

caliber ammunition for practice gunnery or for ARTEPs, and full-caliber 81mm ammunition (when it is available) for ARTEPs. If necessary, 81mm mortar sections can conduct *all their live fire missions effectively with subcaliber ammunition using the 60mm Insert Subcaliber Device (ISD).*

This device was developed by personnel of the 50th Armored Division, New Jersey Army National Guard, for use in its mortar training. The ISD is identical to the M-31 subcaliber device used to fire 60mm ammunition in the 107mm mortar except that the adapter rings and the spacer sizes are smaller to fit snugly inside the M-29A1 mortar. During training, all crew actions are the same with this device as they are with 81mm ammunition.

The maximum range of 60mm ammunition is about 1,800 meters, which makes the ISD ideal for use in small impact areas. The 60mm ISD is the only way to provide training in the use of high explosive, white phosphorus, and illumination rounds, aside from using 81mm service ammunition.

Unlike 81mm ammunition, there is plenty of 60mm ammunition avail-

able. In fact, after deducting war reserve stocks from the total Army stocks, there is approximately a 10-year supply in the Army inventory available for training. And as improved 60mm ammunition is procured for war reserve stocks, additional quantities of the old 60mm ammunition can be released from war reserve for use in training. This means that, with proper management, there may be a 30-year stock for training.

Aside from the availability of 60mm ammunition, its use for 81mm mortar training would greatly reduce the cost of the ammunition used in 81mm mortar training programs. The existing stocks of 60mm ammunition were procured many years ago for \$12.57 per round, and the use of existing stocks would not require the expenditure of new funds for training ammunition as the other options would.

In short, the use of 60mm ammunition for 81mm gunnery would save the Army at least \$95 million over the next ten years. (With this saving, the Army could buy another 50 M-2 Bradley Fighting Vehicles.) Total Army requirements for the 60mm ISD could be procured for less than

\$1 million (based on a recommended basis of issue of four devices per infantry or mechanized infantry battalion).

Although the device, in concept, is not new, the need for it has recently become more critical, and it can be locally produced at minimal cost.

If the 60mm ISD were adopted, it would quickly provide a highly realistic solution to a long-term training problem.

Anyone who would like to have further information on this device and its use may write or call the Ammunition and Support Branch of the National Guard Bureau in Washington, D.C. — Major Schlimgen, AUTOVON 289-1720 — or the Office of Policy and Planning, New Jersey Army National Guard, Eggert Crossing Road, CN340, Trenton, NJ 08625-0340 — telephone (609) 984-3621.

Captain Rodney W. Joye is a National Guard officer serving with the National Guard Bureau where he recently completed an assignment as a training devices staff officer. He previously served on active duty with the 3d Infantry Division, including a tour as a mortar platoon leader, and with the 24th Infantry Division.

Platoon Early Warning System

STAFF SERGEANT DONALD L. MOORE

“Protect the force” is one of the seven imperatives of modern combat, but sometimes there are not enough people to provide the necessary security. Although technology cannot replace a skilled rifleman in this role, it can help. One product of technology that can be of tremendous help to a

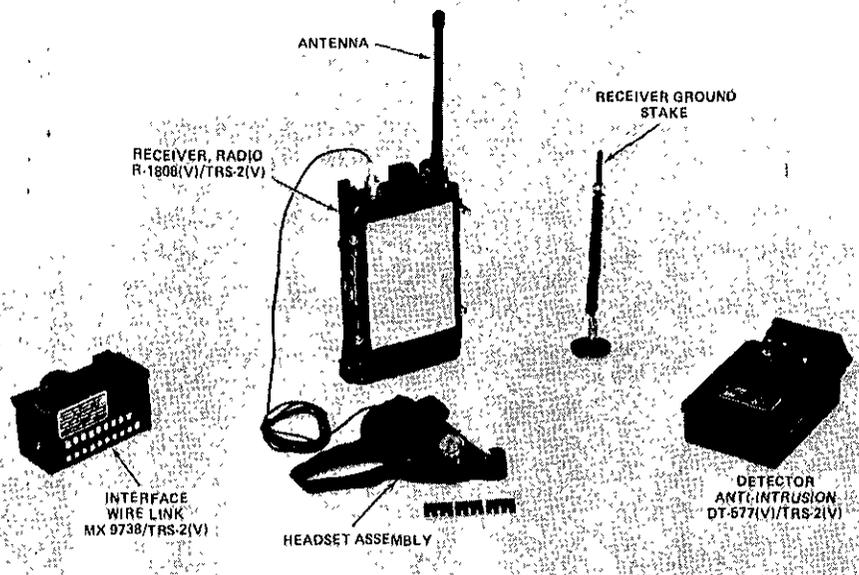
commander is the Platoon Early Warning System (PEWS).

PEWS is a lightweight, battery-powered, portable intrusion detection system designed for use by small units. PEWS detectors, when activated by personnel or vehicular intrusion (ground vibration or magnetic field),

transmit a coded message by radio or wire to a remotely located receiver. The operator receives both audible and visible alarms.

The major components of the system include:

- A receiver, which receives signals from the detectors and transmits an



audible warning through the headset or activates a warning light, or both.

- An antenna for operating in the radio mode.
- Lightweight detectors that detect ground vibrations or magnetic intrusions and send a message to the receiver by radio or wire.
- A wire link for use in the wire mode. (The link can accommodate wires from up to nine detectors.)
- A grounding rod, which is placed in the ground to protect the operator from electrical shock.
- A carrying case for storing and protecting the system.

The system has several features that are important to units: It can locate and classify personnel or vehicular intrusions within 10 meters of an emplaced detector; the detectors are easy to conceal; and the distance between a detector and the receiver can be as much as 1,500 meters for both radio and wire operations.

The system is compact and weather-proof. It has two bags that weigh about 11 pounds each for a total of 22 pounds. (The bags are 18 inches long, 6 inches wide, and 6.6 inches high.) It is reliable and can be remotely operated by radio or wire and three of the major components have built-in test circuits. The system operates on 9-volt batteries (BA90, or BA3090 for low temperatures), which last three days in a receiver and 14 days in a detector.

(The batteries weigh about two ounces each.)

The system is simple to place in operation, although there are certain important points an operator must remember after he has used the built-in test circuits to check the receiver and detectors to make certain they are operating properly.

The key to emplacing the detectors is knowing the composition of the soil in the area, because the detectors pick up ground vibration. Thus, the looser the soil pack, the better the detectors will work. Detectors should not be placed close to trees, because the roots of windblown trees may activate them. Metal objects nearby may also activate them.

An initial detection will always be represented by a tone sent through the operator's headphone, by a message displayed on the receiver's display, or by both. The display shows a P for personnel or a C for vehicles, plus a number to show which detector has been activated.

The displayed information will be repeated in rotation, starting with the lowest detector identification number and going to the highest. It will stay in the receiver's memory and will be displayed until the operator erases it by pressing a test reset button on the receiver.

A receiver can monitor up to 16 different detectors at once in either a

radio or a wire mode. Naturally, in the radio mode, the radio frequency information for both a receiver and a detector (shown on their data plates) must match or the receiver will not pick up the detector's signals.

There are a number of tactical situations in which PEWS can be used to good advantage:

- By a platoon in the defense to cover dead space, flanks, or boundaries forward of the defensive position, and along both mounted and dismounted avenues of approach into the platoon's sector.

- In ambush positions to give early warning of targets moving into the ambush site. (The security element could use PEWS to provide early warning of a superior force trying to outflank or envelop the ambush force.)

- By observation post and listening post personnel to extend their range of surveillance and provide early warning while they remain protected by the parent unit's covering fires.

- To replace or augment security patrols in the rear battle area and in a unit trains area where a limited number of personnel are available to provide security.

- During limited visibility operations to improve a unit's effectiveness by extending the range at which it can detect enemy forces beyond the ranges of its night vision devices.

- In depth in the covering force area or forward of a defensive position to enable the defender to monitor the progress of an advancing enemy force.

- On the flanks of an attacking unit to provide security.

- By patrols and units operating in the enemy's rear to help secure objective rallying points and patrol bases.

When combined with active security measures, when integrated into a unit's reconnaissance and security plan, and when covered by indirect fire, PEWS can be a valuable asset to any commander.

Staff Sergeant Donald L. Moore is assigned to the Combined Arms and Tactics Department of the U S Army Infantry School. He previously served in the 2d Battalion, 17th Infantry at Fort Ord.
