

Organic Indirect Fire In the Heavy Maneuver Force

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I believe the organic indirect fire system of our heavy maneuver battalions is deficient, and I expect that deficiency to continue. The current system—six 107mm (4.2-inch) mortars mounted in M106 mortar carriers—cannot render effective organic fire support on the AirLand Battlefield, and extending this same capability into the AirLand Battle-Future (ALB-F) force will only widen the gap.

My primary reasons for making these statements are the following:

- In the context of the currently portrayed threat, the M106 mortar carrier may not be able to survive forward of the battalion rear boundary.
- Because the vehicle must be opened at the top when the mortar is brought into battery, the crew may not be able to survive in a counterbattery or a nuclear, biological, and chemical (NBC) environment.
- As we complete the conversion of the rest of our heavy force to "full up" J-Series Tables of Organization and Equipment (TOE)—with M1 tanks, M2 infantry fighting vehicles, and M3 cavalry fighting vehicles—the mortar system will not be able to keep up, and it will be far less responsive than it needs to be.
- Given these threat, mobility, and survivability problems, it will be difficult, if not impossible, to execute the current doctrine concerning fire control methods and procedures for laying the section.
- The 107mm mortar system does not

have the growth potential to serve as the basis for improvements in organic indirect fire support for the heavy maneuver battalion.

The system's current capabilities, the planned or anticipated upgrades and improvements, and some long range programs need to be considered, and a responsive and survivable organic indirect fire (high angle) fire support system for the maneuver battalion level needs to be identified.

BACKGROUND

Some background material will be useful at this point. First, according to the Infantry School's concept, as stated in the July 1985 Army Mortar Plan, "The traditional role for Army mortars has been to provide immediate, responsive indirect fire support for maneuver forces," and the Army's "AirLand Battle Doctrine has validated that role."

In offensive operations, this role includes providing fires that support the scheme of maneuver by undertaking immediate suppressive missions to complement the maneuver commander's direct fire assets; by firing smoke rounds on known and suspected enemy positions and along the flanks of maneuver elements; and by firing illumination rounds at critical junctures in an operation as an alternative to using FLIR (forward looking infrared) and image intensification devices without illumina-

In defensive operations, it includes firing on targets in the range band between direct support artillery and infantry small arms; firing on dismounted enemy elements (or, with the development of precision mortar munitions, more directly contribute to the destruction of enemy armored systems); and giving the commander the option of illuminating the nighttime battlefield and using smoke to obscure portions of the battlefield.

The current system, in some form or other, has been filling the role of the organic indirect fire support system in our heavy maneuver battalions since the late 1930s. Although the 107mm mortar was initially used to deliver chemical munitions, it found its way into infantry battalion direct support roles during World War II. Between 1945 and 1962, its organizational configuration—under field artillery or infantry proponentry within or outside maneuver battalions—changed, but it remained a powerful, responsive, and effective system—and it was relatively cheap.

As a result of the adoption of Reorganization of the Army Division (ROAD), a maneuver battalion's mortar system was reorganized into a four-gun section, and an armored cavalry squadron's into one mortar squad per platoon or three per troop.

In the case of mechanized infantry and tank battalions and armored cavalry squadrons, the mortars were eventually mounted in the M106 mortar carrier, a derivative of the M113 carrier. Although the M106 vehicle gave the crew some

protection by allowing it to fire from its vehicle, certain operations were necessary to bring the mortar into battery—opening the modified cargo hatches, putting out aiming stakes, elevating the tube—actions that took time, even with well-trained squads.

Still, given our fighting doctrine and the mobility and survivability of the other vehicles in the force at the time—M114s, M113s, M48A3s, M60s, M551s—this heavy mortar package made sense. Additionally, the 107mm was augmented in the mechanized battalions by the 81mm medium mortar mounted in the M125 mortar carrier (also an M113 derivative and almost identical to the M106). Three of these mortars were provided to each company. As a result, across a mechanized battalion's front, 13 tubes provided fire support from four platoons or sections (depending on the MTOE).

More recently, as part of the J-Series MTOE Army of Excellence (AOE) reorganization, the organic indirect fire support of a mechanized infantry battalion was changed from 13 tubes in four firing elements into six tubes in two elements, plus the loss of nine tubes from the divisional armored cavalry squadron. And, of course, the mechanized infantry and armor battalions and the armored cavalry squadrons were equipped with the newer, faster tanks and fighting vehicles.

Adding to these adjustments has been an increase in Soviet indirect fire support assets from the army down to the regiment, and a tendency in the U.S. Army to increase the centralization of field artillery assets at brigade level and higher. Additionally, Allied and threat nations have almost universally "upgunned" their heavy maneuver force mortars to 120mm, and the Soviets have equipped their airborne units with a tracked, lightly armored personnel carrier (BMD) mounted combination gun. The gun reportedly has a high explosive antitank (HEAT) direct fire capability out to one kilometer, fires conventional 120mm mortar rounds, and has a 120mm high explosive (HE) howitzer round available. The Soviets are also exploring the 120mm combination gun (2S9) turret and gun system technology in their motorized



Crewmen prepare to fire a live round.

rifle battalions (MRBs).

Our short-range plans to compete with these improvements consist of purchasing a 120mm drop-load system to be mounted in the M106, while our long-range plans describe a heavy force modernization (HFM) concept with a turreted system that probably will not be available before the year 2000.

In short, our mortar problems are likely to continue for quite a while. For various reasons, the purchase of the planned 120mm mortar has been slowed, and although this mortar has a potential for firing precisely guided and improved conventional munition (ICM) rounds, the Army can probably expect to see only an austere conventional 120mm ammunition inventory. In fact, the package that is shaping up will not present the "force multiplier" opportunities that it should in the J-Series MTOE battalions, for the following specific reasons:

- When considering the full range of Soviet capabilities—NBC, counterbattery, field artillery saturation fires and the like—two three-tube sections of M106s are less likely to be able to survive in the battalion's battle area. The upgrade of M113A2s (on which the M125 and M106 are based) to M113A3s will help (provided the funds available will cover the upgrade of the M106s).

In any case, the continuing need to open up the vehicle to bring the mortar

into battery will compromise any protection upgrade. An aggressive policy of diverting scarce engineer assets to protect the mortars with revetments would work against another major survival tenet of mortars—their constant and rapid displacement. Even in an extremely deadly counterbattery environment, systems that have more protection must also be able to displace rapidly. A mortar mounted in the present M106 will not survive long against tomorrow's threat.

- Aside from the partial exposure of the crew when the mortar is brought into battery, the system of laying the section with any precision requires the crewmen to completely expose themselves. Too, the mortar men have little protection against chemical or biological attack, except for their individual protective equipment. For a system from which we want continuous and responsive fires, the decrease in performance that will result from operating the mortars in an exposed and dirty environment may be a higher price to pay than we realize.

- Because of the mobility difference between the M106 and the M1 and M2, if the battalion moves more than 20 kilometers at a fast rate of speed, the tank and rifle companies will rapidly outdistance their mortars. Accordingly, and depending on the tactical situation, if a security force of M1s or M2s is not left behind to accompany them at a slower

pace, the mortars will be exposed to the enemy. Even the 120mm mortar's improved range of seven to nine kilometers will not support operations in which movement may exceed 20 kilometers in terms of being able to give continuous and responsive fires to the forward elements.

- In laying the mortars, the requirement to establish a correct triangulation by placing aiming stakes 100 meters from each vehicle and the lack of a positive navigation system, assure a relatively slow and potentially inaccurate fire control system. Moreover, even the 120mm drop-load mortar, if it were mounted on the same vehicle, would have difficulty executing our current doctrine. That doctrine requires the two three-tube sections to displace separately and frequently in leap-frog fashion, thus sustaining continuous fire and reducing the effect of counterbattery fire.

- The 107mm mortar round, because it is smaller, has less potential than the 120mm for accommodating improved munitions such as ICMs and smart missiles.

Three additional points must be made.

- Achieving a "combination gun" capability would give us a large caliber, low velocity direct fire system for the support of the mechanized infantry in urban terrain and "bunker busting" operations. (No replacement combat engineer vehicle is planned.)

- Systems such as non-line-of-sight missiles do not provide an over-the-hill "volume" fire capability because of their

expense (about \$75,000 each) and their slower fire control. This means that mortars will have to continue meeting this requirement for some time.

- The heavy mortar is the maneuver battalion's most responsive smoke and illumination system.

There are some possible solutions, though. The Infantry School has stated a need for a turreted future mortar system and two designs are being considered.

One design has a muzzle section on a swivel mounting fixed to the roof of the turret. The crew can load it rapidly by placing a round in the muzzle section, then swiveling it into place with the lower portion of the mortar, the round sliding down onto the firing pin.

The second design has the traditional breech loading cannon configuration but fires conventional mortar ammunition at high angle mortar trajectories. (It can provide direct fire as well.) This solution offers considerable potential for meeting and exceeding all the requirements for a mortar system that is mobile and lethal, and can survive on a modern battlefield.

In summary, today's mortar component of the heavy force is inadequate to its task of providing that force's organic indirect fire support, and planned improvements will only partially correct this deficiency.

At the very least, the Army needs to make three changes: First, upgrade the mortar's caliber from 107mm to 120mm; second, improve the carrier's mobility; and third, improve the system's survivability.

The most obvious short-term solution to these three problems would be to procure a 120mm drop-load system and mount it in an M2 chassis. But such a solution would not solve problems with crew survivability, fire control, and rapid movement and fire tactics. To achieve even an 80 percent solution in all of the deficient areas, the system would have to be reconfigured into a turreted design.

My conclusions are that the system most capable of meeting the requirements of the heavy force is a breech loading turreted system introduced with the heavy force modernization program, preferably in the first increment. If this is not fiscally possible, we should pursue a modular fighting station to be incorporated into a chassis that is compatible with the M1-M2 fleet of vehicles and later into a heavy force modernization chassis.

With these advances, the Army's heavy maneuver battalion organic indirect fire support system should be able to fully carry out its role in support of the maneuver elements on the battlefield of the future.

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