

USAWC STRATEGY RESEARCH PROJECT

**A CRITICAL REVIEW OF THE U.S. MARINE CORPS' SPACE CADRE STRATEGY**

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This SRP is submitted in partial fulfillment of the requirements of the Master of Strategic Studies Degree. The U.S. Army War College is accredited by the Commission on Higher Education of the Middle States Association of Colleges and Schools, 3624 Market Street, Philadelphia, PA 19104, (215) 662-5606. The Commission on Higher Education is an institutional accrediting agency recognized by the U.S. Secretary of Education and the Council for Higher Education Accreditation.

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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 <b>30 MAR 2007</b>		2. REPORT TYPE <b>Strategy Research Project</b>		3. DATES COVERED <b>00-00-2006 to 00-00-2007</b>	
4. TITLE AND SUBTITLE <b>Critical Review of the U.S. Marine Corps' Space Cadre Strategy</b>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) <b>David Deist</b>				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>U.S. Army War College, Carlisle Barracks, Carlisle, PA, 17013-5050</b>				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 <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT <b>See attached.</b>					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>21</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

## **ABSTRACT**

AUTHOR: Lieutenant Colonel David W. Deist  
TITLE: A Critical Review of the U.S. Marine Corps' Space Cadre Strategy  
FORMAT: Strategy Research Project  
DATE: 30 March 2007 WORD COUNT: 6341 PAGES: 21  
KEY TERMS: Professional Development  
CLASSIFICATION: Unclassified

The National Space Human Capital Resource Strategy of February 2004 required the services to develop and manage a service unique cadre of space professionals to support their unique mission requirements. To date, the Marine Corps space cadre consists of only active and reserve officers, with billets identified for only active duty officers. If the Marine Corps is going to effectively incorporate space power, it must develop a human capital resource strategy and plan that includes officers, enlisted, active duty, reservists, and civilians. Failure to develop and execute such a plan will put Marine Corps success on the 21st century battlefield at risk. The Army, Navy, and Air Force have developed Space Human Capital Resource Strategies and implemented plans with varying degrees of success. This research project reviews the national guidance for space professional development and each service's response and success. It then investigates the applicability of the other services' successes to the Marine Corps and concludes with recommendations for a way ahead.



# A CRITICAL REVIEW OF THE U.S. MARINE CORPS' SPACE CADRE STRATEGY

## The Challenge

Space has been called the ultimate high ground. The nation that can control space will enjoy a significant battlefield advantage over its adversary. In its 2001 report, the Commission to Access United States National Security Space Management and Organization (Space Commission) unanimously concluded that the security and well-being of the United States, its allies, and friends depend on the nation's ability to operate in space.<sup>1</sup>

Just as space is critical to U.S. security, it is unique. Unlike the land, sea, or air, space is not typically occupied by humans. Space is a naturally hostile environment and places unique demands on space systems designers. Once launched, space systems are rarely able to be repaired. Space is inherently global, providing either a detailed view of an otherwise inaccessible section of the surface of the earth, or a broad view of up to a third of the globe. Space systems are expensive and limited in numbers. They are the classic low density, high demand asset. Often, a single space system will support military, civil, and commercial users. This places unique demands on military space planners and operators.

Space professionals must understand the unique capabilities, limitations, and vulnerabilities of space as well as the needs of the space users on the land, sea, and air. Since the Wright brothers demonstrated successful human flight, aviation professionals have pioneered advances in flight technologies, uses, policies, and integration with many aspects of civil, commercial, and military life. Professionals are needed to pioneer advances in space in a similar manner. Space, by its global presence and ubiquitous nature, is inherently joint and interagency, placing greater demand on space professionals. It is incumbent upon the space professional to understand both the capabilities and needs of operating forces and the unique advantages to be gained by fully exploiting space capabilities. Military space professionals do not have the luxury of focusing solely on military operations.

Many within the U.S. military do not truly understand space. Unlike the air, land or sea, the users of space based systems have not had the benefit of having physically been in that medium. As an enabler, providing force enhancement, space can seem transparent to the user. A user may not be aware of the critical capabilities provided from space. If users are not educated on the capabilities, limitations, and vulnerabilities of space systems, they will be ill equipped to use space effectively and unable to sufficiently advocate for space resources critical to their battlefield success.

Guidance from DOD recognizes the importance of space. It recognizes the uniqueness of space and the need for space professionals. Secretary of Defense guidance directs the

development of a space cadre and the synchronization and integration of efforts across the departments. Unfortunately, lack of oversight from DOD has led to individual efforts by the services, each with a focus on their individual service needs. Each service has implemented a space cadre strategy with success in the areas most important to their service.<sup>2</sup>

The Marine Corps has its own unique needs for a space cadre. Marine Corps doctrine embraces maneuver warfare. Marines conduct decentralized, combined arms operations across a non-linear battlefield. These decentralized, distributed operations demand increased situational awareness, a high operations tempo, increased mobility, and support in austere environments. These operations have an increased reliance on space-based capabilities, to include satellite communications; intelligence, surveillance, and reconnaissance (ISR); missile warning; space based position, navigation, and timing (PNT), space based weather, and space control. Space smart Marines are required to integrate space with Marine Corps operations and be full participants in the National Security Space (NSS) community.<sup>3</sup>

The Marine Corps has made great strides in developing its cadre of space professionals. It has published a strategy for developing a space cadre. It has identified officers with requisite training and experience. Billets have been identified where space smart Marines are most needed. Training, education requirements, and forums have been identified. Space support for the Marine Air Ground Task Force (MAGTF) has grown. These are great strides, but greater steps are needed. This research project reviews the national guidance for space professional development and each service's response and success. It then investigates the applicability of the other services' successes to the Marine Corps and concludes with recommendations for a way ahead.

## Background

### Criticality of Space

Space based capabilities have become an important part of all aspects of life. Space technologies impact homes, businesses, schools, and offices through their applications in transportation, telecommunications, health, the environment, commerce, and education. Space has become an important part of the national infrastructure, much like the highway system, electric grids, and water systems. The civil and social importance of space has led to growth in a space industry no longer driven by nations and military application, but by commercial industry seeking leadership in this new era of space. International space industry revenues exceeded \$80 billion in 2000 and are expected to triple by the end of the decade.<sup>4</sup> The expansion of the commercial space industry has eliminated the exclusive use of space by defense and

intelligence agencies. Farmers, fisherman, city planners, and terrorist have access to terrain data, sub-meter resolution photographs, precision navigation and timing, and global communications.

Similar capabilities have significantly enhanced the military's ability to plan and conduct operations. The Department of Defense (DOD) employs space assets to support a wide range of military missions, such as intelligence collection, battlefield surveillance and management, global command and control, and navigation assistance. Recent military operations have demonstrated that space capabilities are critical to the success of military missions, such as precision engagement, search and rescue, and close air support.<sup>5</sup> These space missions are described in doctrine as space force enhancement.<sup>6</sup>

Space force enhancement includes missile warning; position, navigation, and timing; weather monitoring; satellite communications; and intelligence, surveillance, and reconnaissance. These five force enhancement capabilities have become critical to US forces. Today's missile warning systems from space work in concert with other ground assets to give military units the ability to protect themselves from incoming missiles, or continue to fight if missiles are not inbound to their positions. The position, navigation, and timing signals from Global Positioning System (GPS) satellites have enabled US military forces to execute maneuver warfare on air, land, and sea in a way never before possible. Common timing signals from GPS allow units from around the globe to synchronize efforts with accuracy. Systems such as Blue Force Tracker (BFT), give commanders situational awareness and reduce fratricide. Satellite communications are often the only communications that can give today's maneuver units effective communications. Satellite communications enable situational awareness, coordinated planning, and command control, critical to the pace of today's fight. Much of the weather information U.S. military forces receive is from space. Global weather systems rely on ground reporting systems for information, but many of the places the U.S. military is asked to operate in, to include the world's oceans, do not have reporting stations; weather is reported from space. Intelligence, surveillance, and reconnaissance from space have always provided U.S. national leaders with global information that could not be gathered by any other means. The inherently global nature of space ensures ISR in parts of the world where land, sea, and air forces are denied access. Such information will become increasingly important as we address regional issues in parts of the world that were never an issue in the cold war. Much is unknown about much of the world. In many cases, space will be the only source for information about a region before forces are committed.

As a nation, the U.S. has come to rely on space force enhancement capabilities and the focus has shifted to protecting those capabilities against attack and denying the enemy those same capabilities when necessary. Protecting space capabilities includes protecting the space and ground segments of space systems as well as the links that connect them. Each of these segments is vulnerable to varying degrees. Adversaries can be expected to attack each of these segments with the objective of decreasing the military's combat effectiveness to a significant degree. The commercialization of space has made space available as a force multiplier for current and future adversaries at all levels of warfare. As the U.S. fights the long war and plans for future conflicts, it must plan to deny the enemy access to the vital capabilities space provides. Unfortunately, the same commercial availability that makes space an asset for the enemy makes it difficult for the U.S. to deny. Today's societies rely on the same services and capabilities as the military and intelligence communities. Eighty percent of military satellite communications is carried on commercial satellites. Commercial satellite photography can provide high resolution photos for use by coalition partners U.S. forces can not share classified photos with. GPS signals are broadcast to militaries and civilians alike. The implications of denying the enemy use of any of these capabilities can be far reaching in civilian life. Space professionals will be required to understand and overcome these unique challenges.

#### Space is Unique

The global, ubiquitous nature of space capabilities is just one way in which space is unique. Launch and satellite operations are expensive; once placed in orbit, objects tend to stay there for many years, and space is an inherently hostile environment where few humans have traveled. The harsh environment of space presents unique technical challenges. The extreme vacuum of space requires careful selection of materials and mechanisms. The radiation environment provides challenges to both materials selection and electronics design. Compared to the land, sea, and air, the environment of space is a particularly harsh environment for humans, making space a potential battleground without direct human presence. The cost of building, launching, and operating space systems is high. The space portion of the DOD budget request for FY2006 was \$22.7 billion, or about 5.4% of DOD's total budget.<sup>7</sup> Once in orbit, objects in space tend to stay in orbit for extended periods. Today's satellites may be designed to operate for 10 years or more and actually operate for over 20 years. There is rarely an opportunity to repair a satellite once it is launched. Due to pure physics, space is inherently global. A satellite must orbit the earth, it is not physically possible to limit over flight. The global nature of their orbits provides services and capabilities that are inherently global. All of these



characteristics of space, along with the national strategic importance of space capabilities, create a need for space professionals who understand the technical, operational, and political aspects of space.

### Space Professionals

A cadre of space professionals is needed that can master complex technologies, develop plans, requirements, policy, operations concepts, and integrate space-based capabilities with joint warfighting operations. To effectively accomplish these tasks, the space cadre must understand the capabilities, limitations, and vulnerabilities of space systems. They must understand the tactics, techniques, and procedures associated with space systems and be able to develop new ones. They must understand the civil and commercial implications of space control operations. They must understand military operations at the tactical, operational, and strategic levels as well as necessary interactions with other agencies.

Just as professionals who operate on land, sea, or air must understand their mediums, space professionals must understand the medium in which their systems operate. Unlike the air, land, or sea, the users of space based systems have not had the benefit of having physically been in that medium and space operations can be counter-intuitive to human experience within earth's atmosphere. Space professionals must combine their understanding of the medium with the complex technologies associated with space systems. The high cost and enduring consequences of system failures leaves little room for error in space system design, launch, and operations.

Space is most effective in military operations when included at the beginning of the planning cycle. Space planners must understand both the capabilities of U.S. military forces and the unique advantages to be gained by fully exploiting space systems. Only then will space be effectively integrated and coordinated with the rest of the force. This places significant demands on space planners. They must be subject matter experts in the employment of a variety of space systems, understand the enemies space capabilities, and maintain credibility with the fighting forces.

Understanding the capabilities, limitations, and vulnerabilities of space systems can be a daunting task. Other subject matter experts may need to understand a single operating system, such as a single aircraft or vehicle. Space professionals are expected to have an understanding of missile warning, ISR, PNT, SATCOM, and space control. It is only with a good understanding of space systems that space professionals will be able to develop tactics, techniques, and procedures (TTP) that continue to make space a more effective force multiplier. The global and

ubiquitous nature of space capabilities demands space professionals develop relationships within the entire national security space community. Effective policy, doctrine, and operations concepts must account for interactions and affects on other agencies and the national security space community as a whole.

Space integration with military operations can not be left only to space professionals. As with all aspects of warfighting, military professionals need to understand the capabilities space brings to the battlefield and support integration of space into operations. The successful integration of any two entities requires both sides have an understanding of the bigger picture. This is true for space as well. Space professionals need to understand operations and military professionals need a basic understanding of the effects space provides.

### Guidance

Progress with space cadre development will depend on guidance and support from DoD and service leaders. Current national and DoD space policy has its genesis in the Space Commission Report. Congress chartered the Commission to Assess United States National Security Space Management and Organization (Space Commission) in 1999 over concerns with DoD's organization and management of space activities. The Space Commission's report was released in January 2001.<sup>8</sup>

The Space Commission identified some long-standing management challenges, including developing and maintaining a cadre of space professionals to assume leadership roles in all aspects of space-related activities. The Space Commission noted that DOD needs a total force composed of well educated, motivated, and competent personnel to assign to military service, joint, and interagency positions to work on space operations, requirements, and acquisition, but that DOD was not yet on course to develop the space cadre the nation needs. The commission stated that DOD must place a high priority on intensifying investments in space career development, education, and training to develop and sustain a highly competent and motivated space cadre.<sup>9</sup>

Former Secretary of Defense, Donald Rumsfeld, served as the Chairman for the Space Commission from its inception until December 28, 2000, when he was nominated by President Bush to serve as Secretary of Defense. In October 2001 as Secretary of Defense, Rumsfeld signed an implementation plan for the Space Commission report. In that implementation plan, military departments were directed to develop and maintain a cadre of space-qualified personnel and develop education, including Professional Military Education (PME), to ensure the space cadre has an understanding of space activities and how space capabilities and applications are integrated into military operations.<sup>10</sup> In June 2003, the Secretary of the Air Force was designated as the DOD Executive Agent for Space with the Executive Agent (EA)

responsibilities delegated to the Under Secretary of the Air Force, in DOD Directive 5101.2. In that Directive, DOD components are tasked to:

Develop and maintain a sufficient cadre of space-qualified personnel to support their Component in space planning, programming, acquisition, and operations. Support the DoD Executive Agent for Space with space cadre personnel to represent their Component in DoD-wide planning, programming, and acquisition activities.<sup>11</sup>

In February 2004, the EA for Space published the Space Human Capital Resources Strategy (HCRS). The stated purpose was:

To establish the way ahead to synchronize the space cadre activities of the Department of Defense (DoD) and to integrate the space personnel career fields developed by the military departments and the intelligence community to the maximum extent practicable.<sup>12</sup>

Until 2005, the Under Secretary of the Air Force also served as the Director of the National Reconnaissance Office (NRO). According to DOD Directive 5101.2, the EA for Space reports to the Secretary and Deputy Secretary of Defense but is given no specific authorities relating responsibilities for a DOD space cadre. The first EA for Space was the Honorable Peter B. Teets, who saw his role as both the Under Secretary of the Air Force and Director of the NRO as vital to unity of effort within the space community. In an effort to conduct defensewide space cadre development, he established the Space Professional Oversight Board (SPOB), which is composed of the EA for space and senior representatives from the services and other agencies. The SPOB and Mr. Teets' support for space cadre develop resulted in the slow but steady growth and successes the services achieved through his retirement in March 2005. Mr. Teets' replacement, Dr. Ron Sega, did not assume duties as Under Secretary of the Air Force and EA for Space until August 2005. Dr. Sega was not assigned as the Director of the NRO. That position was given to Dr. Kerr as part of the restructuring of the intelligence community in 2005. Although the change allowed Dr. Kerr to place more emphasis on his duties as DNRO, the change had a negative affect on the unity of effort and cooperation Mr. Teets had fostered between DOD and the Intelligence Community. Little progress has been made to date in DOD objectives of synchronizing and integrating service space cadre efforts.

Along with the charting of the Space Commission, Congress required two Government Accounting Office (GAO) reports assessing DOD's strategy and military services' efforts to develop their space personnel. GAO's first report was issued in August 2004.<sup>13</sup> The second report was issued in September 2005. Both reports describe an overall lack of progress in developing a defensewide space cadre. DOD has continually fallen behind planned tasks. The GAO noted in 2005, "DOD has not issues detailed defense-wide guidance for providing

accountability by institutionalizing space cadre authorities and responsibilities of the Executive Agent and the services by requiring specific human capital development and management structure and functions.” There has been no new DOD guidance since. That is not to say there has not been progress in the development of each service’s space cadre, but that progress has come through the initiative of the services with little DOD support. In 2007, the future of each service’s space cadre and ultimately the effective plans, programs, and operations associated with space are at risk due to a lack of DOD focus.

### Service Successes

In the absence of cohesive DoD leadership, each service has pursued its own path toward building a space cadre. Each service has different roles and responsibilities with regard to space. Each service’s space cadre has unique characteristics, therefore, each service developed their own strategy for a space cadre and has had successes where they have placed emphasis based on service priorities.

### Air Force

The Air Force has responsibility for providing the preponderance of space capabilities. They have the responsibility for launch and operation of most DOD space systems. The space program budget comprises about 5.4 percent of DoD’s total funding.<sup>14</sup> The Air Force (AF) receives about 92.6 percent of that budget.<sup>15</sup> As such, the Air Force has a large portion of the money and personnel associated with space activities. They are responsible for the majority of space systems acquisitions. Therefore, they have unique requirements among services for their cadre. Their space professionals enter the service as space professionals and spend their entire career in the space career field. As such they are typically the most experienced space professionals in DoD. The Air Force has created a three level certification system with associated training, education, and experience requirements. They have established an office to oversee and administer their space professional cadre of over 7000 officers, enlisted, and civilians. The shortcoming of such a career is they have little experience with the operational land, sea, and air forces they support with their space systems. There is a danger that AF space professionals will develop and acquire future space systems without adequately understanding the requirements of their brothers and sisters in uniform. It is critical that the other services develop space cadres that will work with the Air Force space professionals to ensure the nation’s resources are being spent on the best possible capabilities for the joint warfighter.

In addition, the AF has established the National Security Space Institute (NSSI) to lead DOD training and education of a stronger, technically oriented space cadre. The NSSI is a multi-service unit supporting the requirements of all services, but is funded through Air Force Space Command (AFSPC). Until the NSSI is funded by and receives its requirements from DOD, the other services are largely dependent on AFSPC for space related training and education. AFSPC has not yet committed to meeting the training and education requirements of the other services, creating a level of uncertainty for the future of space training and education for the other services. The uncertainty of this critical training is a barrier to effective career path planning in the other services, particularly the Navy and Marine Corps who have few other resources available to train their space cadres.

## Navy

The Navy has an inherent deployed state of mind. It sees space as a key enabler of network-centric warfare and the FORCEnet concept. Although the Navy has equities in some space systems, like the UHF Follow-on satellites, the primary objective for the Navy space cadre is to optimize its operational use of space.

“The U.S. Navy needs a Space Cadre to understand and exploit space technologies, to know the “art of the possible,” and to enable Navy to influence the design of future space systems to solve critical warfighting gaps.”<sup>16</sup>

It is committed to developing and maintaining a sufficient cadre of space qualified personnel to support the Navy in space operations, planning, programming, budgeting, and execution.<sup>17</sup> A focal point for the Navy’s efforts is the Naval Space Campaign. The Naval Space Campaign is striving for a space-savvy fleet to better assess capability needs, express requirements, ensure S&T/R&D is directed at fleet capability needs, and ensure program offices correctly translate fleet requirements. It is doing that through an analysis of space utilization by a Carrier Strike Group (CSG). The Campaign is a coordinated effort between Command Naval Network Warfare Command (NNWC) and 2<sup>nd</sup> Fleet to determine the best operational use and organization of space within a Carrier Strike Group (CSG). The CSG is focusing on space through work-up training, CONOPS development, exercises, deployment, and post deployment After-action Reports (AARs). CSG-8 has been tasked to carry out the Naval Space Campaign. CSG-8 has a space professional in the G-3 with reachback to NNWC Operations Center manned by reservists when required. CSG-8 space has developed relationships with the Director of Space Forces and Joint Space Operations Center for reachback and coordination. The Navy has created a skill designator to identify its space professionals; but it is not a primary designator. As such, Navy space professionals have tended to get their first tour associated

with space at about the O-4/O-5 point of their career and rotate back to their primary designator. Few have served a second tour in a space related billet.

Navy space reservists are organized in the Space and Network Warfare Program (SNWP). These sailors are organized in such a way as to allow the commanders of the units to influence where each sailor's specialized skills can be used. If there is a major space exercise, an entire unit may support. If there is a small training requirement, one of two reservists may support. They are not limited by geography or unit. This has provided outstanding flexibility to the Navy. The Space and Network Warfare Program (SNWP) Reserves provide critical support to the Naval Space Campaign in all phases; training, CONOPS, and execution. Most SNWP members work in highly competitive space-related DOD jobs, which lends invaluable experience to the Naval Space Campaign. SNWP members have been instrumental in the Naval Space Campaign to date, including development of CONOPS for C2 of space capabilities for strike groups in theater.<sup>18</sup>

## Army

Like the Navy, the Army has equities in space systems. They are responsible for Defense Satellite Communications System (DSCS), the Joint Tactical Ground Station (JTAGS), and Blue Force Tracker (BFT). But, the primary objective for Army space professionals is support to its combat arms through its Army Space support Teams (ARSSTs) and Space Support Elements (SSEs). Army officers are given the opportunity to become space professionals, functional area 40 (FA-40), at their mid-career point. As such, they spend the beginning of their career in combat arms, combat support, or combat service support, but stay in a space career path once they become an FA-40. This gives the Army a pool of senior space professionals with significant space experience. Officers and enlisted are designated as space professionals with an 11-week training curriculum. The first four weeks of their 11-week training is at the NSSI. As such, the Army has the largest presence outside of the Air Force at the NSSI. ARSSTs are typically deployed at the Corps level and supported the Marine Corps' First Marine Expeditionary Force (I-MEF) during Operations Iraqi Freedom – 1 (OIF-1). The Army has also created SSEs to support the brigade and below.

## Marine Corps

The Marine Corps' needs for space capabilities are unique among the services. It is an expeditionary force with little equity in space systems and few resources. Space cadre development in the Marine Corps will have to come with no new force structure and little cost. National, DoD, and Department of the Navy policy support the development of a Marine Corps

space cadre. Marine Corps policy and doctrine advocate the capabilities space provides, but the strategy for developing a space cadre signed in December 2003, is the only documentation supporting space cadre development.

The Commandant's Planning Guidance 2006 states:

We must be able to rapidly adapt to broad strategic conditions and wide ranging threats.”<sup>19</sup> “Focus areas include; a MAGTF fully prepared for employment across the spectrum of conflict, modernize to be most ready when the Nation is least ready, and posture the Marine Corps for the future. This adaptability is a core competency and trademark of our Corps — and must remain so for generations to come. The Long War requires skillful strategic communications, cultural understanding, complex ethical decision-making, and combat power provided by “boots on the ground.” It demands flexible organizations that adroitly apply a mix of combat and non-lethal actions; interagency capabilities and joint warfare applications; innovative use of airpower; and synchronization of intelligence activities. For rapid integration of these capabilities, no other military formation is more prepared to execute the full range of counterinsurgency tasks than the Marine Air Ground Task Force (MAGTF) — our fundamental fighting organization. These efforts will ensure we continue to provide the joint force a unique, additive capability — one which is much greater than the sum of its parts. As we refine these capabilities within the MAGTF and integrate them with all the other elements of national power, we will further generate the institutional agility that has been the hallmark of our success.”<sup>20</sup>

Space plays a critical role in enabling “a MAGTF fully prepared for employment across the spectrum of conflict.” It enables adaptability, decisionmaking, flexible organizations, lethal and non-lethal actions, and the integration of the MAGTF with all other elements of national power. In the Commandant's words, “This adaptability is a core competency and trademark of our Corps — and must remain so for generations to come.”

The Marine Corps published a strategy for developing a cadre of space professionals in December 2003. It recognizes the importance of space operations and space-based capabilities to 21<sup>st</sup> century warfare and the need to create a Marine Corps cadre of space professionals. It articulates three goals for a cadre of Marines (active duty, reserve, and civilian) with a diverse set of primary Military Occupational Specialties who are:

- 1) Trained in joint space operations planning;
- 2) Educated in National Security Space activities; and
- 3) Experienced in space requirements generation, concept development, planning, programming, acquisition, and/or operations.”<sup>21</sup>

The strategy also articulates five strategic objectives in creating a Space Cadre:

- To support the vision and goals of *Marine Corps Strategy 21* by creating a cadre of Marines who understand both the capabilities of Marine Air-Ground Task Force and

the unique advantages to be gained by fully exploiting current and future space-based systems.

- To increase the integration of current and future space-based capabilities into Marine Corps systems to support the Corps' *Expeditionary Maneuver Warfare* capstone concept and to enable FORCEnet and the transformational naval operational concepts of *Sea Strike, Sea Basing, and Sea Shield*.
- To shape the development of future space systems to meet Marine Corps warfighting needs through increased collaboration with all National Security Space (NSS) partners.
- To increase the effectiveness of our operating forces through the more effective planning, integration, and coordination of space-based capabilities and assigned space forces.
- To increase the distribution of Marines with space training and experience throughout the operating forces to inject space knowledge at the unit level.<sup>22</sup>

The Marine Corps' initial steps toward developing a space cadre were to create two skill designators. The Space Operations Staff Officer MOS was initially designated as 9933, later changed to 0540. The Space Operations Officer was initially designated as 9666, and later changed to 8866. These skill designators give the Marine Corps the ability to identify and track Marines with the training and experience to fill applicable billets. Billets have been identified within the operating forces and the NSS community. When eligible officers are assigned to the applicable billets, space capabilities will be best leveraged to enhance USMC combat effectiveness. Following the identification of the skill sets required for the Marine Corps space cadre, training and education forums have been identified to teach those skill sets. The primary means of training Space Operations Officers, 8866, is the Naval Postgraduate School. Headquarters Marine Corps (HQMC) has worked closely with NPS to ensure the curriculum prepares graduates to serve in the billets needed. The primary means of training Space Operations Staff Officers, 0504, is the NSSI. The NSSI was established by Air Force Space Command (AFSPC) to meet the needs of the space community. It is a multi-service command with representation from the Army, Navy, and Marine Corps. HQMC has worked closely with the NSSI to ensure the training received meets Marine Corps requirements. Training, tracking, and assigning space professionals in the operating forces and NSS community have given the Marine Corps very positive progress toward effective use of space capabilities. During OIF, I-MEF had a space team as part of its G-3 section that consisted of space professionals from the Marine Corps, Army, and Air Force. Based on the success of those space professionals, the



Commanding General (CG) I MEF FWD identified space as a critical combat support enabler for MAGTF operations and requested increased permanent presence at the JFCC-S and on the Army Space Support Teams. The work of HQMC to identify billets for space cadre members, skills and training required, and the recognition of the importance of space by a MEF Commander represents an important milestone for the space community. It is now time to leverage the momentum and take greater steps toward improved space support and awareness throughout the Corps.

### Recommendations

The desired ends for the Marine Corps space cadre should be 1) to have a Marine Corps that understands how to fully integrate and utilize space capabilities in every aspect of MAGTF operations whether large scale operations, forced entry, distributed operations, or small units actions, and 2) to have a cadre of Marines who can work with other services and agencies to help them understand how best to use their capabilities to support Marines.

The ways to accomplish the desired ends have to be varied. Four specific recommendations are offered here. 1) Institutionalize the space cadre training, education, and assignments, 2) Develop a space cadre plan for the reserve forces, 3) Execute a MAGTF Space Campaign with objectives paralleling the Naval Space, and 4) Campaign Increase the level space training throughout the Marine Corps.

The first recommendation is to institutionalize current space cadre efforts. HQMC Plans, Policy, and Operations (PP&O), Space and Information Operations Branch (PLI) is the occupational field sponsor for the space cadre. PLI has identified space cadre members, space cadre billets, and training for the billets. Identifying members and billets is not effective unless the billets are staffed and assigned Marines are training prior to arriving in the billet. The Office of Manpower Personnel Management must get involved and be committed to assigning space cadre members to space cadre billets. As billets get staffed, MAGFTs will begin to see the value of space capabilities effectively integrated in operations. The next step is for Training and Education Command (TECOM) to recognize the training required for those billets and budget for training enroute to those billets. TECOM is the right organization to assume responsibility for ensuring continued effective training for the space cadre and appropriate space training for all Marines.

The second recommendation is a plan for space cadre reservists. Space Cadre reservists typically work in highly competitive space related civilian jobs. Reservists bring unique skill sets that should be considered for unique use. Space is inherently technical and interagency. They

bring years of space experience, relationships, and knowledge, few active duty officers can offer. They are typically the space cadre members with ongoing relationships and interaction with AF and Army space professionals with 10-plus years of space experience. They have gained the credibility within the space community to best leverage the entire space community capabilities on behalf of the Marine Corps. Just as important, reservists may have greater experience and credibility with the civilian community and understand the nuances of using civilian capabilities or the impacts of space control actions. A reserve structure that allows space cadre reservists to remain in space related organizations will allow reservists to maintain and leverage their skills, relationships, and knowledge most effectively. The relative youth of the space community and its technical nature lend it to faster changes than most other communities. A reserve tour that takes a Marine away from the space community significantly hampers effectiveness in the future. In contrast, a Marine who maintains his relationships within the space community, and supports Marines on a regular basis while drilling, is able to be immediately effective when called to support planning, exercises, or augment active duty units. Key to the success of such a space specific reserve unit or units would be maintaining currency and relevance to operating forces. This could be accomplished through tasks for operational support, training and exercise augmentation, and mobilization.

The third recommendation is a MAGTF Space Campaign. A common argument within the Marine Corps against greater emphasis on the space cadre is a lack of support from MAGTF Commanders. Space was been a transparent enabler but critical to battlefield success. A MAGTF Space Campaign would yield several benefits. It would aid in promoting greater understanding of how space provides effects in support of MAGTF operations. It would provide concrete data on the benefits of space, where space cadre members are most effective with the MAGTF organizations, and where future resources are needed to ensure MAGTFs are best utilizing space capabilities. Current operations in OIF with I-MEF Forward (I-MEF FWD) in Fallujah may provide similar information. I-MEF FWD currently has a space cell with Army, Air Force, and Marine Space Cadre members. Based on the success of space support in his unit, the Commanding General (CG) has requested greater Marine Corps involvement with ARSSTs and at the JSPOC. The drawback to referencing the success at I-MEF FWD is that it is focused on one fight and driven by one MAGTF Commander. A MAGTF Space Campaign would be sponsored by Headquarters Marine Corps (HQMC/PP&O), executed by a selected MAGTF, and briefed to the Commandant. Such a campaign would result in Marine Corps wide support and appropriate emphasis to institutionalize results.

The fourth recommendation is to increase the level of space training throughout the Marine Corps. Although space cadre members will bear the largest responsibility to integrating space capabilities into MAGTF operations, it is critical that space training is provided throughout the operating forces. Improved space operations PME for all Marine Corps officers would ensure future Marine Corps Leaders understand the importance and criticality of space capabilities. TECOM should be assigned the lead for this effort.

### Conclusion

The United States' ability to operate in space is critical to the security and well-being of the nation. Along with significant capabilities, space brings unique challenges. It is a unique medium we have little experience in. By its global, ubiquitous nature it inherently affects our military, civil, and commercial worlds. The keys to integrating space with all aspects of our lives are space professionals who understand the unique characteristics of space and users with a basic understanding of space capabilities. The military needs space professionals with the experience, knowledge, and credibility to develop plans, integrate space with operations, identify requirements, and develop policy, doctrine, and concepts of operation. DOD guidance and service strategies have recognized the need for space professionals with these skills. Each service has had varying degrees of success developing its cadre of space professionals. DOD has had little success synchronizing and integrating the efforts of the services. The Marine Corps has had success developing its space cadre, but now needs to institutionalize its successes and build on those successes by addressing the needs for a plan for reservists and the education on the Marine Corps as a whole. If the Marine Corps is going to be positioned for success in the battlefield of the 21<sup>st</sup> century, its leaders must embrace space capabilities. They must provide active support to institutionalize current space cadre efforts, assign space cadre members to MAGTF billets, better utilize space cadre reservists, and educate the MAGTF on space capabilities.

### Endnotes

<sup>1</sup> Commission to Assess United States National Security Space Management and Organization, *The Report to Assess United States National Security Space Management and Organization*, (Washington, D.C.: Commission to Assess United States National Security Space Management and Organization, 11 January, 2001) vii.

<sup>2</sup> U.S. General Accounting Office, *Defense Space Activities: Management Guidance and Performance Measures Needed to Develop Personnel*, (Washington D.C.: General Accounting Office, September 2005), 1.

<sup>3</sup> Commandant of the Marine Corps, "Marine Space Strategy for Developing a Cadre of Space Professionals," white letter no.06-03, Washington, D.C., 1 December 2003.

<sup>4</sup> Commission to Assess United States National Security Space Management and Organization, *The Report to Assess United States National Security Space Management and Organization*, p57.

<sup>5</sup> U.S. General Accounting Office, *Defense Space Activities: Additional Actions Needed to Implement Human Capital Strategy and Develop Space Personnel*, (Washington D.C.: General Accounting Office, September 2004), 1.

<sup>6</sup> U.S. Joint Chiefs of Staff, *Joint Doctrine for Space Operations*, Joint Publication 3-14 (Washington, D.C.: U.S. Joint Chiefs of Staff, 9 August 2002), IV-8.

<sup>7</sup> U.S. General Accounting Office, *Defense Space Activities: Management Guidance and Performance Measures Needed to Develop Personnel*, (Washington D.C.: General Accounting Office, September 2005), 2.

<sup>8</sup> U.S. General Accounting Office, *Defense Space Activities: Management Guidance and Performance Measures Needed to Develop Personnel*, (Washington D.C.: General Accounting Office, September 2005), 1.

<sup>9</sup> U.S. General Accounting Office, *Defense Space Activities: Management Guidance and Performance Measures Needed to Develop Personnel*, (Washington D.C.: General Accounting Office, September 2005), 1.

<sup>10</sup> U.S. Secretary of Defense Donald Rumsfeld, "National Security Space Management and Organization," memorandum for secretaries of Military Departments, Washington D.C., 18 October, 2001.

<sup>11</sup> U.S. Department of Defense, *DOD Executive Agent for Space*, U.S. Department of Defense Directive 5101.2 (Washington D.C.: U.S. Department of Defense, 3 June, 2003), 8.

<sup>12</sup> U.S. Department of Defense Executive Agent for Space, *Space Human Capital Resources Strategy*, (Washington D.C.: Department of Defense, February 2004), 2.

<sup>13</sup> U.S. General Accounting Office, *Defense Space Activities: Management Guidance and Performance Measures Needed to Develop Personnel*, (Washington D.C.: General Accounting Office, September 2005), Introduction.

<sup>14</sup> U.S. General Accounting Office, *Defense Space Activities: Management Guidance and Performance Measures Needed to Develop Personnel*, (Washington D.C.: General Accounting Office, September 2005), 6.

<sup>15</sup> U.S. General Accounting Office, *Defense Space Activities: Management Guidance and Performance Measures Needed to Develop Personnel*, (Washington D.C.: General Accounting Office, September 2005), 6.

<sup>16</sup> Network Warfare Command, *Navy Space Cadre Human Capital Strategy*, (Washington, D.C.: U.S. Department of the Navy, 27 December, 2004), 2.

<sup>17</sup> U.S. Department of the Navy, *Navy Space policy Implementation*, OPNAV Instruction 5400.43 (Washington, D.C.: 20 May 2005), 4.

<sup>18</sup> U.S. Department of the Navy, *Naval Space Campaign Plan*, (Washington D.C.: U.S. Department of the Navy, 13 November, 2005), 15.

<sup>19</sup> Commandant of the Marine Corps James T. Conway, "Commandant's Planning Guidance", Washington, D.C., 28 November, 2006, 1.

<sup>20</sup> Commandant of the Marine Corps James T. Conway, "Commandant's Planning Guidance", Washington, D.C., 28 November, 2006, 3.

<sup>21</sup> Commandant of the Marine Corps, "Marine Space Strategy for Developing a Cadre of Space Professionals," white letter no.06-03, Washington, D.C., 1 December 2003.

<sup>22</sup> Commandant of the Marine Corps, "Marine Space Strategy for Developing a Cadre of Space Professionals," white letter no.06-03, Washington, D.C., 1 December 2003.

