

If it malfunctions, the procedures in the TM should be followed. The TM outlines certain tests and inspections that a firer can use to determine the probable cause of a malfunction and the corrective action he should take.

The use of the AN/PVS-4 on the M60 machinegun is not recommended. The machinegun's large muzzle flash can cause the scope to "white out" or shut down after the first one-or-two-round burst, and this may require the gunner to cease fire before the targets again become visible. The heavier recoil and vibration of the M60 also frequently causes the device to become damaged more quickly than when it is mounted on an M16.

Using NVDs on machineguns sometimes encourages gunners to fire at night and disclose the locations of their weapons, which, according to our night doctrine, should be used primarily to fire on

massed targets and to lay down final protective fires. A trained rifleman using a properly zeroed AN/PVS-4 is usually more effective and less susceptible to detection.

Tracer ammunition is not recommended for use except as a last resort. It is the most erratic (least accurate) ammunition available and, because of slightly different ballistics, does not usually have exactly the same point of strike (zero) as ball ammunition. Tracers also make it easier for the enemy to locate the firers' positions.

Leaders should issue night vision devices only to soldiers who have good vision. Although the devices have an adjustable focus, they cannot always compensate for serious vision problems.

More important, commanders need to understand that rifle marksmanship, with or without night vision devices, is a skill

that requires continuous repetition, reinforced by competent coaching and instructing. They must realize that for their units to achieve full marksmanship readiness, they must allocate more ammunition and time for night training. Night firing is a dying art that must be rejuvenated. Adequate resources, expert trainers, and, above all, command emphasis are the keys to this recovery.

Master Sergeant Edward C. Shelley is NCO in charge of the Service Rifle Section, U.S. Army Marksmanship Unit, at Fort Benning. He formerly served as first sergeant with the 2d Battalion, 8th Infantry, 1st Armored Division.

Sergeant First Class Frank A. Recktenwald is Operations Sergeant of the Marksmanship Unit at Fort Benning. He formerly served as a platoon sergeant in the 1st Battalion, 35th Infantry, 25th Infantry Division.

Double Your Dragon

CAPTAIN MARTIN N. STANTON

The M47 Dragon is the Army's standard medium antitank missile. It is the only major antitank system in light infantry and non-modernized mechanized infantry units. The basic Dragon system consists of three major end items—the SU-36 day sight tracker, the AN/TAS-5 night sight tracker (with batteries and bottles), and the round itself (guided missile surface attack M222). The range of the system is 1,000 meters with a 12-second tracking time at maximum range.

Most people in the infantry know all this.

But not too many people I talk to realize that the Dragon has a unique capability: The SU-36 day sight and the AN/TAS-5 night sight are independent of each other, and this enables a single Dra-

gon system to launch two missiles simultaneously.

This capability exists both in daylight and at night because of the thermal imagery of the AN/TAS-5. (The sight tracks heat sources and is not dependent on ambient light magnification.) The SU-36 day sight tracker can be fired under coordinated illumination from artillery pieces or mortars, which is the way Dragons were employed before the advent of night sights.

The "two for one" firing capability of the Dragon is especially important, given the firing characteristics of the weapon in terms of range and tracking time.

The range of 1,000 meters or less makes the Dragon, by definition, a weapon of decisive engagement. Usual-

ly, when Dragons start firing, the battle has reached its crisis, and the ability to shoot and scoot becomes secondary to the ability to mass fires into an engagement area.

By using both the day sight and the night sight trackers, a unit commander could double the mass of his Dragon fires and reduce the time spent reloading missiles. That is to say, this would increase the chances of expending all the available ammunition at the appropriate time. Also, by spreading his rounds out among both day sights and night sights, a commander could reduce the effects of losing individual firing positions to enemy counterfire.

The employment technique of using both day sights and night sights is not

without its problems, though. A few of the more considerable ones are the following:

Fire Control. With two groups of people looking through two different sights (normal day sight picture and thermal image sight picture), target acquisition and fire control is more complex. Both groups must be more careful than usual to avoid target duplication.

Passive control measures such as trigger lines, target reference points (TRPs), and engagement areas must be clearly visible through both the day sights and the thermal sights. Thus, if the kill zone commander wants to have some of the Dragons engage command-type vehicles as a priority, he would do better to assign these tasks to the day sight Dragons, because it is easier to discern the radio antenna configurations of command vehicles through the day sight. In addition, he should beware of giving fire commands to a Dragon gunner who is using a thermal sight by describing characteristics that the gunner can't see: "Shoot that one with the number 106 on its turret" is not a good fire command for him.

In addition to passive control measures, active control measures become more difficult, because infantry squads are not equipped to provide a radio to each Dragon system; there is one GRC-160 for each mechanized infantry squad, and one PRC-68 for each light infantry squad. It stands to reason, then, that each squad leader will probably have to control the fires of two Dragons using voice commands or signals. This is going to make it more difficult for a platoon to fire all of its Dragons at the exact same moment. Rehearsals and passive fire control measures are the key. A commander should spell out the criteria of engagement for each gunner. The following is an example:

When the enemy crosses Trigger Line Bruno, that road there. See it? Then you are to fire into engagement area 24 north of TRP 2. See TRP2? Those two engineer pickets with the white sign attached to them. It also has as a thermal source an ammo can with lighted heat tablets in it for the night sights. Your primary engagement area is north of that white sign from that bush to that building. If no one comes north of the road, you are to wait

until the enemy elements pass you and cross Grey, that second major road there, and then engage them south of TRP 2 with shots into their flanks and rear. Your priorities are command and control vehicles (tanks with more than two antennas), ADA vehicles, engineer vehicles, infantry carriers, and all other armored vehicles. Now repeat what I just told you.

Detailed fire control instructions and control measures are the best insurance against having the gunners fire too early or too late, and these measures also increase a unit's ability to mass its fires.

Obscuration. An easy solution to fire control, of course, would be to put all the thermal night sight trackers on one engagement area and all the day sight trackers on another. But this does not take into account the enemy's use of obscurants. Thermal trackers must be positioned so they can fire throughout the unit's engagement area. Then, even if the enemy succeeds in partially or completely obscuring the engagement area, all the thermal systems will still be able to engage targets. In this situation, a unit must practice moving its missiles from the day sight tracker positions to the night sight tracker positions to ensure a steady volume of fire.

Night Firing. Any night firing with the day sight tracker, of course, will require some sort of coordinated illumination. This will almost invariably be furnished by the unit's mortars, but it may be from supporting artillery battalions.

Flares in the kill zone are not a good idea, however, because they will present a confusing thermal source to the AN/TAS-5 gunners.

A light infantry company has an advantage here over a mechanized company because it has two 60mm mortars. These mortars may not be big people killers, but they provide plenty of illumination just when the commander needs it. The maximum range of 60mm illumination is 950 meters, and it has a burn time of 25 seconds. This means that if the commander of a light infantry company plans to use his day sight trackers at night, he had better think of bringing along more illumination rounds for his 60mm mortars. Using battalion mortars for illumination is the next step, but this requires extensive coordination and rehearsal.

Registering illumination is an excellent idea, but it has to be balanced against the possibility of giving away the unit's intent to enemy reconnaissance elements. The most important thing is timing. The enemy is not going to be in your kill zone for long. Even if there is an obstacle to slow or stop him, he won't sit still; he'll get out as quickly as he can. The commander and his fire support officer must make sure the illumination pops at exactly the right moment so that the Dragon gunners can inflict the greatest possible damage.

Positioning. The best positions for massing Dragon fires into an engagement area are not necessarily the best



ones for massing fires to repel an infantry assault. The decision must be based upon the commander's METT-T analysis and his acceptance of risk.

The key to being able to employ all the Dragon sights effectively is training. Far more men are going to have to be qualified as Dragon gunners with both day and night sights. In addition, company commanders, platoon leaders, and squad leaders must be aware of some problems with using MILES (multiple integrated laser engagement system) for Dragon training. MILES is a good engagement simulator, but it reinforces some bad habits with regard to the actual employment of the Dragon missile system:

- It gives troops the false impression that it is all right to lug a missile around with the tracker permanently attached. Both trackers should be left in their carriers until the last possible moment.

- It does not force junior leaders to plan on where in the scheme of maneuver they are going to mate the tracker to the round. In the assault position? At phase line so and so? There is no one right answer, but the question needs to be part

of the thought process.

- It gives no practice in the vital task of mating a round to the tracker. This should be a practice drill with soldiers showing quickness and an absolute economy of motion.

- It is reloadable, but a Dragon missile is not. If a squad's basic load is three rounds, then it needs to train to carry three rounds, not one Dragon MILES and three ATWESS (antitank weapon effects simulation system) cartridges.

In addition to all of these considerations, manning the extra Dragons can be a problem. The fact that most infantry platoons average 25 men does not help matters. If a platoon has three Dragon systems and uses all six sights, that will occupy a quarter of the platoon. For a mechanized infantry platoon, the percentage is even worse. The best solution is to evaluate both the mounted and dismounted threats, to build sets of positions to deal with both, and to rehearse moving from one to the other based upon the commander's analysis of the threat.

Finally, there is the problem of the soldier's load, especially in light units.

Who will carry the four rounds per Dragon system (two for the day sight and two for the night sight)? A commander will sometimes be faced with the decision of what other equipment to leave behind. The decision to go Dragon-heavy will always be based on METT-T, with the emphasis on mission, enemy threat, and the terrain to be traversed.

As a rule of thumb, the suggestion to use both sights and carry extra rounds is more practical in the defense than in the offense. In the defense, it is possible to pre-stock ammunition so the soldiers don't need to be overloaded.

In summary, the Dragon system is probably going to be with us for some time to come, and we as leaders must always be looking for new ways to use what we have. We owe it to our soldiers and the Army.

Captain Martin N. Stanton is a maneuver team S-3 at the National Training Center. He previously led rifle and TOW platoons in Korea and commanded the combat support company, 2d Battalion, 2d Infantry at Fort Lewis. He is a 1978 graduate of Florida Institute of Technology.

TOWs in the Offense

Techniques of a Motorized Force

CAPTAIN CRAIG J. CURREY

In traditional heavy task forces in an offensive situation, their TOW 2 weapons normally take on an overwatch role to support the attacking armor or infantry forces. But in a motorized "middle-weight" force such as the 9th Infantry Division, TOWs are used aggressively in offensive operations. Recent exercises, including Devil Strike, the first motorized rotation at the National Training Center (NTC), have demonstrated that an

expanded role for the TOW in the offense is possible if certain techniques are carefully applied.

The 9th Division's combined arms battalions consist of a mix of TOW companies (each with 20 TOW 2 systems mounted on M966 HMMWVs) and light motorized infantry companies, each with many MK19 grenade launchers and Dragons, as well as with the entire range of infantry support arms. Each battalion

also includes a combat support company with scouts, heavy mortars, and an additional antitank platoon of TOWs. This force structure enables a battalion to take several agile and lethal approaches to its conduct of offensive operations.

In a movement to contact against a moving enemy, for instance, it may employ a single axis formation, which allows the scouts and other attached forces to act as security elements, with