ISRAELDEFENSE

Fused Multisensory Sight – The Modern Warfighter Binoculars

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An effective solution to defeat small, low profile terror combatant teams in a civilian environment should be introduced in the form of fused multisensory binoculars

Background

Analysis of military conflicts since the Kosovo War (1998-1999), including the current ISIS confrontation, shows very distinct patterns that should be evaluated to assure enhanced military capabilities in the future.

All those studies demonstrate, with some minor exemptions, the following patterns:

These conflicts are asymmetric. They involve, on one hand, regular state military forces and on the other, terror organizations or rogue forces, which are mainly using low profile guerrilla tactics. Most of these combatants are spread and positioned within civilian infrastructure and population, operating in small or medium size groups that are well camouflaged and well hidden so they can operate with minimal exposure time.

The regular state military forces are unable to utilize their overwhelming military superiority in such scenarios. They cannot bring to bear their full capabilities, technologies and maneuverability due to political and humanitarian restrictions. These forces are limited by inadequate tactical situational awareness thus exposed to ambush, mortars and rocket lunching, IEDs and suicide attacks.

The decision makers commanding the regular military forces are often reluctant to set “boots on the ground” and therefore tend to rely on in-efficient air strikes, which seldom achieve significant operational results and in no case resolve the conflict. In most cases, in order to force any reasonable end-game, the “boots on the ground” are finally deployed but with restricting and unreasonable marching orders.

The most frustrating factor in this situation is the fact that over the last decade, the state military forces, spent billions of dollars on sophisticated long range, precise and super-efficient weapons and intelligence systems, but most of them do not "deliver" in current conflicts. The need for swift and clear resolution of armed conflicts involving terror and guerrilla has not been translated into relevant operational requirements for system design and acquisitions.

It is evident that something is missing in the manner state military forces are planning and executing their operations and the way technology and systems are developed, provided and used in this new era of asymmetric warfare.

What needs to be change?

For over two decades, the defense establishments promoted the acquisition of long-range accurate situational awareness systems, reconnaissance solutions, precision weapons and sophisticated C4I capabilities. These assets have been provided, mainly, to air forces and navies as well as to special-ops forces. Detecting and intercepting threats at long ranges as well as precise strike capabilities at these ranges in all weather conditions, day and night with minimal alert time, were made possible and have been very effectively achieved and demonstrated over the years.

Nonetheless, no effective solution was presented to defeat small, low profile terror combatants teams equipped with sophisticated anti-tank weapons with ranges of 2-5 Km that are present in a civilian environment. In other words, the sub-brigade level commander, who has to operate within a populated urban area, does not have the right means to identify his enemy, nevertheless effectively neutralizing it. Moreover, not only the commander lacks the necessary intelligence and situational awareness to execute his mission, at the same time he is required to avoid civilian casualties and collateral damage to uninvolved assets. The maneuvering tactical ground forces have ultimate fire power with adequate precision and range but are unable to use it, due to the missing the relevant, on time and on-the-spot intelligence.

Obviously, there is no "silver bullet" that can solve this problem. But if only the ground forces would be able to effectively tackle their foe, the use of the “boots on the ground” would become much more effective and immediate, and resolution of conflicts will be swift and the chances of terror and rogue organizations to force governments into concessions will be limited.

Tactical sensor Fused Sight

Traditionally, the commander of a tactical maneuvering ground force used his binoculars in order to build the situational awareness and locate the enemy. In the present, asymmetric warfare environment, his binoculars will show no targets and his situational awareness will be very limited due to the nature of the evasive enemy that is well camouflaged within the urban environment.

The commander needs accurate and comprehensive targeting data to enable him to use his enormous and precise firepower, to neutralize any relevant enemy and avoid unnecessary casualties on both sides.

Harnessing modern technology with adequate fusion of relevant data from various sources can provide such a solution. Following is a short description of the relevant sensors and their outputs' fusion.

- Moving targets shall be detected by on-site integral miniature high-resolution phased array radar. This sensor will alert of any moving target, persons and vehicles, precisely measuring range to target and providing sufficient angular bearing to the target. This sensor is effective day and night with no visibility limitation.
- An EO/IR sensor, preferably co-located with the radar, will do target identification.
- A scanning laser dispersion sensor will alert the force of any optics pointed in its direction.
- A dual FLIR/SWIR sensor will locate hostile fire data in line of sight.
- Tactical short range COMINT and CELLINT sensors will detect active communication devices in the range of interest.
- All these assets will be fused into a single sight and displayed to the commanding level. The display will include, targets of interest prioritized by lethality level, enabling appropriate real-time weapon delivery.
- Fourth generation communication will enable data exchange among the commanders for the benefit of cooperation and coordination. In addition, the communication will enable external users to overlay data such as artillery and mortar threats and, if available, situational data from UAVs.

Such a fused, short-range surveillance and fire control asset is the next generation "must have" tool for any maneuvering unit.

The Fused Multisensory Sight in the hands of the warfighting commander will introduce ConOps that enable the effective engagement of hostile maneuvering ground forces in the entire spectrum of conflict scenarios. The power multiplier of those that processes will open the door to a new era of conflict resolution with minimal casualties and collateral damage, in short time and with minor political costs.