

there is a war in Europe in any of the proposed variations, our present TOCs will be entirely too large, and, therefore, will be lucrative targets. And commanders who insist on using their jeeps or helicopters for getting around the battlefield, as some still do, will find it difficult not to become targets. In Israel, few commanders at any level ever maneuver in vehicles other than their tanks or APCs.

Another important point is that the Israeli APC has been altered in several ways. The most interesting one has to do with the cargo hatch, which also serves as a map board. This enables the commander and his S3 to work off the same map and still maneuver and advise different subordinate units by radio.

We also need to do something about our present medical evacuation vehicle, which, in Europe, is the M113 identified by a red cross on a white background. One problem is that this vehicle usually carries few of the mandatory items essential to



emergency medical care. Another is that the very noticeable red cross makes the vehicle an easy target, and it has no defensive weapon on board. To make this vehicle more useful and more survivable, we might consider the following changes:

- Add battery- or vehicle-powered onboard suction.
- Provide adequate medical lighting.
- Extend its medical-surgical capabilities, including IV solution.

- Add modern splint sets and litter capabilities.
- Mount a defensive weapon such as the .50 caliber machinegun on it.
- Eliminate the uncamouflaged red cross marking.

Many of the things the Israelis are doing today the U.S. Army did 35 years ago. Unfortunately, we seem to have forgotten most of them.

If we are to maintain combat readiness, we will have to place more emphasis on quality training for protecting our soldiers and leaders, and for training them to protect themselves.

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## TOW Tracking Skills

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If he is going to be successful on the modern battlefield, a TOW gunner must be able to track a moving target. Unfortunately, he must get in a great deal of tracking practice if he is going to retain his skill once he has acquired it. And getting that practice is not easy.

One problem is space. Tracking exercises normally require an area at least 300 meters deep and 500 meters wide. In some cases, the depth should even be extended to 3,000 meters; in garrison, such areas are hard to find.

What is needed, then, is a system that will allow for the most tracking

time and that can also be employed in a small area, inside or outside. A motorized scale tracking set, such as the one developed by the antitank platoon of the Combat Support Company, 2d Battalion (Airborne), 325th Infantry, 82d Airborne Division, is such a system. The set, which consists of an electric train set and scale model tanks, allows a TOW gunner and crew to be placed in simulated combat situations. It can be used in an area less than 10 meters wide and 100 meters deep, a size that is available to most units in garrison. The set also allows a gunner to practice armored

vehicle identification and to engage targets moving at realistic speeds toward him, away from him, or across his front.

The set consists of five components: a 1/35 scale model tank, an electric motor, a transformer, some "O" gauge track, and several terrain mockups.

The "O" gauge track provides a stable target platform for the model tank, and the electric motor found in a small locomotive will fit inside the tank model. The only modification necessary is to remove the body of the locomotive, normally held on by

several screws. Then the electric motor can be attached to the tank model.

The transformer is needed to power the tracking set. Most transformers available run off a 120-volt source, which means they can be employed with a field generator as well as with AC current inside.

The accompanying chart gives the length of track needed for given tracking periods and speeds. The lengths of track shown are for single straightaways only. The tracking times selected (17, 11, and 6 seconds) represent the time of flight for a TOW to ranges of 3,000, 2,000, and 1,000 meters. The maximum speed of 30 miles per hour is based on the probable cross-country and combat speeds for modern tanks. (These figures were obtained by multiplying the tracking time by the target speed and then that total by a conversion factor of .55. Other tracking times and speeds can be calculated the same way.)

The simplest track design is an oval. This presents the gunner with target runs of equal time and in dif-

TRACKING TIME (seconds)	TARGET SPEED (mph)	LENGTH OF TRACK (in/ft)
17	30	280.5/23.4
	20	187.0/15.6
	10	93.5/ 7.8
11	30	181.5/15.2
	20	121.0/10.1
	10	60.5/ 5.1
6	30	99.0/ 8.3
	20	66.0/ 5.5
	10	33.0/ 2.8

ferent directions. Although the track design may be varied with additional curves and such, realistic lengths must be maintained.

Terrain mockups such as hills, woods, buildings, and smoke can be used to supplement the track. These mockups can be simple cardboard cutouts in the shapes of typical obstructions, and can be varied in size and location to present different, realistic situations to a gunner and his crew.

If there is only enough track for an oval of minimum size, situations can be varied not only by changing the terrain mockups but by changing the speed of the target vehicle. This presents a gunner with a target that

seems to stop, fire, and move out at a fast rate.

The cost of one of these sets is small -- about \$250. This includes a tank model, 64 pieces of 9-inch track, 8 pieces of curved track, a heavy duty transformer, and a small locomotive. This cost is quite small compared to other TOW or Dragon training equipment. Ideally, each battalion should have at least one set.

A motorized scale tracking set is not a cure-all for the problem of keeping gunners proficient at tracking, but it does allow a unit to make the most of the time and space it has. Because of its small cost and its realistic training value, and because it can be used in garrison as well as in the field, the set is a valuable training resource.

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# Deflection Scale Board

MAJOR MARK S. FLUSCHE

On the future AirLand battlefield, the 81mm mortar section can expect to move frequently. Hipshooting will probably be the rule rather than the exception, and a highly trained fire direction center will be an absolute necessity.

Unfortunately, the present M16 Plotting Board is slow to use and hard to understand; soldiers frequently have difficulty solving a gunnery problem on its rotating disc.

But there is a rather simple solution

to this problem: A field artillery deflection scale board can be modified so that it can be used with mortars. The only things needed are a sheet of plywood about 19 inches wide and 21 inches long, a Graphic Training Aid (GTA) 6-5-1 (Multi-purpose Protractor), a DA Form 4176 (target grid), a small nail, map tacks, masking tape, frosted contact acetate, flat white paint, a Graphical Firing Fan (GFF), and a vertex pin. (The latter two items can be borrowed

from a 4.2-inch mortar section.)

Just about anyone can make one of these boards by following these instructions:

First, paint the working surface of the board with the flat white paint. Once the paint is good and dry, place the left edge of the GFF roughly parallel to the long side of the board and secure it with the vertex pin midway along and one and one-half inches in from either 19-inch side.

Draw two 1,000-mil-wide deflec-