

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE 2002		2. REPORT TYPE		3. DATES COVERED 00-00-2002 to 00-00-2002	
4. TITLE AND SUBTITLE Space Criticality to Ongoing Military Operations				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Army Space & Missile Defense Command, Army Forces Strategic Command, Redstone Arsenal, AL, 35809				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Space Criticality to Ongoing Military Operations



**Lt. Gen. Joseph M. Cosumano, Jr.,
Commanding General,
United States Army
Space & Missile Defense
Command/ United States
Army Space Command.**

By Lt. Gen. Joseph M. Cosumano, Jr.

Draft copies of books describing “lessons learned” from Operation Enduring Freedom are already being written. No matter what the author’s take on our successes and failures, I can guarantee you each will dedicate a significant portion of his or her book to the critical role Space is playing in this worldwide war on terrorism. In this article I intend to highlight examples of the more salient force enhancement support that Space assets have provided.

Before the first soldier, sailor, airman, or Marine was placed in harm’s way — and well before the first unmanned aerial vehicle was deployed — we used satellites to scan hundreds of thousands of square miles of Afghanistan’s rugged terrain. This information gave us a feel for the terrain, for the weapons that potentially could be employed against us, and for an initial set of targets to be attacked with cruise missiles and high-altitude bombers. We used satellites to collect electronic and signals intelligence on the enemy. Satellites fed constant data about cloud cover and moisture into weather forecasting programs. Satellites with spectral imagers were used to detect changes in terrain features indicating potential use by the enemy. Satellites were also available to detect the infrared signature of a missile launch if the terrorists had possessed that capability. Satellites were our first “eyes on target” operating 24 hours a day, during day and night and in all weather.

As the decision neared to deploy forces into theater, digital terrain data provided by satellites were used to develop 3-D images of terrain and streets and even to give military planners an idea of the view from a terrorist’s window. This proved to be a boon for pilots flying low-altitude missions through rugged mountains and for special operations forces carrying out covert raids.

The image of special operations forces soldiers riding horses alongside Northern Alliance forces belies their true capabilities. Inside their saddle packs are global positioning system (GPS) trackers, laser designators, satellite-communications gear that enables them to talk directly to pilots overhead, and laptop computers on which to download satellite imagery. They know where they are. Through

the clever combination of GPS-derived position data, advanced communications, and a variety of Space and airborne sensors, they are able to give fellow soldiers and their commanders — in and outside the theater — a continuous picture of their location and movements. This is commonly referred to as Blue Force Tracking.

These force enhancement capabilities enable our special operations soldiers to accurately identify the locations of targets from a safe distance, relay the target coordinates via satellite phones or laptop computers to warplanes circling overhead, and then get back on their horses to ride to the next target.

We are seeing the employment of precision-guided munitions to a much greater degree than ever before. Estimates show that more than 70 percent of the ordnance dropped so far was precision guided. In contrast, the comparable figures were 30 percent in Kosovo and 10 percent in the Gulf War a decade ago. Our GPS satellites enable pinpoint locating of enemy targets. Our communication satellites relay targeting data to the appropriate command centers that then decide which targets to assign to which bomber. The pilots load this targeting information into their satellite-guided munitions — joint direct attack munitions (JDAMs) are the workhorse so far. These munitions are 2,000-pound bombs fitted with satellite-guidance systems and navigational fins making the ordnance smart enough to hit within a few yards of the target. If, while airborne, the targets change, new targeting information is sent via satellite links directly to the pilots who download this new information into their bombs. The pilots, upon reaching the area of operations, then unleash their payload and the JDAMs fall from the sky as if riding on a string to their targets.

In 1944, it took 835 B-29 flights to achieve four percent damage of a Japanese aircraft-engine plant. Today, a single bomber with satellite-guided bombs can shut down the plant. This precision bombing, capable of keeping up with moving forces, enabled U.S. firepower to clear the way for the Northern Alliance as it turned the tables on its old

As war and intelligence operations become more sophisticated, we find ourselves relying more heavily on Space-relay links from the Pentagon to military command centers in Europe and the Middle East and, further, to outposts near the front lines of operation.

nemesis, the Taliban. It has become possible for B-52s circling thousands of feet above the battlefield to provide close air support.

The emergence of U.S. commercial surveillance satellite systems — such as Space Imaging’s Ikonos satellite and Digital Globe’s Quickbird satellite launched on October 18, 2001, and only halfway through its verification and calibration period — has added a new wrinkle to our goal of achieving Space control, assuring our access to required Space assets while limiting or precluding similar access by our adversaries.

Previously, we relied on the French Satellite Probatoire d’Observation de la Terre, National Aeronautics and Space Administration’s Land Remote-Sensing Satellite, and our own classified systems to provide electro-optical imagery. Because we closely guarded the secrecy of the imagery provided by our classified sources, fewer commanders benefited due to restricted data distribution. Today, commercial ventures are making operationally relevant electro-optical imagery available to everyone — but for a fee. As part of our ongoing Space control efforts, the National Imagery and Mapping Agency signed an exclusive deal that allowed the Department of Defense to control all of Ikonos’ high quality images of Afghanistan.

I am sure we will consider availing ourselves of Quickbird’s services once it commences full operations later this year. Not only does this process keep the imagery away from our adversaries, it also enables us to supplement our capabilities so that by training commercial satellites on lower-priority targets we can free up government satellites for higher priority shots — all from bases hundreds of miles away. It also enables us to use unclassified commercial images in public or in semi-privacy — say, when we share information with coalition partners — without having to reveal the capabilities of our advanced imaging systems. Other Space control efforts that have so far been employed include beefing up the security around all our ground stations and the deployment of 1st Space Battalion’s Space and Electronic Warfare Detachment.

The constellation of sensors that is almost constantly aloft over Afghanistan — from Boeing 707s carrying ground-target radars, to unmanned Predators and Global

Hawks with long-range camera lens, to reconnaissance satellites high above the Earth — have provided a sharper, more continuous picture of the battlefield than any commander has ever had. We don’t miss anything if we have an eyeball on it all the time.

Satellites are also enabling us to better manage the propaganda “war.” When the Taliban and Al Qaeda claim massive collateral damage from our attacks, we can rapidly produce satellite imagery to disprove their claims. We can also, if we so choose, impede their ability to effectively use satellites for broadcasting television and radio messages. By so doing, we can stop them from rallying their forces and world opinion against us.

As war and intelligence operations become more sophisticated, we find ourselves relying more heavily upon Space-relay links from the Pentagon to military command centers in Europe and the Middle East and, further, to outposts near the front lines of operation. The Commander in Chief (CINC) no longer has to be in the theater of operations, as evidenced by the ability of Gen. Tommy R. Franks, CINC Central Command, to run the war from his headquarters in Tampa, Florida.

The conduct of joint operations is no longer limited to the traditional dimensions of land, sea and air. Space now extends the boundaries, adds a new dimension, and enhances warfighting capabilities — as evidenced by the examples provided above.

In closing, it is important we keep in mind that Operation Enduring Freedom represents a single point along the spectrum of operations for which our military must be continually prepared to fight and win. You, as the Army’s specially trained cadre of Space-smart officers, must apply what we are learning today to help build our Interim and Objective Forces as the Army marches toward its transformation. We must prepare across the entire spectrum of possible future operations because, perhaps, the biggest lesson we have learned is — it is impossible to know with certainty when and where new challenges will arise.

Secure the High Ground!