

Designating Targets with “God Guns”

Using laser designators and adapting the gunner’s sight to “see” them
Could improve communication between tanks and infantry

by Captain Michael S. McCullough

With the advent of the M1 tank in the early 1980s, a small but useful form of communication was lost — the external, vehicular-mounted telephone. With a handset usually mounted on the rear of the tank, this telephone provided infantry of the WWII and Korean War era with a method to communicate with armor crewmen inside, even when in contact. The infantry used them to coordinate fires, movement, and protection.

Since the telephone was eliminated on the M1, this kind of infantry-armor cooperation has become completely reliant on the radio to communicate effectively. Once the radio nets are lost, only the most basic signals remain.

There is, however, a low-cost interim solution that our forces could use instead: the Gunner’s Auxiliary Sight (GAS) could be equipped with an infrared optic that could enable the gunner to see targets that are laser-designated by the infantry. By incorporating a monocular, infrared (IR) night vision device to the tank gunner’s auxiliary sight, the GAS becomes night capable.

In late 1994, as a platoon leader, I experimented with using our MILES “God guns” for purposes other than keying. I gave them to the dismounted squad leaders to designate targets in windows and alleys, or to mark movement. The problem with this technique was that tank commanders had to stand up in the hatch and use their night vision goggles to see the laser-designated targets. With the TC exposed to possible sniper fire, we were limited to a support-by-fire position 300 or more meters away. And once we began taking mortar fire, we had to button up, making the technique unusable. In addition to being useful in MOUT situations, we used the technique in setting and initiating ambushes and command

and control in the defense. Though I had little experience working with the infantry at this point, the concept was feasible and we were able to engage and destroy several targets. With an internal IR optic, combined with the new series of laser designators, our mission would have been even more successful.

We need to explore some considerations for incorporating IR optics in the GAS. The IR optic should be attachable, or capable of being rotated in or out of the GAS so that the sight will not be useless if the night vision optics fail. This would allow the gunner to have both thermal and light-sensitive optics.

The infantry currently have systems that would work in conjunction with the IR optic. Two examples are Laser/Device Zeroing, and the AN/PEQ-2A. Infantry leaders have been using these devices for target designation for years. With practice and disciplined techniques, a unit can designate and also identify themselves on the battlefield. One technique is to flash different types of lines to indicate the designating unit. For example, a vertical line might indicate the 1st Squad, a horizontal line the 2nd Squad, circles the 3rd Squad, etc. It is obvious that with the development of an infrared (IR), night sight, infantryman could designate targets to tanks.

Some possible applications of a tank IR sight and the laser designators include: communication with observation posts, squads designating OPFOR positions in windows of buildings, designation of targets in an ambush, identifying hostile streets, marking no-fire zones, trigger lines, medevac marking, identification of landing zones, tracing movement in trench lines, and initiating fires without the need for a noise maker (which would probably not be heard inside the tank anyway).

There is a growing need for communication and target identification techniques between tanks and dismounted infantry. In recent history, missions such as Panama, Haiti, Somalia, Bosnia, and Kosovo have placed a larger emphasis on a more flexible task organization, such as armor and mechanized teams. With the growing number of low-intensity missions, the need has increased for new techniques of communication between these forces. Our vehicle antennas have become extremely vulnerable to the weapon systems that threat forces utilize, like light AT weapons, grenades, and mortars. Though these weapons may cause only minor damage to our armored vehicles, they can quickly reduce our comms capability and keep us buttoned up.

Unfortunately, mounted and dismounted soldiers have become almost completely reliant on the radio. In the close fight, when radios go out, tank commanders and squad leaders have to fall back on hand and arm signals, flares, or flags. However, few have ever practiced with flags and most are rusty on the full spectrum of hand and arm signals. If a situation required immediate communication between ground and armored crewman, under limited visibility, it would be extremely dangerous for a dismounted infantryman to jump up on a tank without a signal. Furthermore, when the hatches are closed, the field of view is very limited, thus making the area around the tank even more dangerous to anyone on the ground.

With any new system, there are limitations and restrictions that need to be considered. Laser designator saturation can cause a literal IR, laser light show, causing confusion. Additionally, understanding the enemy’s night

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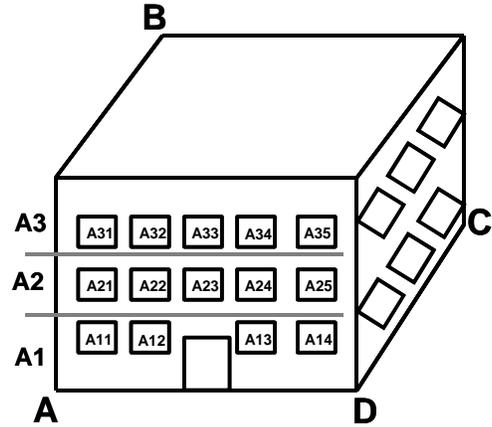
vision capability becomes crucial. If this sight was adapted, units must take steps not to be deceived or confused by enemy IR sources. Another limitation is that thick smoke and fog reduces both designator and IR optic capabilities.

With the development of an IR attachment to the GAS, communication would be greatly improved between mounted and dismounted forces. Dismounted infantry will have a powerful tool with or without radios to identify targets for our mounted forces. Because of the size of the device and the existence of the technologies, the cost will be relatively small. This adaptation will facilitate, command and control and increase the U.S. forces' ability to "own the night."

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SUPPORT BY FIRE: A MOUT

- Element occupies the SBF position and SSG designates sectors passively with lasers.
- SSG: "Section #1 on my laser identify A2." "Identified." "Watch and shoot." "Section #2 on my laser identify A3." "Identified." "Section at my command sustained ROF." "Section #2, standing by."
- Section leaders assign sectors of fire to their internal systems.
- SL #1 "Gun #1 A21-A22 watch and shoot." "Gun #2 A23-A25 watch and shoot."
- SL #2 "Gun #3 identify A31 and A32." "Identified." "At my command rapid." "Gun #4 identify A33-A35." "Identified." "At my command sustained."



Sketch illustrates a technique for fire distribution and target handoff using laser designators. A simple numeric code uses a letter to designate the side of a building, a first numeral to designate the floor, and a second numeral to indicate a specific window, numbered left to right.