle commander, who is very busy keeping his position in formation, land navigating, and communicating with other vehicles. This is a recipe for disaster on a nonlinear battlefield. Let's put these eyes to use. Keep the men from dehydrating, and the vehicle itself from being destroyed in ambush. The German Marder IFV has hatches from which the infantry can stand up and fight. In closed terrain, this is a survival imperative. Why not have the Bradley's rear cargo hatch open up and fold all the way down so at least two of the men in back can stand and fire their weapons?

Introducing the Super M113A3: The Gavin Airborne IFV

The following changes will require little or, in some cases, no money to execute. Hardware for the M113A3 is in the system, available for our use if we know enough to ask.

Harnessing a soldier's fighting spirit and enthusiasm for a dirty job like war by invoking U.S. Army history is the epitome of good leadership. When we are cynical and look down on the mechanized infantry, this only fuels the feeling in these units that they are "low-speed." We need these units to be "high-speed." The military is serious business, not some kind of existentialist

General James Gavin

First, Let's Name the 113 After a Fighting Hero

Why are we calling APCs M113s after all these years? The M113A3 is airdroppable and easily airlandable; why not name it the Gavin Airborne Infantry Fighting Vehicle or Airborne Infantry Personnel Carrier, after the legendary U.S. Army General James Gavin?

General Gavin was one of our greatest combat commanders, and should be honored with a fighting vehicle that has had a long record of service, just as he had during and after WWII. General Gavin cared deeply about the lives of his soldiers and always led from the front. I'm sure the thousands of soldiers and paratroopers who served with him would be in favor of naming the M113 in his honor. The designation "Airborne Infantry Fighting Vehicle" would redress the inferiority complex some feel about their M113A3s because they are not as complicated or as heavy as the M2. It would remind them that light weight is a virtue. It allows them to enter the battle early, while the initiative is on our side, by air-delivery. It allows them to actually swim across inland waters. Soldiers would be darn proud to put a "Gavin Airborne Infantry Fighting Vehicle" or an "I'm an Airborne Mechanized Infantryman" bumper sticker on their personally owned vehicle. The stroke of a pen can affect a name change; it will not cost us millions of dollars from the Army budget.

game where we gain exalted status (high-speed) for ourselves and deny others the chance to be as good. Someday, the battlefield situation will be desperate, and we will have wished that we were less snobbish during peacetime preparations. Can the 10-division Army afford to wait for a North Korean invasion to realize that we need each other?

Remember Chamberlain at Gettysburg? What would Chamberlain do today if his National Guardsmen in M113A3s faced the North Koreans? He'd make his men "high speed," and do whatever it takes to win and keep them alive. Today's soldier wants to be the best — let him. The Israeli Defense Force has learned this; all of their branches wear berets and are allowed to forge a unique fighting identity and spirit. "Elite" means being good, not "I'm good, and you're not." It is measured vertically, by the standards of reality, not horizontally, by what our peers are doing. In the U.S. military, we don't allow mechanized infantry units to be elite; they are seen as "cannon fodder" for conventional war. This narrow view of mechanized infantry overlooks the unique capabilities and amazing potential the M113 will have as new equipment, like the Javelin ATGM and lightweight hand-held thermal imagers, enters service. The modern battlefield will not allow a stereotyped battle approach; either what you are doing is **special**, i.e., unpredictable to the enemy — or you are going to be **dead**. Remember Chamberlain's bayonet charge when his men ran out of ammunition? It was the last thing the other side expected him to do. The sooner we start to let initiative and the human fighting spirit emerge in the mechanized infantry, the better off we will be. The official Russian doctrinal conclusion from our own DESERT STORM says it all: "The stereotypical employment of forces must be avoided at all costs."

Now, let's discuss some do-able, practical equipment and training upgrades for the M113:

Earth-tone brown paint scheme for better camouflage in all world terrains. Much time is lost painting vehicles in a mad rush to blend in with different areas before deployment. An earth-tone Army brown color on M113A3s would suit more of the world's regions, including arid deserts. Brown will also work in wooded areas where more moisture is present.

Better loading SOPs. We need to maximize ammunition, weapons carrying, and self-logistics support capability, as well as survivability and quality of life in the field. Most troop gear can be strapped to the top of the vehicle. There, it can act to support the arms of soldiers firing upright, while keeping the insides clutter-free for fast exits. The interior shelf space is tight between the spall liners. These must slide; if gear bulges out, the liners will not slide easily. Handles need to be added to the sliding spall liners.

Ammunition that isn't needed for immediate use, such as extra missiles, rockets, etc., should be placed as far to the rear and outside as possible to prevent cook-offs if the vehicle's interior is penetrated by enemy fire.

When infantry dismount, they need a survival evasion, resistance, escape kit as well as E-tools to construct shelters or fighting positions should their vehicles get destroyed. Without vehicles, they need to be fully functioning light infantry.

To perfect loading schemes, practice, and training, at least one M113A3 needs to be located at each Armory. Some units have their M113A3s in storage at a distant Army post, making them unavailable for training. Training in dismount drills, weapons employment/mounting, etc., can all take place at the Armory if at least one M113A3 is present.

Armament Upgrades. M60 medium machine gun universal mounts need to be mounted on the roof to allow firing from the vehicle. The Israeli Defense Force Armored Corps has long known that a single .50-caliber HMG is not enough to protect the M113. They have installed medium machine gun mounts on all of their M113s. In the defense, you do not want to waste your precious enhanced .50-caliber ammunition on targets that can be handled by your medium machine guns. The M60 MMG (or any pintle-equipped light, medium, or heavy machine gun) can be mounted on the roof to the right or left side of the troop hatch using the Arm, Assembly Gun Mounting or universal gun mount (NSN 2590-00-406-1493) that bolts directly into three antenna mount holes already in position on M113s, but usually covered.

The arm assembly allows an M60 MMG, or even an M2 .50-cal HMG, pintle to lock in for flexible weapons interface. When the interface for a pintle to attach to the M249 SAW becomes available, a light machine gun can be mounted. The arm is part of the M113A1 gun shield armor kit first used on M113A1 ACAVs in Vietnam. In nonlinear war, like what we experienced in Vietnam or recently in Somalia, your machine guns do you no good strapped inside your vehicle or facing in just one direction; they must face outward, ready to pour a high volume of fire at an enemy that can come from any direction. Without side-firing port weapons, or the ability of the infantry in the back to stand upright and fire through top hatches, the M2A2 is very vulnerable to side attack unless the turret happens to be facing in the enemy's direction when the ambush occurs. The universal mount on the M113A3 will support the weight of the M60 MMG and improve firing accuracy by reduced vibration. The M113A3 can have a machine gun facing in each cardinal direction for 360-degree coverage, the .50-caliber HMG facing front, the M60 MMG covering the right side and rear, and an M249 light machine gun covering the left side and rear.

Add M175 Dragon ATGM mounts for snap shooting at enemy vehicles. The advent of the M2 Bradley has surely made a lot of M175 Dragon mounts available for M113A3 use. Mounting just aft of the TC's HMG, these mounts allow the Dragon to be fired and tracked to targets from a briefly stopped M113A3. The mounts are probably in storage somewhere, awaiting a use.

The German panzer grenadiers have their M113A1Gs outfitted with mounts for their medium-range antitank weapon, the MILAN II.

We need gun shields for the track commander when he is upright and firing the M2 .50-caliber HMG. As recently as 1990, 24th Infantry Division (Mechanized) M113A2s were seen with TC gun shields. These shields are important — a smart enemy will concentrate fire on the exposed TCs to thwart an attack. The loss of M113 TCs was decisive as far back as 1963 in Vietnam, at the battle of Ap Bac. These lessons need not be relearned in 1994. In addition to old shields in the inventory, the M113A3 manufacturer, FMC, has a new shield available.

During training, bring along tripod traverse and elevation gear for HMGs and MMGs. Make it an SOP for all FTXs to include ground-mounted firing and employment. The ability to ground

mount the HMG will be lost if the mounting hardware is not taken into the field out of ignorance or laziness. Soldiers may be unaware that the .50 HMG has only 200 rounds immediately available when mounted on the M113A3. The vehicle will have to seek cover while the driver bends down and reloads. In contrast, a ground-mounted HMG can be loaded and fired continuously from a dug-in fighting position. The .50-cal HMG, firing hand-held from the pintle mount of an M113A3, is not nearly as accurate or controllable as it is when ground-mounted on the tripod/T&E. This is important for precise defensive fires and indirect fires behind defilade. Often, by moving the HMG to a ground mount, the team's firepower can continue while the M113A3 moves to a less exposed, more survivable position.

Let's stress indirect fire machine gunnery by teaching it and practicing it. In general, U.S. infantry is overly fond of forward slope defensive positions, allowing a skilled enemy, equipped with thermal imagers or image intensifiers, to spot us from a safe distance, then bombard our positions with impunity. One of the reasons for setting up a forward slope defense is to get maximum range from machine guns. This is not necessary if you are precise about using your ground mounts and use gunnery tables to control your fire from T&E readings. Indirect, plunging fire is possible from machine guns, allowing the guns to stay behind the masking terrain of a minimum defilade or reverse slope defensive position.

Obtain M60 Medium Machine Gun plastic assault packs for dismounted firing. When dismounting, the M60 gunner has a loose belt of 7.62-mm ammunition that can get dirty, have its links bent or twisted, or snag on clothing or equipment as he exits the M113A3. We know this from direct, personal experience. The issue cardboard box/canvas bandolier is too flimsy to be hung on the M60 to provide a stable carry of a full 100-round belt. One answer is to obtain a plastic assault pack commercially, as other units in the U.S. military have done. They are just $10 each from Capco Enterprises, 3250 Pollux Avenue, Las Vegas, Nevada 89102, (702) 362-3700, POC: Mr. Ross Capawana.

M3 .50-cal HMG antiaircraft mounts should be obtained and employed in the field as SOP. There is ample space in the M113A3 to carry the M3 antiaircraft mount for the .50-caliber HMG. In areas where the enemy air threat is great, these mounts could bolster air defensive fires. I've yet to see these mounts used, so many are probably languishing in storage somewhere.

Buy enhanced lethality .50-caliber rounds now for wartime use. Saboted Light Armor Penetrator (SLAP) and explosive Raufoss .50-caliber ammunition is available to make the .50 HMG effective against BMPs from any angle, and improve the gun's destructive effect against aircraft and dug-in enemy positions. These rounds were used by snipers during DESERT STORM and are in the system.

Explore using the Small Arms Common Module Fire Control System (SACMFCS) for HMG first-round accuracy. The vibration and human error built into the M113A3 .50-cal HMG mount can be reduced by the Contraves SACMFCS laser sight. As soon as the Army buys SACMFCS in numbers, some units should be trialed on M113A3s for evaluation. If improvements in accuracy are possible, M113A3s should be fitted with these sights.

Make TOW II ATGM ground-mounting and employment SOP for all field exercises. Most of the TOW ground mount hardware is with M113 Improved TOW Vehicles (ITVs). Some extra guidance sets and launch tubes could make available a second launcher apart from the vehicle's TOW launcher. Dismount TOW "missilery" needs to be done from infantry-carrying M113A3s, and not just ITVs, because the tendency of ITV units is to use the TOW from the vehicle. By giving non-ITV infantry dismounted TOW training, we have the opportunity to double the number of TOW launchers at the infantry commander's disposal. A ground mount TOW set does us no good if it's stored in an ITV that gets hit and goes up in flames trying to shoot/track from open, vehicle-traversable terrain.

Javelin fielding should be a top priority for M113A3 units with contingency missions. At 49.5 pounds, the Javelin is not easily carried; but its day/night thermal imager launch capability is lighter than a Dragon ATGM using its 22-pound AN/TAS-5 thermal tracker — 73.2 pounds. An excellent way to employ this heavy weapon system is from ambush positions a short distance from a vehicle so its weight doesn't have to be carried all the time by the antitank gunner. U.S. Army Rangers are slated to be the first to receive Javelins, but an M113A3 force could use them just as well. The Javelin's soft launch capability means it can be fired from vehicles like the M113A3 without need of a vehicle mount to point backblast away from friendly troops. As soon as possible, Javelin trainers should be issued to M113A3 units to give them an awesome fire-and-forget antitank capability not possible from dismount troops inside Bradleys. Unlike TOWs and Dragons, Javelins have no trailing wires, so they can be fired over water, and through vegetation.

JAVELIN, the new "fire-and-forget" antitank missile.

Fit M40A2 106-mm Recoilless Rifles to designated M113A3s for shock firepower. The M113A3 can mount the 106-mm recoilless rifle to one of its roof side antenna mounts for shock firepower against dug-in enemy or enemy in buildings. This would be useful in situations like the Rangers faced in Somalia. In addition to a healthy antitank capability, the 106-mm antipersonnel round has thousands of wire flechettes that can stop the kind of massed infantry attacks we might expect in a North Korean invasion of the south. The M40A2 can also be used to economically reduce minefield and wire obstacles, breaching a pathway for vehicles to pass without risking men. There are over 250,000 rounds of 106-mm RR ammunition in stock, according to a spokesman for U.S. Army TRADOC. The recoilless rifle has proven itself as the shock weapon of choice in Southeast Asia, the Middle

East, and recently the former Yugoslavia. Hundreds of surplus M40A2s are available in U.S. Army storage, but need to be claimed before they are destroyed by demilitarization.

Maximizing Protection. We need ballistic protective CVC helmets or PASGT Kevlar helmets with communication links. Current CVC helmets offer no ballistic protection; drivers and TCs are the prime targets of an enemy trying to stop an armored vehicle attack. Ballistic CVC helmets capable of defeating most missile threats comparable to the current PASGT helmet should be fielded or we should develop a vehicle intercom/mike system that can be fitted to the PASGT Kevlar helmet. In the case of the latter, one helmet would do the job of two — drivers and TCs carry PASGT Kevlar helmets inside their vehicles in case they have to abandon their vehicle and fight dismounted, which takes up space inside the vehicle. With a Kevlar helmet/vehicle communication link, they need only disconnect the mike cord, grab their weapon, and leave the vehicle. Later, they could remove sound-dampening earphones from the helmet, etc.

Wearing body armor should be SOP for all FTXs. The whole point of transporting infantry in vehicles is so they can be rested to fight savagely as a shock force. If they leave the vehicle and immediately get wounded by enemy fire, this will be all for naught. Body armor needs to be worn during field training exercises, not collect dust in the supply room. I'd rather carry a PASGT flak jacket into the field for warmth than a M65 field jacket, the dreaded "Field Sponge," which offers no rain protection and little warmth soaking wet. The M65 field jacket is a hypothermia inducer. It almost killed me one FTX at Fort McCoy, Wisconsin, in 1982 with the ill-equipped U.S. Marine Corps.

We need Nomex BDUs for drivers, TCs, and embarked troops. The risk of fire is a fact of life in vehicle warfare; all persons inside should be wearing fire-resistant clothing. This is easily possible by providing the Nomex Battle Dress Uniforms now issued to aircrews (NSN 8415-01-328-8253, jacket; NSN 8415-01-328-8269, trousers) to military clothing sales stores for soldiers to purchase on their own. When name tapes, insignia, and patches are added, these woodland camouflage BDUs look just like current BDUs and could be reserved for actual field wear when operating inside vehicles. A tan color Nomex BDU is available for desert operations. Nomex flight gloves are another necessity. These fire-resistant gloves, now issued to tankers/aircrews, need to be authorized for wear and made available in the MCSS at every Army post.

We should consider buying the AN/PVS-7B NVG mounts for the PASGT Kevlar helmet. Many soldiers fail to use current AN/PVS-7B night vision goggles because they find the head harness confusing and uncomfortable. A valuable U.S. battle advantage is lost when NVGs sit in their cases unused. A PASGT Kevlar helmet interface that allows the NVGs to be "flipped up" for unaided night vision is available from Litton. The U.S. Army is expected to buy these mounts en masse. If not, the Guard should take the initiative and buy their own. Helmet, Mount Assembly Flip-up, Part #240963-100, POC: Project Manager Night Vision, John Spadafore, Fort Belvoir, Virginia, (703) 806-3276 or Litton (602) 968-4471.

Dragon ATGM IR thermal sight use should be SOP during all FTXs. Until better thermal sights become available, Dragon AN/TAS-5s should be used by infantry on watch standing upright in moving M113A3s and from ground defensive OP/LPs. The U.S. Army paid for these systems, and they should be put to use.

M113A3s should be retrofitted with hatch pins that are easily removable and can be pulled by 550 cord. A problem noted at the NTC was that it is difficult to remove hatch pins and close hatches while the vehicle is moving. The TC can reach back and get his pin out, the troops in the rear can pull theirs out with great difficulty, but the driver cannot get his off unless he stops the vehicle and reaches back. Nor can the TC reach forward to remove the driver's pin. If indirect fire is received, and an M113A2 wants to button up, it's in trouble. I'm not sure the situation is any better with the M113A3. The problem is that the pins have a button that must be depressed to disengage two holding bulges at the end of the pin. Because of this, you can't use a pull cord to remove the pin. One solution might be a pin with a ring that works in reverse: pulling the ring out would depress the holding bulges for removal. With this kind of pin, a cord could be tied (Type III "550" parachute cord) to the driver's hatch pin so the TC could remove it prior to "buttoning up."

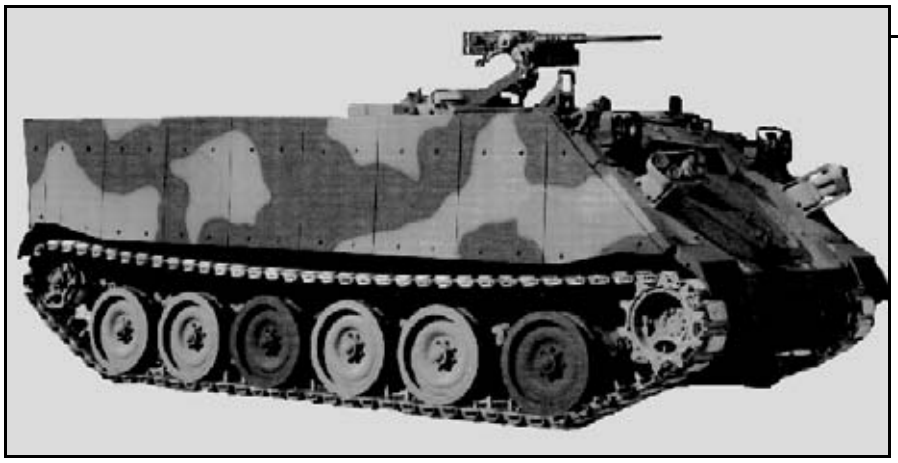
We need to practice applique armor attachment. For fuel economy, M113A3s are not operated with their applique armor. At least once a year, M113A3 units need to go to their Mobilization and Training Evaluation Station and actually attach this armor to their vehicles. Then, in a combat zone, they will be capable of attaching their armor with little difficulty when much more pressing concerns will be at hand.

All soldiers should train to Light Infantry EIB standards. One of the reasons mechanized infantry soldiers get lazy is that they are not challenged to be the best, just to make minimums. Also, they have no "Hooaah" badges that they can work for and take pride in. By training them at weekend drills to pass the Expert Infantryman's test, they would have the hope of earning an EIB patch, a coveted and respected badge that could do wonders for morale, as well as improve infantry skills. The close proximity to Fort Bragg, where EIB testing is on-going, makes it very easy for 30th Brigade units to set up an EIB program. Soldiers who pass the EIB test administered by active duty soldiers know that they have skills that will work in the real world, bolstering confidence and a realization that the National Guard is on the "first string" with the active Army in the "Total Force." This training must include field living and survival skills so soldiers can be confident and able to operate light on their feet with minimum equipment.

Mixed Force Structure and Missions. M113A3s should be kept in the force structure for the many reasons previously stated. This is not without precedent — the IDF Airborne airdrops M113s for use by its paratroopers as "battle taxis." They can fight from the vehicle or dismount to fight on foot. The IDF has enhanced its "Zeldas," as they call the M113, with side medium machine gun mounts and improved armor. They know when to fight from them and when to dismount.

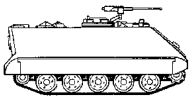
Every fourth company of a German Army Panzergrenadier Battalion within a Panzergrenadier Brigade is equipped with 11 M113A1Gs; most are set up to fire MILAN II ATGMs from simple mounts comparable to our own M113 Dragon mounts.

●At least one battalion in the 30th Brigade should remain as mechanized infantry with M113A3s, probably the

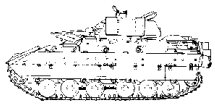


The Mobile Tactical Vehicle Light (MTVL), latest derivative of the M113 family, as seen in a United Defense brochure. The most recent improvements include a 350-hp turbocharged engine and an improved suspension that allows more than 15 inches of roadwheel travel. The M113 is probably the most common armored vehicle in the world.

119th. This battalion should be a round-out battalion for the XVIII Airborne Contingency Corps and be authorized to wear the maroon beret. Paratroopers leaving active duty from the airborne corps, but who plan to stay in the area, often chose to join the nearby 119th Infantry (Mechanized). These men are airborne-qualified and hold to high standards of professionalism. Being a part of the 119th should be seen as a way of continuing their military careers. Strategically, the battalion should be proficient at rapid deployment by air, rail, and sea to world trouble spots as the vanguard of the 30th Infantry Brigade (Mechanized). Operationally, their M113A3 trim vanes should be fully functioning for inland amphibious capability. The entire battalion should be able to secure a river crossing for the rest of the brigade. As the battalion holds the far and near sides of the crossing point, our combat engineers construct bridging for Abrams MBTs to cross and allow time for M2 Bradley IFVs to erect their swim skirts and swim across. Ft. Bragg has small lakes where this capability can be practiced.



M113 vs. Bradley M2



	M113	M2 Bradley
Cost:	$281,705	$1,056,845
Height:	99 in.	117 in.
Weight:	22,000 lbs	49,138 lbs (A1) 66,000 lbs (A2)
Airdrop Capability?	C-130, C-141, C5B, C-17	C-17 only
Dismounts Carried:	7-13 soldiers	6 soldiers
Stretcher Carry?	YES	NO
Swimmable?	YES, no preparation	YES, after erecting swim skirt
Ground-Mountable Machine Guns?	.50 cal, .30 cal	.30 cal only
Armor Protection:	Up to 14.5-mm HMG	Up to 30-mm cannon
Antitank Firepower	M-47 Dragon or Javelin TOW Manpack	Turret-mount TOW only
Fire on the Move?	NO	YES
Mortar Carry?	81mm, 107mm, 120mm	None
Fuel Consumption (OPTEMPO figures from TACOM)	2.4 mpg	1 mpg

●At least one company in this battalion should have on-call (18-hour notice) airborne-qualified TCs/drivers to act as an M113A3 airdrop detachment for the XVIII Airborne Contingency Corps. [Perhaps the much esteemed, Alpha Company of the 1/119th Infantry(M), located just 45 minutes away from Ft. Bragg in Smithfield, North Carolina. Alpha Company recently returned from the NTC decorated by the OPFOR with the Order of the Hamby, 1st Class, for devastating active-Army BLUEFOR units as OPFOR augmentees.] This detachment of volunteers would train with Dragon Corps COSCOM riggers so they would become proficient enough to prepare their own M113A3s for low-velocity airdrop/LAPES, requiring only rigger supervision. Members of the 82d Airborne currently provide the "muscle" when preparing their vehicles for airdrop, with riggers supervising. The airdrop detachment would jump with paratroopers of the 82d Airborne and operate their M113A3s for armored mobility and troop transport of a designated paratrooper force. The M113A3s would have M40A2 106-mm Recoilless Rifles and/or M175 Dragon ATGM mounts to provide shock firepower and anti-vehicle defensive fires for airborne forces. This force could be a mobile reserve to defend the drop/assault zone(s) or speed to secure assault objectives using M113A3 firepower and shock action. It could also provide infantry escort for the Airborne's Sheridans or M8 Armored Gun Systems.

●One platoon in this company should be designated to act as a mobile scout/reconnaissance detachment for the brigade, using the M113A3's cross-country mobility, especially its swimming capability. Trim vanes need to be fully functioning and used often to keep this skill viable. There are no other vehicles in the Army inventory that can swim. HMMWVs don't swim. These soldiers should be jump-qualified so they can airdrop their vehicles and themselves into a conflict early on. Slots for Pathfinder, Ranger, and Long Range Reconnaissance Schools should

be provided to enhance the unit's expertise. The Mech Recon Platoon (Airborne) would have its own scout vehicles, folding All/Extreme-Terrain Bicycles (A/ETB) that would be used to silently approach the enemy while the M113A3 sits in a full defilade "hide" position. The A/ETBs would be carried inside the M113A3s during airdrop and be strapped outside once on the ground.

●During monthly training drills at nearby Ft. Bragg, the remainder of this company would be trained to airland as mechanized infantry. The only personnel that would require jump status would be the airdrop detachment and the reconnaissance platoon. On a regular basis, they would practice short takeoff and landing (STOL) operations into and out of dirt strip assault zones, using 23d Air Force and Air National Guard C-130 Hercules aircraft.

●Extra M113A3s replaced by M2 Bradleys should be maintained as a mobility asset for joint training exercises with light infantry forces (29th Light Infantry, U.S. Army National Guard in Virginia) as an ad hoc mobility/firepower asset. The 30th Brigade would provide drivers/TCs for contingency operations where the M113's capabilities would be more appropriate, peacekeeping for example. Combat in the jungle is another.

Conclusion: Don't replace all of our M113A3s with M2s!; we need them both — "sports cars" and "pick-up trucks."

Notes

Instead of cluttering the main text with footnotes, I've placed the source documents below with the page numbers where the relevant pieces of information can be found.

FMC fact brochure on M2 Bradley.

FMC brochure on M113A3.

McDonnell-Douglas C-17 Globemaster III brochure.

Texas Instruments/Martin Marietta Javelin Antitank Weapons System brochure.

Infantry Magazine, January-February 1992; "Javelin: A Leap Forward," Captain John T. Davis, U.S. Army.

Personal Interview, March 28, 1994, LTC Mauro, U.S. Army Airborne/Special Operations Test Board, Ft. Bragg, N.C.; M113A3 has been and can be airdropped using same procedures as A1/A2 models except different internal tie-downs are required for control wheel instead of levers. The center of gravity is a few inches aft, due to the M113A3's external fuel cells, but is not significant.

Israel's Cutting Edge: Samuel M. Katz, Concord Publications, 1990; p. 12, C-130 Hercules LAPES Low Altitude Parachute Extraction System of M113; pp. 8, 10, M113 gun shields for track commander.

Israel's Armor Might; Samuel M. Katz, Concord Publications, 1989; p. 15, de-rigging of M113 after airdrop.

Author's personal observations of IDF M113 external stowage, May 1990, November 1991, while attending IDF jump school.

NTC battle performance of M2 Bradley/M113A2 while OPFOR augmentee fighting against 1st Brigade of the 1st Cavalry Division, Fort Hood, Texas, during the March 1994 rotation.

M113 in U.S. Service, Michael Green and Yves DeBay, Concord Publications, 1991; p. 3. M113 LVAD (Low Velocity Airdrop); pp. 14, 19, M47 Dragon ATGM M175 vehicle mount on M113s.

Soldier's Manual 11B Infantryman Skill Level 1, U.S. Army, July 1985; p. 2-542, "M175 vehicle or tripod mount" for M47 Dragon ATGM.

TM 9-1425-484-10 *Operator's Manual for Dragon Weapon Guided Missile System, Surface, Attack, M47.*

M2/M3 Bradley, Second to None, Greg Stewart and Michael Green, Concord Publications, 1990; p. 1, M2A2s will only have rear-firing port weapons.

The M2 Bradley Infantry Fighting Vehicle, Stephen J. Zaloga, Osprey Books, 1986.

FM 7-70, *The Light Infantry Platoon/Squad,* U.S. Army, September 1986; p. D-34, cooled Dragon thermal sight is good observation device.

USMC Research Center Research paper #92-0002*, Armor/Antiarmor Operations in Southwest Asia,* July 1991, Major John Kelly, Captain Douglas Seal, 1LT William Harrison, 1LT Robert Esposito, USMC; p. 33, "Develop a simple HMMWV mount for the Dragon. In many regions of the expeditionary environment, use of the TOW will be restricted and the Dragon will fill this void."

Soldier of Fortune magazine, "M60 Bullet box," May 1989, p. 50.

The Mortar Book, Product Manager for mortar systems, U.S. Army Picatinny Arsenal, N.J., March 1992; pp. III-E-1-4, 120-mm M121/M120 system described in detail.

British Army Staff Report, "Reverse Slope Defence - A Lesson for the Americans from the Falklands Campaign," Major J.G. Williams, British Army, Special Forces Liaison Officer, 17 January 1984.

"Some Thoughts on Reverse Slope Defense," Lieutenant Colonel John A. English, Canadian Army.

Infantry Journal, Canadian Army, "The Rise, Fall & Rebirth of 'The Emma Gees,' Part 2", Major K.A. Nette PPCLI.

Paraglide, "Division Troops Compete for EIB," Cameron Porter, 82d Airborne Division PAO, March 31, 1994.

Natick P-32-1 *Items of Individual Clothing and Equipment,* U.S. Army Natick RD&E Center, September 1991, pp. 31-32.

Letter to ITSG Director, from Contraves, maker of the SACMFCS for the U.S. Army, February 25, 1994.

"The Danger of the Over-Reliance on Technology in the Armed Forces" by Brigadier General Franz Uhle-Wettler, German Army Armored Corps, 1983.

Army magazine, almanac edition, October 1991, pp. 295-296.

Modern German Panzer-Grenadiers: Germany's Mechanized Infantry, Michael Jerchel, Concord Publications, 1990.

Bright and Shining Lie, Neil Sheehan, Random House, NY, N.Y., 1988; pp. 200-265, 1963 Vietnam, The Battle of Ap Bac; TCs firing exposed .50-cal HMGs on M113s targeted by Viet Cong to stop mechanized infantry attack.

Just Cause, Malcolm McConnell, 1991, St. Martin's Press paperbacks; Low-velocity airdropped M551 Sheridan main guns in urban combat; M113s for mobility, fire support, protection, medevac in urban combat.

"Secret Weapon: America's next military marvel may be the bicycle," *Mountain Bike,* October/September 1993, p. 82.

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