it takes little training to keep them combat-ready. Unit first sergeants should review recovery team rosters quarterly and schedule training for new members.

Sustainment training, including practical exercises, should be conducted at least quarterly. Again, a key soldier for planning and conducting sustainment training is the FSB mortuary affairs NCO.

Additional training assistance is available from the Quartermaster Center and School at Fort Lee, Virginia (DSN 687-3831, commercial 804 734-3831). Particularly helpful is a training support package on performing MA operations for non-MA personnel.

Deployment. Recovery team supplies, references, and blank forms need to be combat-loaded in labeled and easily identifiable containers. Any container that a single soldier cannot carry should be broken down into two or more boxes. Shipping containers for repair parts are ideal for this.

Land navigation is an essential skill for recovery teams conducting search operations.

The collection team kit must be load-planned on a vehicle that is readily accessible to recovery team personnel, and all team members must know the vehicle bumper number.

Unit recovery operations must be conducted with the highest respect for soldiers killed in action and must convey this respect to soldiers, families, host-nation civilians, and the news media. The duties recovery teams perform have a direct effect on unit morale, and training a proficient, confident team ensures that this effect is positive.

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Heavy Mortar Fires

Improving Their Responsiveness

LIEUTENANT PATRICK S. McGLYNN

Mortars are generally accepted as the Army's most responsive indirect fire weapons, because they are organic at company and battalion level and therefore available when other indirect fire weapons are not. Because of their high angle of fire, they are uniquely suited to urban operations and mountainous terrain. Today's field commanders rely on the organic indirect fires that a battalion's heavy mortars add to the combined arms scheme of maneuver. To be effective, however, indirect fire systems must be capable of hitting the target rapidly and accurately.

The field artillery has the M109A6 Paladin, which can send highly accurate 155mm projectiles downrange within 30 seconds of receiving a fire request. And after completing a fire mission, and before the enemy can put counterbattery fire onto its position, the Paladin can then move to another position.

When field artillery support is not available, and maneuver units need indirect fire support, fire requests are passed down to the battalion's heavy mortar platoon. Unlike the Paladin, however, heavy mortars must be laid-in through time-consuming survey techniques. The standard time for the mortar section to occupy a firing position is eight minutes, and it takes another two minutes to process the request and place accurate indirect fire on a target. If a mechanized infantry unit on the move needs an adjust-fire mission, it may be ten minutes before the first adjustment round can be fired.

The standard for a mortar section to obtain an accurate fire-for-effect (FFE) is 11 minutes after receiving a fire request. The process takes even longer in a nuclear, biological, chemical (NBC) environment, at night, or in conditions of limited visibility.

The "hip-shoot" emplacement technique, which is one solution to this delay, can be used to reduce the delay to four minutes or less for an immediate suppression mission. But this technique sacrifices accuracy for a faster FFE.

Neither survey nor hip-shoot emplacement is sufficient for the rapid pace of modern combat; the momentum of battle will not allow for repeated ten-minute halts to provide accurate indirect fire support. Combined arms commanders need a heavy mortar that can "shoot and scoot."

I believe that we can improve our mortars and make them more responsive by

taking the following steps:

Give each mortar section a global positioning system (GPS). The GPS is common to many Army units but is not part of a mortar platoon's table of organization and equipment (TOE). The GPS could take seconds, if not minutes, off the time required for a mortar section to get the first round downrange, not to mention the improved accuracy that would come from the ability to pinpoint its own position at all times.

Put one mortar ballistic computer (MBC) on each track. Presently, only the fire direction centers (FDCs) have MBCs. Each gun track does have an M-16 plotting board, but the board lacks the range to plot heavy mortar rounds using the maximum charge for the 4.2-inch mortar, and it is even less adequate when used with the 120mm mortar. Changing the mortar platoon TOE to put an MBC on each track would increase survivability by reducing the interruption in fire support that the loss of an FDC would cause and enabling each track to control the fires of the remaining gun tracks, if necessary.

Upgrade the present mortar fire direction system. A slightly more expensive alternative would be to upgrade the present mortar FDC by integrating the GPS, the MBC, the digital message device, and the SINCGARS (single-channel ground and airborne radio subsystem). This integration would enable a forward observer to send a fire mission electronically, giving the mortar section immediate firing data. Since all of these items already exist, combining them probably would not require any new research and development, but it would require some reconfiguration of the FDC vehicle.

Mount heavy mortars on Bradley chassis. Mounted on Bradleys, the mortars would be better able to keep up with the units they support. The supply system's burden would be lightened by not having to stock as many different parts and lubricants. The Bradley-mounted mortars would use many of the same repair parts as the supported unit, with the added advantage of enhanced mobility.

Make the heavy mortar breech-fed and turret-mounted. A breech-fed mortar permits a high rate of fire and allows the mortar to be mounted inside a turret. A turret gives the mortar a greater field of fire, a possible direct-fire capability, and better protection from small arms and artillery fire. It also offers the ability to integrate the gun tube into a computer-operated FDC and an opportunity to be less vulnerable to NBC attack.

The British have a turret-mounted, breech-fed 120mm mortar, that might possibly be used in an existing Bradley chassis with little modification. The British mortars also have an integrated computer fire direction system that allows them to stop and fire instantly.

The tools are available to make our heavy mortars more compatible with the tanks and infantry fighting vehicles that they support. In order to do this, we must take advantage of the technology currently available.

In today's cost-conscious environment, developing a new mortar system from scratch is at best difficult if not impossible. Using or modifying existing equipment and weapon systems makes more sense, and the infantry force can train more quickly on the weapons that it will need on tomorrow's battlefield.

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