

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 What? ...Space Control				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 What? ... Space Control

By MAJ Lem Williams

Space control has been an escalating concern for some years now and has recently come to the forefront of Department of Defense concerns and issues. As defined in Joint Publication 3-14, Space control is the ability “to ensure freedom of action in Space for the United States and its allies and, when directed, deny an adversary freedom of action in Space.” The U.S. Army is the largest user among the U.S. military services of Space-based capabilities and information — its dependency on these Space resources will only continue to grow with the advent of the Objective Force. The good guys (Blueforce), the enemy (Redforce), and the rest of the world (Greyforce — civil and commercial) are today’s Space customers. The product line includes but is not limited to: position and navigation; environmental monitoring; intelligence, surveillance, and reconnaissance; communications; and missile detection and warning. This article illustrates why Space control has emerged as a primary focus in today’s three-dimensional tactical arena of modern warfare.

To better understand the interdependencies and relations within Space control, certain categories need to be identified and defined. Space control requires the fluid integration of four interrelated areas:

- **Surveil the Space operating environment** (Space, air, and ground), including intelligence-gathering functions, to achieve and maintain Space situational awareness that is the foundation of all Space control efforts.

- **Protect our critical Space systems** from hostile actions and environmental hazards; requires foreknowledge and warning of possible threats, both natural and man-made.

- **Prevent unauthorized access** to and exploitation of U.S., partner, and allied Space systems, when required; is the application of all elements of national power, to deny an adversary from exploiting U.S., partner, and allied or commercial Space capabilities.

- **Negate Space systems** that place U.S., partner, and allied interests at risk. We will act to negate an adversary’s Space capability by targeting ground-support sites, ground-to-Space and Space-to-ground links, or Spacecraft.

Through a holistic and unified approach, Army/U.S. forces must integrate a suite of terrestrial- (ground) and extraterrestrial- (Space) based capabilities to facilitate the continued security of national assets and the U.S. dominance in Space. Branches of the armed forces no longer have the luxury of operating autonomously during military/combat operations. Joint situational awareness is imperative to the success of these operations and the mitigation of collateral damage or fratricide.

Of these four pillars of Space control, negation is probably the most critical to the warfighter because it allows him to “squeeze the trigger” in immediate response to enemy threats. While using the other pillars to fortify his position, the warfighter can pick the time and place to engage the enemy without fear of reprisal. Negation is the ability to deny, disrupt, deceive, degrade, or destroy an adversary’s Space systems and services. It involves military actions to target ground-support sites and infrastructure, ground-to-Space links, or Spacecraft.

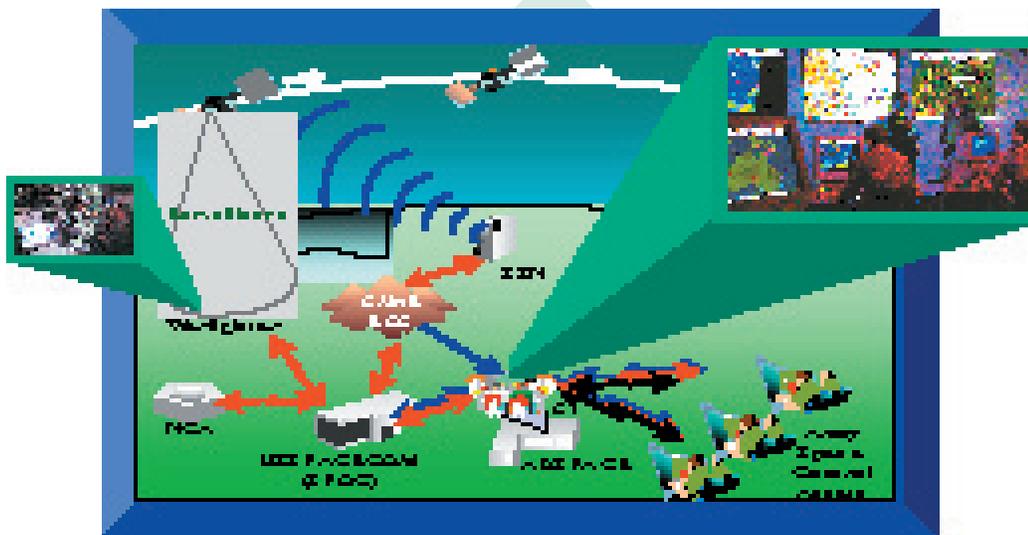
Further defined, these missions are:

- **Denial**, the temporary elimination of the utility of a Space system, usually without physical damage (total removal).

- **Disruption**, the temporary impairment of the utility of Space systems, usually without physical damage to the Space system (diminished value or strength).

- **Deception**, which consists of those measures designed to mislead the enemy by manipulation, distortion, or falsification of evidence to induce the enemy to react in a manner prejudicial to their interests.

- **Degradation**, the permanent, partial, or total impairment of the utility of Space systems, usually with physical damage.



- Destruction, the permanent elimination of the utility of Space systems. This last option includes special operations forces interdiction of critical ground nodes; destruction of uplink and downlink facilities, electrical power stations, and telecommunications facilities; and attacks against mobile Space elements and on-orbit Space assets.

In order to accomplish the negation mission, the other three pillars of Space control must be effectively integrated. This vital integration is most apparent in the “key tasks” and “key capabilities” listed below. These capabilities provide the assurances and parameters that the warfighter needs to use these assets with the surgical precision required for modern engagements.

Key Tasks:

- Target identification — know what you are shooting.
- Weaponizing — hit your target.
- Operations cycle — know when to shoot.
- Develop and maintain a force structure — be armed and ready to shoot in short order.

Key Capabilities:

- Flexible effects achieve the range of reversible and permanent negation.
- Precision attack minimizes or eliminates collateral damage so we do not harm or destroy Space services for the United States or our allies.
- Employment on demand protects forces and supports military operations; combatant commanders must be able to negate Space systems immediately (the “trigger”).
- Combat assessment includes real-time identification of system users, types of support provided by the Space system, effects of system loss on enemy operations, and alternate sources for support.

In the short term, the Army is preparing itself for the

full implementation of Space/Space control as a battle-field operating system in the future by:

- Developing system operational requirements documents for negation and surveillance.
- Establishing a Space control integrated concept team.
- Establishing the FA 40 — Space Operations Officer.
- Executing Space control programs and missions for the warfighter.
- Experimenting and demonstrating new technologies with and for the warfighter
- Integrating Space control in the Objective Force table of organization and equipment.

In the longer term, the Army has the goals of institutionalizing, operationalizing, and normalizing Space and Space-based products/capabilities. These three terms refer to the on-going efforts and desired future goals of the Army to transform this “Holy Grail — Star Trek” vision of Space into a forged tool of war. The mindset of considering Space in all daily operations is being rapidly infused into the formal officer education process and will soon enter the warrant officer and enlisted ranks.

Institutionalize — Space capabilities and knowledge of their limitations must be fully understood throughout the ranks. Officer, warrant officer, enlisted, and Department of the Army Civilian education must cover the spectrum of Space capabilities and Space control.

Operationalize — Embed Space capabilities and the understanding of their limitations into everything the Army does to include planning, operations, wargaming, and exercises. Appropriate models and simulations of tactical Space capabilities must also be incorporated.

Normalize — Ingrain and use Space and its capabilities in day-to-day activities and thought processes. It should be common practice for Space to be included in
(See *Space What?*, page 39)

As defined in Joint Publication 3-14, Space control is the ability “to ensure freedom of action in Space for the United States and its allies and, when directed, deny an adversary freedom of action in Space.”

SPACE WHAT? ... from Page 15

all planning and operations by leaders at all levels.

Traditional paradigms and rules of engagement must now be reshaped with new focuses on joint command and control and planning as cornerstones. Once completed, this transformation will link the “point man” on a patrol with the National Command Authorities, not only in tactical and strategic terms but in thought methodology relevant to the engagement of adversaries. Warfighters will need to assess how an adversary may use many of the same capabilities to gain operational advantages.

The threat in relation to Space/Space control is more pronounced in the easy acquisition of products rather than their widespread application. The capabilities and quantity of both civil and commercial systems with military utility have significantly increased over the past decade and show no sign of slowing down. Potential adversaries now have access to global commercial Space industries. The increasing availability of satellite telecommunications, Space-based imaging, and position and navigation systems significantly degrades the technological edge that the United States has enjoyed in the past. Without Space dominance/Space control, future adversaries could gain advantages they would otherwise not possess. They may well interdict U.S. and allied capabilities

or destroying an adversary’s Space systems when directed. The Army is developing a suite of technologies and Doctrine, Training, Leader Development, Organization, Materiel and Soldier solutions to assure access to required Space capabilities for the Objective Force while denying the same to any adversary.

on which our recent successes have relied. Future military operations can assume neither uninterrupted nor sole access to Space products. As more nations gain access to Space capabilities, the need to ensure U.S. access to Space will become a military necessity. Common access to Space capabilities will challenge, perhaps even limit U.S. ability to achieve strategic surprise. As order-to-delivery times decrease, commercial imaging systems will be capable of providing tactically significant products to potential adversaries in near real time.

These capabilities could assist an adversary’s implementation of an anti-access strategy and potentially limit U.S. military options, hence our need to deny such capabilities. Space control will be an essential element in ensuring theater access to Space and Space capabilities, and land force information superiority. Future Army operations and equipment will require Information Operations methods that protect our Space capabilities, exploit an adversary’s Space capabilities, and protect friendly forces from Space-based observation. These methods will include capabilities for in-theater Space surveillance; protecting vital command control communications/intelligence surveillance and reconnaissance assets; and deceiving, denying, degrading, disrupting and/

or destroying an adversary’s Space systems when directed. The Army is developing a suite of technologies and Doctrine, Training, Leader Development, Organization, Materiel and Soldier solutions to assure access to required Space capabilities for the Objective Force while denying the same to any adversary.

The Army is, and must continue to be, an active participant in the design and development of Space architectures and capabilities. Military use of Space is inherently joint and increasingly critical to land force operations. Terrestrial systems alone will not enable full-spectrum dominance. Commanders at all levels (strategic, operational and tactical) must have assured, direct access to the full range of Space capabilities, and they must be able to protect that access while denying access to any adversary. The Army equity protected by maintaining Space dominance is nothing less than achieving the Objective Force; enabled by Space and protected by Space control.

MAJ Lem Williams is the Joint Space Control Team Leader with U.S. Army Space and Missile Defense Command’s Force Development and Integration Center Space Division. A former enlisted Infantryman, he was commissioned as an Ordnance Officer in 1990. His assignments include 2d Armored Cavalry Regiment, 82d Airborne Division and the 10th Mountain Division.