

Too Late the XM8:

Alternatives to The Armored Gun System

by Stanley C. Crist



The XM-8 Armored Gun System: It's gone. Now what?

The cancellation in early 1996 of the XM8 Armored Gun System program deprives the 82nd Airborne Division of a state-of-the-art bunker buster/tank killer. Although this action was a disappointment to many in the armor community, the decision to terminate the XM8 was probably justifiable and rational; the AGS was more sophisticated and expensive (the XM8 costs roughly as much as an M1A1 main battle tank!) than necessary for the mundane task of destroying bunkers and buildings, but was considered by many to be too lightly armored for tank-versus-tank duels.

Where does that leave the paratroopers of the 82nd when they have an exceptionally hard target to neutralize? Currently, they can call on the M551A1 Sheridans of 3/73rd Armor for direct-fire support, but there is reportedly no funding to keep the Sheridans in service beyond September, 1997. The realities of modern warfare dictate a continuing requirement for a large-caliber, direct-fire weapon system

XM8 Armored Gun System

Airdrop Capability: C-130, C-141, C-5, C-17

Armor Protection: Basic: 7.62mm, Bolt-on: 14.5mm, 30mm, RPG

Primary Armament: 105mm cannon

Effective Range: 3000+ meters

Number of Rounds: 21 in autoloader, plus 9 in hull stowage

Fuel Capacity/Cruising Range: 150 gallons/300 miles

to operate with parachute infantry forces, but the realities of the constrained defense budgets anticipated for the near future apparently rule out the acquisition of a new design like the XM8.

In order to be affordable, it would seem that any alternative to the AGS will have to be an adaptation of equipment that is already in the system. Indeed, this is how the XM8 should have originally been designed, instead of as a completely new, non-standard item unique to one or two units. If airborne forces are to operate an armored vehicle, it should be — ideally — standard issue to the rest of the Army, although modifications to create an airborne-specific variant of the standard combat vehicle would be acceptable. Some AGS alternatives that can be easily implemented are:

- Deactivate 3/73 Armor, leaving 82nd Airborne with no direct-fire support.
- Deactivate 3/73 Armor; attach M1A1 tanks to 82nd Airborne.
- Keep 3/73 Armor; keep (and possibly upgrade) the M551A1.
- Keep 3/73 Armor; replace the M551A1 with the HMMWV.
- Keep 3/73 Armor; replace the M551A1 with the M113A3.
- Keep 3/73 Armor; replace the M551A1 with the M3A2.

Analysis

Option 1. No direct-fire support.

Although this alternative generates substantial cost savings, it does so by preventing the 82nd Airborne from

conducting combined arms operations, except in conjunction with follow-on forces. The resulting negative impact on overall combat effectiveness makes this option less than desirable.

M1A1 Main Battle Tank

Airdrop Capability: None

Armor Protection: 125mm APFSDS, HEAT

Primary Armament: 120mm cannon

Effective Range: 3000+ meters

Number of Rounds: 40

Fuel Capacity/Cruising Range: 505 gallons/289 miles

Option 2. The M1A1 MBT

This would provide the paratroopers with support by the most lethal, survivable "armored gun system" in the world. Unfortunately, since the *Abrams* cannot be parachuted into the drop zone, an airhead would have to be seized and secured to allow C-17 or C-5 transports to bring them in. This means the airborne infantrymen would not have tank support when it might be most needed — *during* the initial attack.

Also of consequence is the voracious appetite of the *Abrams*' turbine engine. The enormous fuel consumption rate — *twenty times as great* as the HMMWV — makes this tank much less than ideal for airborne operations, where the quantity of fuel available for resupply efforts is necessarily limited.



The HMMWV, shown here with TOW launcher. Would a 106mm recoilless rifle be a better armament system?

Option 3: The M551 Sheridan

Currently in service with 3/73rd Armor, the M551A1 Sheridans are all about 30 years old and, reportedly, require excessive amounts of maintenance to stay in operation. Like all armored vehicles developed in the 1960s, it is a low-survivability design, with no separation between the crew compartment and ammunition stowage. Like the XM8, the M551A1 is a non-standard weapon system, on active service (for combat duty) only with the 82nd Airborne Division.

M551A1 Sheridan

Airdrop Capability: C-130, C-141, C-5, C-17

Armor Protection: Basic: 7.62mm, Bolt-on: None

Primary Armament: 152mm gun/launcher

Effective Range: HEAT: 1800 meters
ATGM: 3000 meters

Number of Rounds: 29

Fuel Capacity/Cruising Range: 160 gallons/370 miles

On the plus side, there are still sufficient numbers of Sheridans stored at Anniston Army Depot to make up for

any vehicles destroyed in training mishaps or combat actions. Also, the destructive power of the high explosive round is second only to that of the 155mm howitzer, enabling Sheridan gunners to make short work of enemy-occupied bunkers and buildings.

Option 4: The HMMWV

In the breakthrough to Task Force Ranger during 3-4 October 1993, 40mm MK19 grenade machine guns — mounted on HMMWVs — were used by 10th Mountain Division soldiers to provide direct fire support during the movement through Mogadishu's streets.³ The minimal capabilities of the 40mm HEDP round seem unlikely to overcome a well-fortified bunker — let alone the steel hide of any but the lightest of armored vehicles — but the effects on the buildings in Somalia were claimed to be quite devastating. Combining the MK19 with the vastly increased protection of the M1109 up-armored HMMWV would improve the survivability of this combination as a direct-fire support vehicle, but the small amount of explosive in the 40mm projectile seriously limits its usefulness against well-trained and well-prepared foes.

A low budget platform that *can* demolish bunkers and buildings could be assembled from surplus M40A2 106mm recoilless rifles, by mounting them on open-top M998 cargo HMMWVs.⁴ As there is still a number of these weapons — as well as a large quantity of 106mm ammunition — in storage, it would enable a potent bunker-busting capability to be provided to the paratroopers for little more than the cost of the weapon mounts. The existing HEAT round is able to defeat most of the armored vehicles on any likely battlefield; if greater lethality is desired, the Swedish 3A-HEAT-T ammo can penetrate nearly twice as much steel armor, even when fronted by explosive reactive armor.⁵ There are, however, at least two significant disadvantages to affixing the 106mm recoilless rifle on the M998, complete lack of armor protection for the vehicle crew and a rather meager quantity of stowed ammunition. A possible solution is to use the M1109 or XM1114 up-armored HMMWV and develop a mount for the 84mm M3 RAAWS (Ranger Antiarmor, Antipersonnel Weapon System).⁶

HMMWV: M998 & M1109

Airdrop Capability: C-130, C-141, C-5, C-17

Armor Protection: M998: None
M1109: 7.62mm

Primary Armament: M998: 106mm recoilless rifle; M1109: 84mm RAAWS

Effective Range¹: M998/106mm: 1700 meters; M1109/84mm: 800 meters

Number of Rounds: M998/106mm: 6
M1109/84mm: 24²

Fuel Capacity/Cruising Range: 25 gallons/300 miles

The 84mm HEDP round does not have the same destruction potential or effective range as the 106mm HEP round, but it is still quite potent *and* requires only half as much stowage space.

There is a useful variety of 84mm ammunition, too, including HE (with airburst fuzing), illumination, smoke, and two different types of HEAT rounds.

Should it be necessary to do so, the RAAWS (also known as the Carl Gustav) is light enough for easy dismounted operation — a characteristic



The RAAWS: Potent and compact...

that could come in handy in a number of plausible scenarios.

The HMMWV, however, has no more than bare minimum capabilities in close combat. Mobility is inferior to tracked vehicles,¹⁰ as is armor protection and load-carrying capacity.



Barry Marriott

The M113-106mm RCLR solution: Unbalanced weight was a problem.

Option 5: The M113A3 APC

There is only one tracked combat vehicle currently in the Army inventory that meets the AGS requirements for both air transportability and armor protection: the venerable M113 APC.

Although the basic M113 design is even older than the M551, the first of the A3 versions entered production in 1987; the initial 1,600 M113A3s are all less than ten years old, so they are able to serve for quite some time.¹¹ Crew survivability and tactical mobility have been greatly improved,¹² compared to earlier models, and the versatility of the design remains unmatched by newer, more complex infantry vehicles. 3/73rd Armor presently operates two M113A3s — one as a battalion command post, one for the maintenance section — so the logistical and operational base is already in place for this vehicle.

During the Vietnam war, one route to increasing the combat power of the M113 was to attach an M40A2 106mm recoilless rifle to the right of the cargo hatch, bolting the weapon to the right rear antenna mount. This configuration is currently undergoing trials for antiarmor use by the Australian Army, after prolonged dissatisfaction with the mobility of M40A2-equipped Land Rovers.¹³ The same concept could provide a parachute-deliverable, fire support vehicle at virtually *zero* cost. The 106mm HEP round has nearly the same target effect as the 105mm HEP ammo fired by the XM8, which should make it a fairly capable bunker-buster. The addition of an AN/PSG-501 CLASS laser sight, with its full-solution fire control characteristics, extends the maximum effective range well beyond

what was once considered possible for recoilless rifles.¹⁴

As might be expected, this idea has drawbacks, too. The rate of fire of the APC-mounted recoilless rifle is no better than that achieved by the Sheridan — two to four rounds per minute, depending on the strength and skill of the loader. Also, weapon traverse is extremely limited with the side mounting; a better — but slightly more costly (in both development time and money) — method

strength and skill of the loader. Also, weapon traverse is extremely limited with the side mounting; a better — but slightly more costly (in both development time and money) — method

M113A3 APC

Airdrop Capability: C-130, C-141, C-5, C-17

Armor Protection: Basic: 7.62mm
Bolt-on: 14.5mm, 30mm, RPG

Primary Armament: 106mm recoilless rifle or 84mm RAAWS

Effective Range⁷: 106mm: 1700 meters;
84mm: 800 meters

Number of Rounds: 106mm: 26⁸;
84mm: 100⁹

Fuel Capacity/Cruising Range: 95 gallons/300 miles

would be to develop a centerline mounting for a modified M125 mortar carrier, similar to the configuration of the Australian *Milan* ATGM carrier.

Another possible problem with the side-mounted M40A2 was pointed out by Major Hal Spurgeon, who — as a young soldier in the headquarters scout section of 2/47th Mech Infantry in early 1970 — had personal experience with the M113/recoilless rifle combination. According to Major Spurgeon, the right track of the “one-oh-six” APC regularly became stuck in muddy terrain that posed no obstacle to other M113s.¹⁵ This was attributed to the unbalanced loading (all of the ammunition — as well as the weapon — was stowed on the right side of the vehicle) of the recoilless rifle carrier. It would be interesting to learn if the Australian

Army is experiencing this problem with their trials versions, too, or if the difficulty was unique to the one particular Vietnam-era APC.

Option 5: The Bradley M3A2 CFV

With the planned acquisition by the Air Force of significant numbers of the C-17 transport, it becomes feasible to plan for parachute delivery of Bradley fighting vehicles. As the M3A2 version is, in essence, a light tank, it has some potential for employment in the AGS role. While the 25mm cannon is only marginally effective in defeating bunkers and fortifications, it is fairly capable at the task of knocking out light armored vehicles and older model tanks;¹⁶ newer main battle tanks can be engaged with TOW missiles.

Basic armor protection of the M3A2 is actually superior to that of the XM8, and add-on tiles can be attached for protection against hand-held HEAT weapons like the RPG. The vehicle commander and gunner — since they operate inside a fully-enclosed turret — have better survivability than the exposed gunners of HMMWVs and APCs.

A definite logistical advantage would result from having 100% parts commonality with the Bradleys of follow-on forces. One disadvantage, however, is the rather high fuel consumption rate, which is exceeded only by that of the Abrams. The other major drawback is the inability to be airdropped by any transport aircraft other than the C-17 Globemaster III, limiting the options for delivery during airborne missions.

One possible solution would be to develop an armored gun system variant

M3A3 CFV

Airdrop Capability: C-17 only

Armor Protection: Basic: 30mm
Bolt-on: RPG

Primary Armament: 25mm cannon and TOW ATGM

Effective Range: 25mm: 3000 meters;
TOW: 3750 meters

Number of Rounds: 25mm: 1500;
TOW: 12

Fuel Capacity and Cruising Range:
175 gallons/250 miles



United Defense L.P.

The up-armored M113A3: A viable choice, perhaps the only choice...

of the M3A2, incorporating a low-profile turret mounting a recoilless rifle (for engaging bunkers, buildings, personnel and light armor) and an ATGM (for engaging main battle tanks). If considered worth the increase in complexity, a dual or quad recoilless rifle mount — similar to what was used on the old M50 Ontos antitank vehicle — could be developed to provide a rapid-fire capability; this would overcome one of the objections to the use of recoilless rifles.

Another frequently-voiced criticism of this type of weapon centers on the prominent firing signature. Potentially, this could cause a problem when fired from an unarmored HMMWV, as the occupants would be vulnerable to return fire from enemy rifles and machine guns, but it seems like a non-issue if the weapon is mounted on an armored vehicle.

There is no appreciable difference between the firing signatures of a 106mm recoilless rifle and a 105mm tank gun — if one is visible to the enemy, so will be the other. Survival then becomes more a question of armor protection.

To improve strategic mobility, utilizing the XM8 bolt-on armor concept would allow the width of the Bradley-AGS to be reduced enough to enable it to fit in the cargo hold of the C-141. A properly designed low-profile turret ought to reduce the height enough to permit parachute drop from both the C-141 and C-5, in addition to the C-17, thereby greatly increasing the number of delivery aircraft.

Conclusion

It is unfortunate that the XM8 was cancelled. Even though it was a non-standard weapon system, it had enormous potential to expand the warfighting capabilities of airborne forces. If the AGS program is not to be revived in the foreseeable future, and if the Sheridans truly are to be withdrawn from combat duty by the end of 1997, the alternatives are few.

The M1A1 Abrams would seem to be a non-starter, due to its incompatibility with the parachute delivery requirement. The standard Bradley fighting vehicle is just slightly better, as it can be airdropped only from the C-17. The HMMWV — even in up-armored form — has minimal armor protection, tactical mobility, and payload capacity, although it has superior transportability; it can be carried by Blackhawk and Chinook helicopters, as well as Air Force cargo planes.

The remaining option is the only full-tracked, armored vehicle small enough for airdrop from all four models of USAF transport aircraft: the M113A3. Armed with a recoilless rifle, a MK19 grenade machine gun, and Javelin ATGMs, a single “one-one-three” would possess rather significant combat power. In comparison, *three* HMMWVs would have to be employed in order to provide mountings for the same weapons. Undoubtedly some will object to the use of the M113A3 as an interim armored gun system because “it is not a tank.” The fact remains, however, that there is no more viable option available for imme-

diately employment, and for virtually no cost.

Notes

¹When equipped with the CLASS laser ranging sight; without CLASS, effective range is reduced.

²Estimated quantities. Actual figures may differ, depending on load plan and ammunition type.

³CPT Charles P. Ferry, “Mogadishu, October 1993: Personal Account of a Rifle Company XO,” *INFANTRY*, September-October 1994, pp. 28-29.

⁴Mike Sparks, “Improving Light Force Firepower With HMMWV-Mounted Recoilless Rifles,” *ARMOR*, November-December 1995, pp. 42-44.

⁵Bofors Weapon Systems information pamphlet on the 3A-HEAT-T ammunition.

⁶“Infantry News,” *INFANTRY*, September-October 1990, p. 6.

⁷When equipped with the CLASS laser ranging sight; without CLASS, effective range is reduced.

⁸Estimated quantity, based on the 16-round stowage of the Australian M113A1/106mm.

⁹Estimated quantity, based on 114-round stowage of the M125A2 mortar carrier, and similar sizes of 81mm mortar rounds and 84mm HEDP ammunition. If HEAT rounds are employed, total quantity will be reduced.

¹⁰CPT Kevin J. Hammond and CPT Frank Sherman, “Sheridans In Panama,” *ARMOR*, March-April 1990, p. 15.

¹¹“Infantry News,” *INFANTRY*, January-February 1992, p. 4.

¹²*Ibid.*

¹³CPL Darren Booker, “Armor Hunters May Get Mobility,” *ARMY*, November 3, 1994.

¹⁴Letter to the author from Computing Devices Canada, maker of the CLASS Computerized Laser Sight (NSN 1220-21-912-2232 Sight, Lead, Computing AN/PSG-501): “The 106mm RR, for example, under test conditions at CFB Gagetown, hit targets at 1,700m by day and 1,400 by night. Likewise, the [84mm M3] with CLASS is capable of hitting both stationary and moving tank targets at 800m by day and 600m by night.”

¹⁵From a conversation with MAJ Hal Spurgeon, AUS (Ret.).

¹⁶Tom Carhart, *Iron Soldiers*, Pocket Books, 1994, p. 224.

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