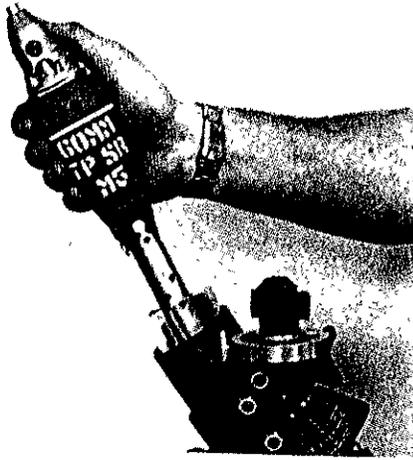


elevation of the tube and by removal of increments. (The removal of LITR increments is simulated by removing plugs from the projectile.) The "safe" and "arm" mechanism of the fuze makes it safe to handle and fire. On impact, its spotting charge simulates a detonation by providing a flash, bang, and smoke signal. The fuze incorporates a selection button that simulates the "super quick" mode. The fuze assembly contains a cap similar to that on the multi-option fuze system.



fielded with the 120mm mortar system.

The LITR will be incorporated into the indirect-fire training system as the training round to be used instead of standard HE ammunition. It could be incorporated into live fire training exercises as well to reduce the cost of firing service ammunition. A one-tenth scale LITR, with smoke signature only, will be used by crews where there is no firing range — on parade fields, for example, or on large open areas — to increase effectiveness and realism and to reduce cost.

The approach that will be used in integrating the LITR into institutional and unit training programs will be based upon the standards outlined in the direct fire soldiers manuals, the

skill qualification test, and ARTEPs 7-15 and 71-2. Existing indirect-fire training programs will be revised or modified as appropriate to provide for the LITR.

In the future, the mortar platoon's indirect fire support is going to be relied upon more and more; company and battalion commanders must therefore have confidence in the ability of their "hip pocket artillery."

It has been said that to prepare for war you must have an adequate training program during peace — our mortar platoons have been "short changed" on training in the past, and the LITR may help even out this shortage.

The cost of this new raining system (\$30 per 81mm mortar) will allow more rounds for training. Additional cost savings can be found in the refurbishing of the LITR once it has been fired. To refurbish the LITR, all that is necessary is to visually inspect the fired round, remove the old fuze and fin assembly, and replace it with a new fuze and fin. Total cost — approximately five dollars. Retrieving the fired round will be the responsibility of the crew that fired it, but it has not been decided whether the crew or direct support maintenance will refurbish the round.

Technical data on the proposed LITR rounds has been developed for all the 60mm, 81mm, and 120mm mortars, and testing is being conducted on the 60mm and 81mm rounds. The 120mm round will be



Master Sergeant Robert E. Brewster is assigned to the Directorate of Combat Developments at the Infantry School. He has served in mortar platoon assignments in Vietnam and with the 25th Infantry Division and 1st Cavalry Division.



Master Sergeant Clinton Wilder, Jr. is assigned to the Directorate of Training and Doctrine at the Infantry School. He was previously senior FDC instructor for the Infantry Mortar Platoon Course, and he also served in Vietnam.

The Indicating Round Technique

WARRANT OFFICER-2 KEITH F. HOYLE, British Army

Modern technology allows us not only to introduce new equipment, but also to give older systems and techniques a new lease on life. Although laser range finders have been with us

for some time and are used extensively on today's modern battlefield, they have not normally been used by Infantry soldiers at company level. In Great Britain, however, the hand-held laser

range finder (HHLRF) has given the mortar platoon a new and important procedure — the indicating round technique (IRT).

The IRT gives a forward observer

(FO) "first round hit" accuracy with less than a 50-meter error; it records multiple targets without actual adjustment; and it significantly lengthens the battle life of mortar crews by not requiring extra rounds that may be tracked by radar. The HHLRF allows the FO to have his position accurately plotted by the FDC, either on the plotting board or with the mortar ballistic computer (MBC).

The IRT uses geometric principles with two known angles and distances. The mortars and the observation post (OP) use a single round on the ground as a common data point. The mortar-men get the range and azimuth from the plotter, while the observers find the range and azimuth by using the HHLRF and a compass. The triangular relationship thus created allows a level of accuracy that has not been possible in the past.

This technology can also be used in areas where maps are either useless (large flat desert areas, for example) or non-existent. Indeed, once a mortarman has put his initial round on the ground, he may never again need to use his map for fire control.

The procedure is simple:

- Once the baseplates have been settled, the FO calls for an adjusting round to be placed into an open area. This open area must be safe to friendly forces, and the FO must be able to positively identify his round among other fires. He can use high-explosive or smoke ammunition.

- As soon as the round lands, the FO uses his HHLRF to obtain an accurate (plus or minus 10 meters) range to this round.

- He must also obtain an accurate (plus or minus 10 mils) grid azimuth using his compass. If he already has a

known point in the vicinity, he may use the reticle pattern in his binoculars to work out the grid azimuth. If the FO is uncertain of his ability, he may repeat these first three steps.

- The FO then sends an order to the FDC that will cause his position to be accurately plotted on the plotting board — for example, "Record OP, direction 1420 mils at drop 1,720 meters (range to fall of shot).

- The FDC uses the FO's information to backplot from the adjusting round that was fired into the open area. In this example, on the plotting board the FDC places the direction of 1420 mils above the index and, using the range arm (removed from the pivot point), measures down from the plot the range sent by the FO (1,720 meters), makes a plot there, and marks it with a symbol for an OP and the call sign of the FO. The OP may be given a user number if the FO has alternate positions. (The FDC may also record these alternate positions.)

- Once the OP is recorded, the observer can use the polar technique without adjustment and go straight into immediate suppression — "Fire for effect POLAR, OP3, direction 1260 mils, distance 1,000 meters, enemy platoon in open."

- At the FDC, the new azimuth or direction is indexed, the range is measured up from the OP, and a plot made. Charge, deflection, and elevation are obtained as usual.

This simple procedure uses one adjusting round to accurately locate an OP instead of a target. It also effectively lessens or removes any errors that may exist or that may be caused by the following:

- Inaccurate map reading at gun line during occupation or in the OP

when locating targets. (Remember that this technique can be used without a map.)

- Incorrect azimuth-related procedures during setting-up drills on the gun line.

- Any unaccountable meteorological effects, particularly wind.

- Any range table versus actual range error caused by ambient charge temperature.

The procedures outlined here are in their simplest form; other more complex operations can also be carried out using the HHLRF. And the information may be encoded to keep the enemy from finding the FO's location from the information he sends to the FDC. The use of the indicating round technique allows the forward observer to engage with effective accurate fire any target he can see without making lengthy adjustments that will usually give away his intention and allow the enemy to take evasive action.

Given the speed of modern mechanized warfare, we have to be able to retain the flexibility to hit the enemy quickly, forcefully, anywhere we wish without relying on him to move on or near our pre-recorded targets. Along with current and future ammunition types (including the GAMP round), the use of the indicating round technique will give us this flexibility.



Warrant Officer 2 Keith F. Hoyle is part of an exchange between the British School of Infantry and the U.S. Army Infantry School, where he is assigned to Company B, 1st Battalion, 29th Infantry to conduct mortar instruction.

