in FM 90-4, *Air Assault Operations.*

Planning communications. Means of communication between the dismounted element and the company or task force must be planned in detail. The task force signal officer must be a part of the planning process and must predict the element's ability to communicate, given its scheme of maneuver and the terrain. Then he must offer solutions to any potential communications problems. A task force retransmission or a company relay may be the technique to use in order to ensure effective communications. If the plan calls for the relay of dismounted radio traffic through a company team, the company command post must be prepared to execute this mission. The commander, executive officer, or first sergeant must be able to operate on the net to provide clear command and control.

Planning casualty evacuation. Detailed planning concerning the treatment and evacuation of casualties from the dismounted element helps reduce the died-of-wounds rate for this element. Units must plan for the use of company wheeled vehicles positioned forward to help the evacuation of dismounted casualties or the use of the company's attached M113 ambulance or the first sergeant's M113, if so equipped. If the company does not use the ambulance forward, the task force medical platoon leader should plan to support the company's mounted element and request support through the forward support battalion's medical company. The dismounted element should include as many combat lifesavers as possible, along with properly stocked lifesaver bags.

At the NTC, some units have had the task force physician's assistant move as part of the dismounted element. This choice should be carefully considered, however, in light of the limited amount of Class VIII supplies he could physically carry with him as well as the effect his loss would have on the task force.

Predictions of potential casualties for the operation should include the number that would make it impossible for the dismounted element to achieve its purpose. The dismounted soldiers must understand at what point they should go to ground and conduct casualty evacuation instead of continuing with the assigned mission.

Inadequate planning, preparation, and home-station training for employment hampers the dismounted infantrymen's ability to accomplish their assigned task and purpose. Commanders must focus their training efforts on the ability of the dismounted soldiers to move and fight at night and also on the ability of the task force staff and the company team commanders to plan adequately for their employment.

Specifically, the training must include conducting an IPB, planning direct and indirect fires, conducting unit coordination, and giving the element a clear and achievable task and purpose. Units should task organize and conduct consolidated dismounted operations as early as possible during train-up for an NTC rotation. One set of SOPs for the entire element should be developed if the intent will be to consolidate squads "on the fly." A clear chain of command for the element must be established.

This kind of focus on the precious few dismounted infantrymen in the heavy task force will set them on the path toward accomplishing their assigned task and purpose.

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Bradley Gunnery Tips

CAPTAIN STEVEN A. SHELBY

We in the Army have always had to manage our training resources carefully, but now it is imperative that we make every training round and every vehicle mile count. With tighter budgets and higher personnel turnover rates, it is increasingly difficult to develop and sustain combat-ready Bradley crews.

To win the first engagement of the next war, wherever and whenever that may be, our crews and units must be lethal, and we must be able to protect our force—two key elements of combat power. Meeting these challenges will require both determined leadership and innovative gunnery training techniques.

The updated Field Manual (FM) 23-1, *Bradley Fighting Vehicle Gunnery,* offers several excellent techniques for training in today's resource-constrained environment. These include the unit conduct of fire trainer (U-COFT), the Bradley Gunnery Skills Test, the Bradley Crew Proficiency Course, and turret manipulation boards (worm/snake boards). All of these are essential before a gunnery density. But the manual does not address in ad-

equate detail the practical techniques and procedures that will turn inexperienced personnel into effective, fully integrated crews. This is especially necessary for leaders with light infantry backgrounds or soldiers new to the 11M military occupational specialty.

The following techniques and procedures offered here can help improve gunnery training for all crew members, and particularly for soldiers new to the Bradley fighting vehicle:

First, the following information should be posted in every turret:

- A crew coordination checklist (posted on the 25mm gun guard). Crews will use this checklist before every engagement, thus eliminating most crew cuts.
- A coaxial machinegun cheat card (on the coax door) with arrows pointing which way to adjust the coax—left down, right up, and clockwise for right and counterclockwise for left corrections.
- A GTA 17-2-12 (Gunnery Flag Signals) card.

Once the company occupies the range, the following should be done before loading ammunition, and should be verified by the platoon master gunner in the company motor pool or assembly area:

- Make sure weapons are boresighted. After initial boresight, do not recheck with boresight adapter. Do not boresight again unless there is a serious change to the gun system.
- Display proper range flags.
- Conduct prefire checks. (Ninety-eight percent of all malfunctions are crew induced.) Prefire checks must be done in accordance with a unit's gunnery standing operating procedures (SOPs) or FM 23-1, with the gunner and Bradley commander (BC) present.
- Rehearse fire commands and possible scenarios.
- Rehearse misfire procedures.
- Conduct communication checks, including NBC (nuclear, biological, chemical).
- Take NBC mask and gloves out and store them in an accessible spot. Do not hang the mask on the BC's hand station.
- Cool thermal sights.
- Use snake boards or any other training aid to warm up turret manipulation skills before moving to the ammunition point.
- Clean NBC mask lenses with an anti-fogging cloth.
- Tape up low-ammunition override switch.

After drawing ammunition, crews move to the ready line, where the following actions should be conducted:

- Make sure the coax forward access door is closed to prevent binding and breaking of links.
- Make sure thermal sights are ready for day or night engagements. Since target signatures vary in intensity, crews must be ready to switch quickly with minimal loss of time.
- Check jump radios. Avoid leaving a microphone keyed on the jump frequency.

CREW COORDINATION CHECKLIST

TOW up, TOW test complete.
Driver in gear.
Review possible scenario.
Review fire commands.
Ammo count (how many rounds for engagement).
Ammo select (remember ammo switchover).
Select range.
Misfire procedures.
Stabilizer on.
Null drift.
NBC system on.
Crew check.
Off safe.
Report SET to tower.

Communication problems are the most frequent cause of delays, and they disrupt the firing crews' concentration.

- Ensure that ammunition is properly loaded (check feed chutes) to prevent avoidable malfunctions.
- When on the ready line make sure the ammunition tension is released after it is put into the feeder, to prevent binding and breaking links.
- Ensure that every crew member knows how many rounds are on board and reviews how many there are for each engagement. Drivers are responsible for keeping the round count for each engagement and for keeping crews informed of how many rounds are left. This enables the gunner and BC to make decisions on the number of rounds to fire.

After the ready line, crews are ready to begin zeroing. The following should be done during zeroing:

- Ensure that the gunner is indexed on 1,200 meters for the 25mm gun and 600 meters for the coaxial machinegun.
- Fire one round to warm up the barrel.
- Adjust after that first round.
- After zero is confirmed, tape down the reticle, flip down the cover guard, and tape a card over the thermal sight knobs to prevent the gunner from accidentally hitting the zero knobs during the switch from high to low magnification.
- Refer the auxiliary sight. Remember to loosen the prelude nut before making adjustments and to tighten it once zeroing is complete.
- After zeroing the auxiliary sight, touch the auxiliary spring to see how far zero has moved.
- Check thermals and refer the night sight.

After zeroing, crews are ready to fire engagements. The following should be done before any engagement:

- Go through the entire crew coordination checklist.
- Erect the TOW launcher in defensive positions (failure to do so will result in a 30-point crew cut).
- Lower the TOW launcher before beginning offensive engagements.
- Check the "low-ammunition" light.
- Adjust reticle brightness so it does not obscure target or sensing rounds.

During engagements, the following steps should be taken:

- Make sure the gunner locks the MAG SWITCH all the way into the HIGH position; listen and feel for the click. Failure to lock the switch will result in loss of the reticle during the engagement.
- During *defensive* engagements, when the vehicle is firing from a platform, the driver should put the vehicle in reverse in anticipation of the BCs command, "Cease fire, driver back."
- Throughout *offensive* engagements, drivers must maintain a steady platform and constant speed.
- Sensing-round and burst-on-target (BOT) adjustments must be quick and accurate.
- Ensure that the gunner and the BC use the proper firing sequence. The following is a recommended technique:

- Fire commands, adjustments, kill tar-

get. For example, fire command BC: "Gunner, sabot PC 1200." Gunner: "Identified." BC: "Driver up fire." BC: "Fire." Gunner: "On the way."

- In the scenario in Figure 1, a total of eight rounds were fired—the standard number allocated for most engagements. This scenario will work if the first sensing round is close. If the BC has to make a correction of more than two target forms, up/down or right/left, the gunner has to fire a second sensing round. Then the BC makes corrections and the gunner fires a three-round burst. If the sensing round is not observed, the BC should have the gunner check his range select and bump up or down—BC: "Gunner bump up one (1,200 meters to 1,400 meters), fire sensor." Gunner fires one sensing round, and BC makes corrections.

• On multiple targets, always shift back to low magnification to identify the second target. Otherwise, there is a chance of losing the target.

• If a gunner does not identify a target after the BC issues his fire command, the BC must slew the turret onto the target. Do not yell out "Right, right, right" or "Left, left, left." The BC needs to pick an aim point on top of the turret to use as a sight.

• Always scan bumper to bumper.

Aim points for offensive engagements are shown in Figure 2.

Use the following low ammunition strategy:

• Kill trucks with the coaxial machinegun.

• Fire on single shot when only a few rounds are left.

• During multiple engagements when the first target is destroyed and the second cannot be identified, the BC should call cease fire to receive 50 points instead of taking crew cuts for going over time. (Remember, there is a six-point penalty for every second over the allotted time.)

• Fire all engagements on low rate, especially if the gunner is inexperienced. This will allow him to walk the rounds onto the target and save ammunition in the process.

Miscellaneous tips:

• Priority of engagements: RPG team, movers (if BMP-2), BMPs, BRDMs, trucks, and dismounted infantry.

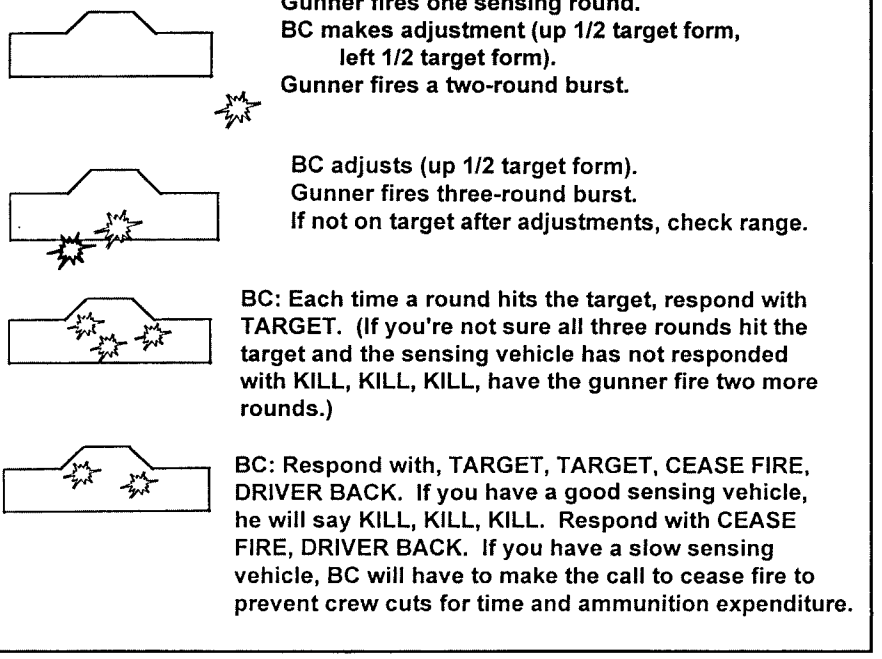

Figure 1

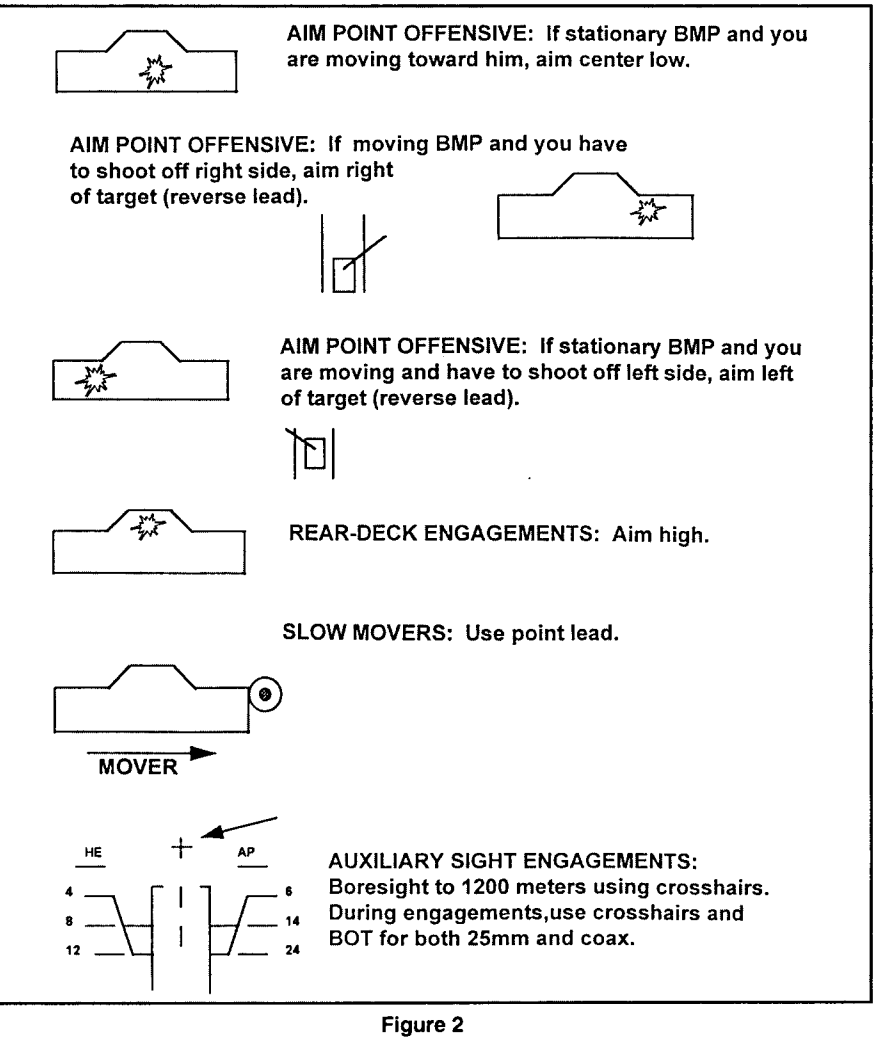

Figure 2

• For a high-explosive (HE) area troop engagement—done on low rate of fire—kill one target, then make a Z pattern.

• For HE area trucks, done on low rate, remember to kill all the trucks.

• For coax engagements, you have two different types of scenarios: a point target, an RPG team between 300 and 500 meters, and dismounted infantry between 400 and 600 meters. You must use a good Z pattern, or a 15-point crew cut will be assessed.

• For helicopter engagements, 20 rounds are allocated. This is the best engagement in which to save rounds for future engagements. Gunners should fire this engagement on low rate to conserve ammunition, because it only takes five rounds to get a kill.

• The BC should always have his head out of the turret with binoculars scanning for targets in the opposite direction from the gunner. At night, the BC scans for Hoffman devices going off.

• During BC engagements, the gunner should have his head out of the turret scanning for targets and have one hand on the selector switch to switch the BC into HIGH MAG. The BC should try to have the target in the middle of the sight before the gunner switches to HIGH MAG so he won't lose the target during the switch.

• Gunners and BCs must be able to state how to conduct misfire procedures and ammunition switchover.

• The BC must not say "cease fire" before achieving target kill; he must be sure. If the sensing vehicle is slow, the BC has to make the call.

• On Bradley Table VII, after a crew completes a run, park the vehicle in a spot overlooking the range, monitor the fire frequency and practice engagements. Practice fire commands and BOT by using the crew that is firing. Try using thermal sights and auxiliary sight, and if the BC is new have him track from the BC's position.

• After every engagement, sweep and clear the plenum chamber to prevent malfunctions.

The driver can make or break a crew; he is responsible for the following:

• Keeping round count.

• Keeping time. If the crew has a misfire during a defensive engagement and there is confusion in the turret, the driver should say "Driver back" to remind the crew that he is pulling back the vehicle. Any time there is a pause, the driver should recommend pulling back to keep the vehicle from being exposed.

• Keeping the gunner and the BC calm and relaxed during a run.

• Spotting targets, especially at night when Hoffmans go off.

• Helping spot sensing rounds.

• Always maintaining a steady platform.

With fewer resources today, commanders are challenged in training their new crews. By using the updated FM 23-1 and these gunnery tips, commanders should be able to prepare their crews to succeed in any upcoming Bradley gunnery training. More important, these skills will carry over to combat, where the firing range is unforgiving and the stakes are considerably higher.

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Light Infantry Company Defense

CAPTAIN MATTHEW M. CANFIELD

Like everything we do in the Army, the defense is a procedural operation. It is built upon certain fundamentals that are shaped by an analysis of mission, enemy, terrain, troops, and time (METT-T). Regardless of the specifics of a situation, the basic purpose of the defense rarely changes: Cause the enemy attack to fail, and create conditions favorable to a counterattack.

Companies conduct defensive operations to accomplish the following goals:

• Defeat an enemy attack.

• Gain time to prepare for other operations.

• Allow a higher commander to concentrate forces elsewhere.

• Control key enemy forces as a prelude to offensive operations.

• Retain key or decisive terrain.

While the defense is rarely decisive in itself, it can be used to set up the conditions for a decisive *offense.*

For example, during the U.S. Civil War, Confederate General Robert E. Lee incorporated one or more of these purposes into his strategy in moving from the defense to the offense in the Battle of Fredericksburg (13-15 December 1862) and the Battle of Chancellorsville (1-3 May 1863) in Northern Virginia.

When the Union and Confederate forces met at Fredericksburg, Lee estab-