Space Support to the Infantry

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Infantry operations today have global implications, and the U.S. Army Space Command (ARSPACE), the Army operational component of the U.S. Space Command, is influencing the future infantry battle now. Its soldiers, including quite a few Infantrymen, are deployed worldwide in support of operations 24 hours a day.

What this means for today's Infantryman is that numerous new systems are arriving on the battlefield to acquire, use, protect, deny, exploit, and manage weapon systems for information operations. The maneuver commander still sees the land battle in the context of the dimensions of available battlespace (in terms of mission, enemy, terrain, troops, and time). Our Army Warfighting Experiments (AWEs) have revealed a new battlefield on which we gather, process, and use information in new and different ways.

By way of a thorough intelligence preparation of the battlefield (IPB), the commander uses space systems to acquire information to use in influencing the enemy's actions, denying him information, and exploiting his weaknesses. Space systems then serve to protect the infantry commander's compressed decision cycle. Commanders still want to know the dynamics of their battlespace, and space systems provide the instant edge that enables them to move, shoot, and communicate in three dimensions.

The systems that make this leap possible are already here and in the hands of combat arms soldiers as part of the Army Space Exploitation Demonstration Program. The assigned mission of ARSPACE is to reduce delays that keep soldiers from the potential combat power of new space force enhancement weapons and to deliver those weapons to the field. In the past two years, ARSPACE has delivered systems to numerous major training exercises. In fact, an Army space support team was attached to the 10th Special Forces Group component of the Dismounted Battlespace Battle Laboratory's AWE *Warrior Focus*.

ARSPACE is developing a number of demonstration program systems for the immediate future. These systems were carefully developed to meet the operational capability requirements of U.S. Army Training and Doctrine Command (TRADOC) Pamphlet 525-66, *Future Operational Capability*. Those systems include the following:

Global Broadcast Service (GBS) Operational Demonstration. During XVIII Corps Exercise *Royal Dragon 96*, GBS provided rapid multiechelon space-based distribution of seamless, secure video, imagery, maps, data, E-mail, and voice in support of the operational scheme of maneuver. GBS provides an information superhighway of real-time video, imagery, maps, friendly and enemy locations, and other data from units at levels from corps to platoon. In the field, the signal can come from a laptop computer. The large amounts of data provided by GBS allow the commander to receive current map data worldwide.

Low Earth Orbit Mobile Data Communications (LEOCOMM) Operational Demonstration. This system relies on a new low-earth-orbit satellite constellation to provide two-way digital messages to the individual soldier. In application, this pager-based system frees the commander from the line-of-sight limitations imposed by cross-compartmentalized, mountainous, or jungle terrain, with direct-to-soldier space uplink and downlink.

One objective application of a LEOCOMM-type paging system is to warn soldiers of incoming ordnance, so that they can avoid the casualty radius of impacting rounds. If a SCUD-type weapon is coming in on a soldier's location, the beeper can tell him, in effect, "The SCUD will hit in two minutes; if you move 500 meters due east immediately, you can reduce unit casualties by 95 percent."

GPS Attitude Determination Device (ADD) Operational Demonstration. This device has already been used at the National Training Center and in Korea. For an artillery unit, ADD gives the commander "HE Quick" immediate fire capability to suppress or neutralize and destroy targets of opportunity, disrupt enemy counterattack, and support J-SEAD (joint suppression of enemy air defenses) and JAAT (joint air attack teams). The system is useful for the internal defense type missions of Special Operations forces engaged in training indigenous units to acquire and

suppress indirect fire targets. It also may be used for navigation by maneuver units, such as a brigade task force at the National Training Center, with its ability to compute avenue of approach in real-time to an accuracy within one mil.

Blue Force Tracking (BFT) Operational Demonstration. BFT provides one of the most significant space force enhancements. It was used successfully in the Mounted Battlespace Battle Lab's Exercise *Focused Dispatch* to bridge the 100-mile distance between the Western Kentucky Training Area and Fort Knox for real time and virtual integration from geosynchronous orbit. BFT uses available space systems to display "blue force" location, identification, and movement on conventional maneuver control systems. It provides near real time situational awareness and fratricide avoidance.

BFT equipment mounted on a Bradley fighting vehicle reduces the "fog of war" by sending an electronic situation report from the battle scene, and updates data by injecting digitized moving map icons into the commander's computer screen every few seconds. During the exercise—for example—the brigade fire support team can click on the blue icon projected from space and see the track commander's name, vehicle bumper number, and a short sentence, such as "I'm broken down and going to the UMCP; please do not shoot me."

Meteorological Automated Sensor and Transceiver (MAST) Operational Demonstration. MAST enables the brigade task force commander to see over the next hill. It prepares the unit for reaction to changed weather, not unlike the situation in which VII Corps found itself before the battles of Norfolk and 73 Easting during Operation *Desert Storm*.

The MAST system can provide for NBC dispersion or chemical attack predictions, with constant real-time forecasts that can be updated. The generated information provides G-2 or S-2 forward area weather sensors to gather meteorological information in data-denied areas—and areas for which we have sparse data on wind, pressure, humidity, visibility, soil moisture, and the like—and automatically relays that data by satellite to division and corps weather teams.

Blue Force Tracking Demo mounted on M2A2 during AWE focused dispatch.

Small Terrain Visualization Device Operational Demonstration. This device enables commanders at battalion level and below to choose a route, and build by satellite, a three-dimensional "movie" (drive-through) of the route using a laptop personal computer. It is an electronic terrain table at the commander's fingertips. It reduces the time required to prepare for the next operation, when staffs and troops are tired and stressed, day or night, and in chemical or directed energy warfare environments.

Military Tracking and Guidance Electronics Technology Demonstration. When the Aegis Cruiser Vincennes mistakenly shot down a commercial Iranian A300 Airbus in the Arabian Gulf, one of the factors cited was the information overload that individual systems impose on a commander. This tracking and guidance technology cuts that overload by letting through only the information that is critical to support fire and maneuver. The commander tailors information requirements to the operational plan, the level of risk, and the subordinate commander's experience.

This space-based demonstration is a compact, radiation-hardened processor to pre-filter massive data downlinks—reducing soldier and system processing time in critical situations to direct fires, react to enemy movement, and conduct operations across the forward line of troops.

Hyperspectral Sensor Concept Technology Demonstration. The next war we fight may be on a battlefield polluted by chemical, biological, radiological, and directed-energy weapons. This system uses space-based hyperspectral imagery for remote detection and identification of battlefield and terrorist induced chemical agents, as well as camouflaged man-made targets. It provides a sensor for 8 to 11 micrometers in the infrared waveband with a resolution of 47 nanometers—a leap ahead in detail from current multispectral sensors.

For information on ARSPACE space force enhancement, contact SSDC Public Affairs, (719) 554-8899, or e-mail: whitee@spacecmd-emh2.Army.mil.

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