

**ARMY SPACE OPERATIONS ORGANIZATION:  
STELLAR SUPPORT FOR THE WARFIGHTER**

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## **Disclaimer**

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the U.S. Government, Department of Defense, the United States Army, the United States Air Force, or Air University.

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## *Abstract*

This study examines the evolution and current structure of Army space support operations in an effort to better understand how to improve space support as the Army transforms. Specifically, the author addresses the roles of Army Space Support Teams and the newly formed Functional Area 40 (Space Operations) officers being integrated into Army corps and U.S. Army Special Operations Command headquarters. The first three chapters are dedicated to setting the scope of the study and providing background information on the evolution of Army space support operations. The fourth chapter examines pertinent assumptions, considerations, and some possible options for future space support structure as the Army transforms its organization to adapt to a changing international security environment. The last chapter examines and compares the options outlined in Chapter 4 and, coupled with information presented throughout the study, offers recommendations and insights for the continued development of Army space support to field commanders.

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## **Chapter 1**

### **Introduction**

*The military cannot undertake any major operation, anywhere in the world, without relying on systems in space.*

The Phase III Report of  
*The United States Commission on National Security/21<sup>st</sup> Century*,  
15 February 2001

#### **Purpose**

The purpose of this study is to examine options for the Army to best organize to integrate space support to the Army commander in the field. Currently this is performed by Army Space Support Teams (ARSSTs), which are centrally located and controlled at Army Space Command in Colorado Springs, Colorado. This study will approach the subject by first examining some of the trends and pertinent issues in the evolution of the ARSST in Chapter 2. Chapter 3 examines the current state of Army space support, and Chapter 4 looks at options for future Army structure and organization to ensure integrated space operations. The concluding chapter, Chapter 5, pulls this information together to propose a direction for future development of Army space support organization.

#### **Importance**

This topic is important for several reasons. Current official policies, strategies, and security studies all note the globally increased use of military application of space assets.<sup>1</sup> Development, deployment, control, and availability of space capabilities are

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<sup>1</sup> Pertinent examples include comments in such official policy documents as the “National Space Policy,” National Science and Technology Council, The White House, 19 September 1996 and the Secretary of

problem in recording and collecting data on space support issues until recently. For example, a search for space support related topics at the Center for Army Lessons Learned in 1998 revealed only a handful of reports, which offered little substantive information.<sup>4</sup> Though the growth of documentation relating to Army space support issues is accelerating, the base literature available is found wanting. This work seeks to add to the scant literature on the subject, and serve as a point of departure for further discussion and study in a burgeoning section of the Army.

## Scope

This research is limited in scope to the direct integration of space support into the military decision making process (MDMP) and execution of the ground force commander's operations. The focal point for this integration is the corps headquarters and, in the case of special operations forces (SOF), U.S. Army Special Operations Command (USASOC). Although all Army units are able to task organize for specific missions, the unit-level that this integration usually occurs at is the corps headquarters in conventional units. The unit level of integration for special operations forces is more varied depending on mission priorities. It can occur at as low a level as directly to a Special Operations Forces Operational Detachment – A Team (SFODA). However, space integration from the Functional Area (FA) 40 (Space Operations) community to these units normally occurs through the USASOC headquarters.

Excluded from the scope of this paper is discussion on Theater Missile Defense (TMD) structure and organization. Although this subject is often intertwined with discussions of space support, current Army space operations leadership views Army TMD as outside their purview, and more in line with the Air Defense Branch of the Army. Although Joint Tactical Ground Station (JTAGS) systems are attached to 1<sup>st</sup> Space Battalion, when deployed they are integrated and controlled as part of the overall

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<sup>3</sup> “Army War Game Shows Need for U.S. to Assist Allied Missile Defense,” *Inside Missile Defense*. May 16, 2001, 1.

<sup>4</sup> “Space Warriors: The Army Space Support Team,” a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 4-11 – 4-12.

TMD umbrella.<sup>5</sup> In this regard, I have narrowed the focus of the paper to Army space integration and analysis in support of the Army Commander in planning and conducting maneuver-oriented operations. In this work, I will not address the issues of TMD, JTAGS, Airborne laser and other technical areas that can crossover to some degree into the FA 40 realm.

## **Sources of Information**

Despite the scarcity of information on the topic, several sources offer some level of detailed information on ARSSTs. *Space Warriors: The Army Space Support Teams*, was published jointly in 1999 by the U.S. Army Space and Missile Defense Command (SMDC) and the Science Applications International Corporation, and offers a detailed account of the development of the ARSST through 1998. It is based heavily on primary sources, and forms a foundation for much of Chapter 2. Likewise, the yet to be published Field Manual (FM) 40-2 (2d Draft), *Army Space Support Team Operations*, provided much of the information for Chapter 3, along with several recently released briefings and studies conducted at the bequest of Functional Area 40 (Space Operations). These studies also formed much of the information for Chapter 4. Most vital to Chapter 4, however, was information gained through attendance at the First Annual Army Space Operations Officers Conference held in Colorado Springs, Colorado from 22-23 March. In addition to the main conference schedule, I was able to attend a key senior Army space operations leader's seminar conducted in conjunction with the Space Officers' Conference from 20-21 March. These two events were the first time such a large number of the FA 40 Functional Area officers were gathered together to exchange information specific to Army space operations. As such, it offered a unique opportunity to record discussion on the future of Army space operations from the Army space operations community.

A strength of this study is the gathering and consolidating of information on the subject in a manner not achieved heretofore. This work tries to offer a blended use of sources that have been previously unavailable. This alone should make this work useful

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<sup>5</sup> Author's notes from the First Annual Army Space Operations Officers Conference, Senior Leaders Seminar, March 20-21, 2001 in Colorado Springs, Colorado.

to the continued study of organizing for Army space support. Another advantage to this work is that it approaches the topic from outside the FA 40 community. I began with few preconceived notions or feelings of “ownership” to any of the concepts espoused by Army space support leadership.

One disadvantage to the methodology of this study is the lack of information drawn from other Army branches in regard to their concern of redundancy of effort with the forming of FA 40. This was a controversial part of Army space evolution and, though not critical to my research, such information may highlight potential areas of controversy in the continued evolution of FA 40. However, the disagreements that I found were generally of the hearsay variety. Perhaps in the current environment of “political correctness,” few in leadership positions are willing to “air their dirty laundry” for publication. However, I believe a focused social science study into this area, which is beyond the scope of my research, could yield some worthwhile insight into the bureaucratic processes in Army space support organization evolution.

### **Research Goals**

The goal of my research was to provide the reader an opportunity to increase his or her personal knowledge and understanding of Army space support organization and related issues. From a personal standpoint, I used this study as a vehicle to broaden my own understanding of these issues. The primary audience for this paper is the Army leadership. Grasping the importance of the integrated space support will prove a crucial part of transforming the Army over the next few decades.

## Chapter 2

# EVOLUTION OF ARMY SPACE SUPPORT OPERATIONS

*Space is the highest hill around, but since it does not have dirt on it too many in the Army are not prepared to deal with it.*

Ed Kiker, Army Space Institute, 1992

### Introduction

This chapter outlines the development of the use of space capabilities in support of U.S. Army operations. The focus is on the significant events of the past decade, beginning with the impetus given space support to warfighters following Operations Desert Shield and Desert Storm. I will also address more recent developments in the evolution of U.S. Army space organization evolution. I will especially focus on those organizational developments formed specifically to provide space support to the Land Component Commander and warfighter at the corps and division level.

The basic unit for Army space support integration at the end of the last decade was the Army Space Support Team (ARSST); its development is especially key for discussions in the following chapters. The purpose of this chapter is to outline the issues surrounding the evolution of Army Space Operations in the last twelve years or so, and discuss how the past might affect their continued evolution into the future.

### **The Clamor for Space Support and the Fall of the Evil Empire**

The beginning of post-cold War era saw a reshaping of the entire U.S. military, a time reminiscent of the years following the end of both World Wars. However, in the developing ‘new world order’, it became apparent that the U.S. armed forces would play an active, engaged part. As the political and military leaders searched for paths to reduce

the size of the Department of Defense, space beckoned for a chance to loose the reins of monetary constraints and show its full potential.

Alasdair McLean, an expert in military space issues, noted the fascination with space by some security-minded and military professionals as a natural extension of the timeless “pursuit of the high-ground” by military commanders. This ‘key terrain’ served in obtaining reconnaissance, assisting in securing better lines of communication or providing an ideal location from which to attack. On the global battlefield facing today’s international security issues, space had become the “ultimate high ground.” McLean states that “command of, and the ability to make use of the space environment, has become a fundamental part in the defense planning of all the major military powers.”<sup>6</sup> McLean echoes many of today’s military strategists in espousing the Gulf War as the first “Space War”, with capabilities provided by satellites proving a critical factor in the success of the coalition forces. He goes further by suggesting the most significant impact of the conflict was to “bring home to low-level commanders the centrality of facilities which can only be provided via that utilisation (sic) of space in the ultimate success of the operation.”<sup>7</sup>

Although the above is probably overstated, the essence of McLean’s statement was not completely lost on the U.S. military, though many in the Army have been slow to grasp the true potential and inevitable permeation of space capabilities into military operations. Forming a foundation for what would later become Army Space Support Teams (ARSSTs), U.S. Army Space Command (ARSPACE) stated that Operation Desert Storm had demonstrated the need for “the Army to activate a dedicated space support organization capable of providing on-site training and operational support to units deployed in a theater of operations.”<sup>8</sup> Some key leaders in the Army, spurred on by U.S. Space Command (USPACECOM) and ARSPACE early in the last decade, had begun to cast their support in favor of expanding space support for the Army warfighter. In a study conducted in 1993, over 100 Army personnel from “senior Army leadership on the Army Staff to the soldiers and civilians in almost all of the schools and centers” were

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<sup>6</sup> Alasdair McLean and Frasier Lovie, *Europe’s Final Frontier*. (Commack, N.Y.: Nova Science Publishers, 1997) 1.

<sup>7</sup> Ibid, 1.

interviewed on their view of the future of space in Army operations. “The majority of personnel interviewed voiced a concern for lack of commitment by the Army senior leadership to exploiting the use of space, despite an apparent growing dependence on space products for contingency operations.” The study attributed much of this concern to “the elimination and downsizing of space-oriented organizations and reduced funding for space activities since Operation Desert Storm.”<sup>9</sup>

Facilitating an emphasis on Army space support required the development of an adequate structure and organization to provide support, developing and acquiring the appropriate equipment, educating the Army on space support integration, and serving as visionaries for Army space initiatives. USSPACECOM history reflects this in showing how the space community “embarked on a major effort to incorporate space systems into the operations and contingency planning arena.”<sup>10</sup>

### **USSPACECOM Impact on the Evolution of Army Space Support**

As the military began to grapple with the changing international security environment following the Cold War, issues that threatened funding and organization structure for direct space support of Army units emerged. Draft copies of the 1992 Roles and Missions Report “proposed Air Force assumption of the principal role of military space operations,” with the subsequent “dissolution of the Army and Navy Space Commands.” To many, these recommendations “demonstrated, that despite the successes of space systems in the Gulf War, space as a mission and important functional contributor to national security, was still little understood and not widely appreciated.”<sup>11</sup> This could have been due in part to the high level of secrecy involved in space operations that has historically served as an obstacle to integrating space support to the warfighter.<sup>12</sup> Also revealed in the review was the understanding that the demise of the Soviet Union would manifest itself in the Defense Department as a reduction in funding. As the DOD

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<sup>8</sup> Field Manual 40-2, *Army Space Support Team Operations*, ( Second Draft) (Washington, D.C.: Headquarters, Department of the Army, April 2001), 1-7.

<sup>9</sup> “Study of U.S. Army Space Program Organization and Structure,” prepared for Commander, U.S. Army Training and Doctrine Command by Science Applications International Corporation (1 Sep 1993), 9.

<sup>10</sup> *USSPACECOM 1992 Historical Summary* (U), (Headquarters, US Space Command Office of History), 17. (Secret - NOFORN) Information extracted is unclassified.

<sup>11</sup> *Ibid*, 10. Information extracted is unclassified.

continued its draw down, space modernization projects would likely feel the sting of the auditor's pen. Another issue brought to light was the Defense Information System Agency (DISA) opposition to USCINCSpace's efforts to transfer the Defense Satellite Communications System (DSCS) to ARSPACE. DISA claimed the DSCS as a "common-user C2 system," and the fact that it required satellites in space as merely incidental.<sup>13</sup>

Within the USSPACECOM community, it is important to note the high priority (second only to the Follow-on Early Warning System) given to MILSATCOM in 1992. This priority was driven by the unified CINCs and their dawning realization of the potential of space communications in joint warfighting, especially in the face of increasing requirements for worldwide deployments in the emerging international security environment. This showed, through the credibility of the purse, that military leadership within USSPACECOM was serious about sharing the wealth of access to space capabilities with the warfighter. Furthermore, the USCINCSpace MILSATCOM Roles and Responsibilities Review in 1992-93 identified the importance of advocating space systems that could support CINC requirements.<sup>14</sup>

The idea of focusing space support to the warfighter's needs rather than just the pursuit of advanced space technologies continued to gain precedence. Influenced by problems with coordinated space support in the Gulf War, General Charles Horner, upon becoming USCINCSpace on 30 June 1992, specifically demanded that space become oriented to supporting the war fighter. He began a proactive campaign to integrate space into the "theater warfighting support role," setting the stage for future debates on space roles and missions.<sup>15</sup> As even further cuts in military spending loomed on the horizon, proper organization to pursue this directive efficiently continued to vex USSPACECOM and the service component space commands. USSPACECOM, in response to the stated need to educate CINCs on the importance of space support, published "Space Support to the Warfighter" in December 1992. This codified a change in focus from "post-war

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<sup>12</sup> Charles Horner, General USAF (retired). Interview with author on 16 February 2001 via e-mail.

<sup>13</sup> Ibid, 5. Information extracted is unclassified.

<sup>14</sup> *Command History, United States Space Command: January to December 1992, Narrative (U)*, (Headquarters, US Space Command Office of History), 13. (Secret - NOFORN) Information extracted is unclassified.

assessment to a catalog prepared in layman's terms that could be used by war and contingency planners from other commands."<sup>16</sup> USSPACECOM continued to sponsor initiatives to enhance space support to the warfighter. These included emphasis on education to the theater CINCs through the continued use of liaison teams and integration of space capabilities into the professional military education system across all of the services. It also encompassed a focus on developing Joint Doctrine for military space operations.<sup>17</sup>

### **Evolving Organization and Roles Within the Army: SMDC**

Overall U.S. Army involvement in space traces its roots back to post World War II organizations focused on countering the emerging threat symbolized by the German V-2 rocket. From this inauspicious beginning, the pinnacle in the Army's pursuit of exploiting the advantages of space capabilities was embodied in the U.S. Army Space and Missile Defense Command (USASMDC or SMDC). SMDC served as the Army Major Command "focused on exploring and exploiting space and meeting the missile defense challenges..." As such, SMDC provided the organizational umbrella for all Army Space related operations, acquisition and doctrine. The following shows the evolution of various commands developed to coordinate the pursuit of Army space exploitation.<sup>18</sup>

- 1946 - Army Air Defense Command
- 1957 - Redstone Antimissile Missile System Office, NILE-ZEUS Program
- 1969 - Safeguard System Command
- 1973 - Army Space Program Office
- 1974 - Army Ballistic Missile Defense Organization
- 1985 - Army Strategic Defense Command
- 1988 - Army Space Command
- 1992 - Army Space and Strategic Defense Command
- 1997 - US Army Space and Missile Defense Command

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<sup>15</sup> *USSPACECOM 1992 Historical Summary* (U), (Headquarters, US Space Command Office of History), 24. (Secret - NOFORN) Information extracted is unclassified.

<sup>16</sup> *Command History, United States Space Command: January to December 1992, Narrative* (U), (Headquarters, US Space Command Office of History), 185. (Secret - NOFORN) Information extracted is unclassified.

<sup>17</sup> *USSPACECOM 1992 Historical Summary* (U), (Headquarters, US Space Command Office of History), 18. (Secret - NOFORN) Information extracted is unclassified.

As the parent unit of all U.S. Army space related units and activities, SMDC (and its precursors prior to 1997) was responsible for developing the organization, capabilities, and doctrine to integrate space into the Army warfighter mission. For this purpose, ARSPACE, under the split leadership of USSPACECOM and SMDC, seemed the appropriate command based on inherited missions and structure, and geographical and organizational placement within the DOD space community.

### **U.S. Army Space Command Comes of Age**

U.S. Army Space Command (ARSPACE) was established as a full command on 7 April 1988. It replaced the Army Space Agency with its command headquarters located at Peterson AFB, Colorado, and consisted of 101 authorized billets. ARSPACE “was organized as a Field Operating Agency of the office of the Deputy Chief of Staff for Operations” (DCSOPS).<sup>19</sup> As a formal command, ARSPACE roles and mission were clearly delineated:

- provide for DOD space system support to land forces and strategic defense operations.
- ensure integration of Army requirements.
- respond to USCINCSpace directed taskings.
- command assigned forces.
- conduct planning for DOD space operations in support of Army strategic, operational, and tactical missions.<sup>20</sup>

The ARSPACE mission was to “assure access to and use of space capabilities to enhance the accomplishment of Army missions.”<sup>21</sup> ARSPACE was responsible for several critical missions within the USSPACECOM architecture. Its principal mission was considered to be “assuming responsibility for operating and maintaining the worldwide Defense

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<sup>18</sup> “US Army Space and Missile Defense Command Strategic Plan,” September 1999.

<sup>19</sup> *Command History, United States Space Command: January 1987 to December 1988* (U), (Headquarters, US Space Command Office of History), 13. (Secret - NOFORN) Information extracted is unclassified.

<sup>20</sup> *Ibid*, 14. Information extracted is unclassified.

<sup>21</sup> *USSPACECOM 1992 Historical Summary* (U), (Headquarters, U.S. Space Command Office of History), 7. (Secret - NOFORN) Information extracted is unclassified.

Satellite Communications Systems” (DSCS),<sup>22</sup> with a look to shouldering responsibility for all associated DSCS operation centers by the end of the decade. In 1992, it “operated and maintained the DSCS system and managed the development of operational concepts for the anti-satellite and ballistic defense systems.”<sup>23</sup>

USARSPACE established a detachment responsible for performing payload and platform control, initial on-orbit checkout and anomaly resolution operations for the satellites forming the Global Positioning System (GPS). Additional responsibilities included supporting USCINCSpace with operational responsibility for two space surveillance radar sites, and input into USSPACECOM’s ballistic missile defense concept of operations. ARSPACE was also given administrative control of a detachment at the NASA-Johnson Space Center, which supported manned space efforts. It is interesting to note that part of this team’s purpose was to “enhance the Army’s ability to execute Airland Battle Doctrine using manned space capabilities.”<sup>24</sup> This demonstrated a vision for the potential of space capabilities not echoed through much of the Army.

### **ARSST: Fertilization**

The year 1986 saw the first substantial organized efforts to integrate space systems and technologies in support of tactical operations in the US Army. That year the Army activated the Army Space Institute (ASI) as a proactive organization to pursue this integration through demonstrations and on-site training to Army units. The growth in this organization and its pursuit of space integration in the four years prior to the Gulf War proved its worth on the field of battle.<sup>25</sup>

The Gulf War seemed to be one of those moments in history where technology and contextual elements of a conflict seem to marry perfectly on the time graph of history. The desert environment made navigation by conventional maps extremely difficult over even relatively short distances. The realization that GPS could provide a

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<sup>22</sup> Ibid, 14. Information extracted is unclassified.

<sup>23</sup> Ibid, 7. Information extracted is unclassified.

<sup>24</sup> *Command History, United States Space Command: January 1987 to December 1988* (U), (Headquarters, US Space Command Office of History), 15. (Secret - NOFORN) Information extracted is unclassified.

<sup>25</sup> “Space Warriors: The Army Space Support Team,” a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 1-23.

huge advantage over Iraqi forces motivated the Defense establishment to field GPS receivers to the lowest levels of the Army. It also accelerated the development of tactics for all branches of the military to maximize the advantages of satellite-based GPS navigation and precision guided munitions (PGMs). Also important was the proliferation of satellite communications technology to cover the great distances between units greatly separated in the field, as well as with theater level contact with CONUS. Space assets also produced satellite multi-spectral imagery and satellite-based weather reporting, both crucial for addressing operational concerns.

As the Army's first extensive combat experience with space support for tactical operations, the Gulf War proved significant for several reasons. First of all, the systems worked. Even the lowest levels of command witnessed the efficacy of space capabilities in supporting their operations. As with the rapid increase of computers, the Internet, and global information sharing, the potential for technical improvements and availability of space capabilities was stunning. To fully harness this potential would require a cadre of space specialists to stay abreast of the latest advances and study how to best integrate current and future capabilities. To capture the support of the Army as a whole, it would be necessary to develop teams to provide support and education on integrating space assets to operational units to enhance their missions and training.<sup>26</sup>

### **ARSST: Gestation**

Using the Louisiana Maneuvers program as a test bed, the Army evaluated evolving tactics, equipment and doctrine in 1993 and 1994. Outcomes showed what had been foreshadowed in Desert Storm: exploiting space capabilities was a significant combat multiplier available to the ground force commander. Other deployments in support of peacetime worldwide operations begin to show that the Army Space Exploitation Demonstration Program developed to provide this support to Army units was not organized or funded to meet the growing demands. One course of action to fix this problem was offered under the auspices of the Contingency Operations (Space), or COPS, program in 1994. This consisted of "off-the-shelf" equipment acquired under the

Commercial Space Package, and was manned by ARSPACE personnel ready to deploy in 48 hours in support of Army operations at the JTF or Army Headquarters level.<sup>27</sup> This marked a major shift in previous Army space initiatives focused more on training than true space support. COPS had an unprecedented stability in manning and continuity in training that allowed it to integrate more easily into field unit operations. COPS would soon change its name to become the first Army Space Support Team, but remain virtually unchanged in organization and mission.<sup>28</sup>

### **ARSST: USSPACECOM as Midwife?**

From U.S. Space Command, the Army received the urging needed to finally form true ARSSTs. Following General Horner as CINCSPACE, General Joseph Ashy continued the emphasis for support to the warfighter. In particular he addressed the problem of division between the principals in USSPACECOM, and with USSPACECOM's interaction with other services, agencies and activities. In October 1994, as CINC USSPACECOM, he directed a closer relationship between the unified command and its service components. On this basis, the services activated Space Support Teams of various sizes and missions to focus space support with each service.<sup>29</sup> Soon after, USSPACECOM begin deploying teams to the theater CINCs to demonstrate and educate the CINCs and staffs on current and developing space capabilities.<sup>30</sup> Within ARSPACE, 3-5 man ad hoc teams had already been deploying in support of relief operations since the end of the Gulf War. In 1992 alone, they deployed to Florida in response to Hurricane Andrew, to Guam for Typhoon Omar, and to Hawaii for Hurricane Iniki. ARSPACE teams provided commercial satellite communications terminals to aid

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<sup>26</sup> "Space Warriors: The Army Space Support Team," a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 1-24.

<sup>27</sup> Ibid, 2-25

<sup>28</sup> Ibid, 2-25.

<sup>29</sup> "Space Warriors: The Army Space Support Team," a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 1-1.

<sup>30</sup> *USSPACECOM 1992 Historical Summary* (U), (Headquarters, US Space Command Office of History), 18. (Secret - NOFORN) Information extracted is unclassified.

in command and control aspects of these relief efforts.<sup>31</sup> The teams served as a base of knowledge and demonstrated their usefulness in furthering space support team development.

In response to General Ashy's 1994 directive, the "Army Chief of Staff gave verbal guidance that led ARSPACE to establish the means to provide the space support mission..." To comply with this guidance the Deputy Chief of Staff for Operations (DCSOPS) "directed ARSPACE to create a contingency support element to reinforce corps and division contingency packages. Additionally, this entity could also be committed to the theater Army component commander to increase his operational capability."<sup>32</sup> This derived from General Horner's emphasis on providing more dedicated and coordinated space support to the warfighter than was provided in the Gulf War. Though Horner recognized the contribution of space support toward the final outcome of the war, he knew that a coordinated effort in developing space support could result in even greater advantages in future conflicts. By September 1994, Air Force Space Command had initiated the development of Forward Space Support in Theater teams in effort to coordinate space efforts in theater. Inexplicably, these teams had little interaction with COPS (later ARSST). Furthermore, "no formal coordination mechanisms for joint operations were incorporated into the ARSST CONOPS, Standard Operating Procedures, or training programs,"<sup>33</sup> a situation that is still mostly unresolved today.

### **ARSST: A Star is Born**

The Commander, ARSPACE, formally approved the ARSST Concept of Operations on 20 April 1995<sup>34</sup>, though the first ARSST teams officially deployed in

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<sup>31</sup> *Command History, United States Space Command: January to December 1992, Narrative* (U), (Headquarters, US Space Command Office of History), xxiii-v. (Secret - NOFORN) Information extracted is unclassified.

<sup>32</sup> Field Manual 40-2, *Army Space Support Team Operations, Second Draft* (Washington, D.C.: Headquarters, Department of the Army, April 2001), 3-1.

<sup>33</sup> "Space Warriors: The Army Space Support Team," a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 2-23.

<sup>34</sup> *Ibid*, 3-2.

support of units on 1 January 1995.<sup>35</sup> This name change was directed by USSPACECOM in part to more accurately depict the true command and control relationship of COPS to the Headquarters of the Department of the Army and not USSPACECOM.<sup>36</sup> Initially there were three teams stationed at ARSPACE in Colorado Springs, Colorado, one each aligning with EUCOM, PACOM and CENTCOM. Due to heavy demand from the XVIII Airborne Corps and Army special operations forces, one team was forward deployed to Fort Bragg, North Carolina. A continuing complaint from these units was the lack of space support expertise on a daily basis,<sup>37</sup> a problem that would affect a thinly staffed ARSPACE through the rest of the decade.

The search for solutions to solve this issue highlighted problems key ARSPACE and Army leaders would continue to face. Limited funding meant a never-ending struggle to acquire and maintain adequate equipment to fully support all Army Corps and Joint Task Forces. Also identified were the difficulties in educating team members on the latest advances in space technology, which continued to accelerate at a dizzying rate. These issues supported the plan to colocate teams at ARSPACE and forward deploy them on a prioritized schedule to support fielded units.<sup>38</sup> BG Frank H. Akers, Jr., XVIII Airborne Corps Chief of Staff, addressed the other side of the space support problem when he stated “to realize the full potential of the ARSST concept, the team must be integrated into the day-to-day activities of the Corps’ various garrison, readiness and contingency training functions and requirements.” He emphasized his point by adding “we must train with the ARSST the way we will fight!”<sup>39</sup> a sentiment that seemed integral in General Horner’s focus on space support to the warfighter. This sentiment carried the day, and in August 1995 one ARSST was forward-deployed to Fort Bragg, NC.<sup>40</sup> But lack of emphasis for funding and growth, along with the problem of

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<sup>35</sup> Ibid, 3-1.

<sup>36</sup> Ibid, 2-23.

<sup>37</sup> Ibid, 3-6.

<sup>38</sup> Ibid, 3-7.

<sup>39</sup> Memorandum, BG Frank H. Akers, Jr., XVIII Airborne Corps Chief of Staff, to Commander, U.S. Army Space Command (FWD), Subject: Attachment of an Army Space Support Team (ARSST) to HQ XVIII Airborne Corps. Undated. This document was transmitted to U.S. Army Space command by facsimile on 9 May 1995.

<sup>40</sup> “Space Warriors: The Army Space Support Team,” a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 3-8.

maintaining top-notch expertise on evolving technology, impeded the level of continuous support to the field units.

### **ARSST: Baby Steps**

In the following year, ARSPACE set out to correct ARSST deficiencies uncovered in its first full year of operations. An overarching concern was that ARSPACE through the ARSST was “not truly providing a value-added to the supported unit.”<sup>41</sup> An ARSPACE command briefing highlighted this issue making the claim that “the Army views our capabilities with interest but has not really wanted them in TF XXI or Bosnia and, as a result, doesn’t have the best (space support) that is currently available.”<sup>42</sup> Because the field units approached space integration half-heartedly, ARSSTs were doomed to marginal success. Corrections to resolve identified weaknesses revolved around three issues: increasing ARSST manning and equipment to realistically support two simultaneous major regional conflicts; continuing to upgrade to emerging systems; and changing the ARSST focus to “space advisory and liaison functions.”<sup>43</sup> In pursuit of this vision, the ARSST concept of operations in 1996 underwent several major changes. First, the three ARSSTs expanded their affiliation to combatant commands to include USACOM and SOUTHCOM, with two teams now responsible for two combatant commands and one team aligning solely with PACOM. In the midst of these transitions, in July 1996 the ARSST consisted of the following organization:

- Headquarters section (3 personnel)
- CENTCOM team (2 personnel)
- EUCOM team (4 personnel)
- PACOM team (4 personnel)
- XVIII Airborne Corps/Special Operations team (3 personnel)<sup>44</sup>, which was forward deployed officially by MOA in March 1996.<sup>45</sup>

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<sup>41</sup> Ibid, 3-12.

<sup>42</sup> U.S. Army Space Command Briefing, “Put Space Capabilities in the Hands of Warfighters Today,” dated 8 January 1996.

<sup>43</sup> “Space Warriors: The Army Space Support Team,” a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 3-10.

<sup>44</sup> “Space Warriors: The Army Space Support Team,” a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 3-11.

<sup>45</sup> Ibid, 3-18.

This organizational focus on Combatant Commands withered under the second change, an organizational restructuring to field an ARSST affiliated with each of the four Corps headquarters. The last major change included a new focus on special operations forces, resulting in an additional ARSST fielded to support these units.<sup>46</sup>

### **ARSST: Toward Maturation**

Through 1996 into 1997, ARSPACE continued to struggle with determining the organization and structure of ARSST to best support Army field units. “One of the defining moments ... was the development of a briefing for the SMDC Commanding General on a variety of concepts for ARSST reorganization and future operations.”<sup>47</sup> This briefing offered a unique glimpse of the ideas on restructuring ARSSTs and proposed six alternative organizational changes, as well as examining the “value-added” benefits of space integration to field units and a vision for future efforts. The advantages of ARSST were summarized as: bringing satellite information to the warfighter through “off-the-shelf” technology, involving the supported units in developing “statements of need” for space products, providing a “reachback” point-of-contact for support and maintenance, and continuing to educate the field in space capabilities. The future efforts for ARSST and ARSPACE were outlined in the briefing as increasing joint interoperability; providing seamless support down to the division; providing ‘one-stop-shop’ capability with weather, imagery, missile defense, space expertise, and communications; merging state of the art technology; continuing to enhance black and white space integration; and space education.<sup>48</sup>

The six alternatives for reorganization included the following:

- Option 1 - maintaining the status quo
- Option 2 - deploying all ARSSTs forward
- Option 3 - forward deploying only liaison officers (LNOs)
- Option 4 - rotational deployments of ARSSTs
- Option 5 - forward deploying ARSSTs for V Corps (Germany) and XVIII Airborne Corps

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<sup>46</sup> Ibid, 3-11.

<sup>47</sup> Ibid, 3-30.

<sup>48</sup> “Space Warriors: The Army Space Support Team,” a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 3-31.

- Option 6 - rotational deployments of LNOs.

These options were evaluated using the criteria of space education, maintaining a technical base, tailoring support to the field, planning response, execution response, command and control, operations tempo (OPTEMPO) levels for deployment, reorganization costs, and annual costs. Under the study's measures of merit, options that allowed most teams to remain located at ARSPACE provided advantages in space education, maintaining a technical base, tailoring support, centralized command and control, and cost. Execution response and planning response to the units would suffer, but options that utilized LNOs would greatly lessen planning response limitations. For this reason, the briefing favored Options 3 and 6 as the best, preferring "growing" and shaping emerging space capabilities over immediate capability in the field. Of these two options, the briefing recommended Option 3 based on the need to minimize reorganization and lower annual operating costs.<sup>49</sup> This emphasis conjures up arguments surrounding the developing US Army Air Corps during the interwar years, looking to "what could be" rather than present concerns of support in a relatively benign security environment.

### **Army Space Support Cell**

The six options proposed in the briefing to the SMDC Commanding General are important for highlighting issues of organization during a very volatile time for Army space support operations. These were soon superseded by the decision to activate an Army Space Support Cell (ASSC). The primary function of the ASSC was to provide connectivity for ARSST teams to ARSPACE assets, to include logistical support. It also served a coordination function with joint and component organizations.<sup>50</sup> At the Corps/Division level, "the ASSC integrates into the Corps or Division staff and planning process the ARSST. The ASSC integrates space analysis into the supported decision

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<sup>49</sup> U.S. Army Space Command Briefing, "Forward Deployment of ARSST: A One Stop Shop is Our Goal," undated.

<sup>50</sup> "Space Warriors: The Army Space Support Team," a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 3-41.

making process providing value-added products and services.”<sup>51</sup> The ASSC filled some of the critical staff functions that had become burdensome and distracting to ARSSTs from their technical support missions. It also signified the continued growth of space integration into the field units.

Into 1998 the ASSC concept evolved under the rigors of exercise and testing. This period witnessed a string of successful deployments of independent ARSSTs and ASSCs in terms of the supported unit’s satisfaction. It also demonstrated a growing niche for space capabilities within the supported unit’s planning and execution processes. This year also gave rise to an emphasis on more formalized ARSPACE training, both internally and in conjunction with supported units.<sup>52</sup> Internal reviews and long range planning for ARSPACE centered on several issues for future reorganization. In regard to ASSCs, recommendations surfaced to emphasize the following:

- forward deploying two ASSCs by the year 2000.
- designating ASSC as the focal point for ARSPACE input in theater planning.
- integrating ASSC into the Theater Crisis Action Team.
- assigning ASSC the mission to plan for the support requirements of SMDC assets in theater.
  - ASSCs conduct formal training of in-theater staffs when ARSSTs are not aligned to those units.
  - ASSCs participate in Theater exercises,
  - establish an ARSPACE Battle Staff to support military operations with space assets and products.

In conjunction with these efforts, ARSPACE’s focus for the ARSST in the near term included greater involvement with major Battle Command Training Program (BSTP) exercises and Combat Training Center (CTC) rotations, acquiring improved equipment, focusing on training, coordination with other Space Support Teams for mutual growth, and providing a system for feedback for requirements from the field to ARSPACE.

During the evaluations of these issues, the ARSST forward-deployed to Fort Bragg was returned to Colorado Springs under the mutual agreement of ARSPACE and XVIIIth Airborne Corps. The primary reasons cited were to allow for better on-site training for ARSST team members; better maintenance of high-tech, low-density, high-

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<sup>51</sup> U.S. Army Space Command Briefing, “ASSC: Army Space Support Cell,” January 1998.

value equipment; and to enhance centralized control by ARSPACE. This last concern stemmed from an unusually high operations tempo for the team as it responded to support requirements from the corps headquarters, four divisions, and USASOC.<sup>53</sup>

## **Conclusion**

This chapter recounted the evolution of Army organizations in the quest for effectively and efficiently integrating space support to fielded units. The process of evolution of Army space organization proved to be less than ideal due mainly to the constraints placed on the entire military during the drawdown following the dissolution of the Soviet Union. Another factor was convincing all the leadership in the Army of the true potential of space support to Army operations. Pivotal events, such as the proliferation of space technology adequate to support Army operations and their demonstration in the Gulf War, did accelerate the process. Uncoordinated efforts by agencies in USSPACECOM and continual advances in capability also led to undue turbulence in Army space support evolution.

As shown in the following chapters, this evolution shows little sign of slowing as key Army leaders and organizations address the increasing demand for space support. The focal issue continues to be to provide highly trained experts with the most advanced technological equipment.

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<sup>52</sup> "Space Warriors: The Army Space Support Team," a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 3-49.

<sup>53</sup> "Space Warriors: The Army Space Support Team," a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 3-52.

## Chapter 3

### CURRENT ORGANIZATIONS AND ROLES

*The customer of Space is not the satellite manufacturer, the satellite producer. The customer of Space is the soldier in the fox-hole, the sailor on the bridge of a ship, or the pilot in the cockpit. We need to get Space to come together as a team that satisfies the needs of the customer.*

General Horner, USCINCSpace, 1992

*Even today it would be impossible for the Army to fight without...space capabilities.*

Colonel Glen Collins, Director of the Force Development and Integration Center,  
U.S. Army Space and Missile Defense Command, May 2001.

### Introduction

By 1998 the ARSSTs had reached a relatively stable level of maturity to provide consistent, effective support focused at the Army corps level. I have taken the period of 1998 through 2000 as a window to examine the current state of space support to the Army for several reasons. This period included the implementation of Space Operations Officers at the corps level (and SOF units). Furthermore, it witnessed the official recognition of the Functional Area (FA) 40 Space Operations Officer within the Army's OPMS XXI system, as well as the activation of the 1<sup>st</sup> Space Battalion in Colorado Springs, Colorado. This snapshot of the structural evolution of Army space operations will provide a basis for examining future organizational options to be discussed in Chapter 4. Much of the information obtained in late 2000 and early 2001 is focused on future force structure, also addressed in Chapter 4.

This chapter describes and evaluates the structure of Army organization in regard to integrating space operations into the planning and execution cycles of Army maneuver units. Specifically, I will look at the Army Space Support Team (ARSST) in the Army Space Support Company (ARSSC) and the Space Operations Officer (SOO) embedded in the supported unit's headquarters. This chapter also attempts to establish the wider view of where the ARSST and SOO fit into the larger Army and DoD space organization. A first step is to examine the implementation of the FA 40 space operations functional area.

### **FA 40: Space Warrior Incarnate?**

In 1999, the Army officially recognized Functional Area 40 (Space Operations) as a part of the Career Field Designation process. This was done in recognition of the increasing need for dedicated space operations officers to assist Army commanders in exploiting space system capabilities. The Space Operations Support Study notes that the “the Space Operations Officer embodies other initiatives to improve space support to the Warfighter. The Space Operations Officer will serve as a permanent member on staffs at Corps and Division-levels.”<sup>54</sup> The study goes on to state that

to integrate fully the range of space capabilities in the transformation force, the initial, interim and objective forces will need space-literate personnel who can provide enhanced access to space-derived information from the full range of military, national, civil and commercial space segments. The Army recently established functional area (FA) 40 (space operations) to provide a career path for officers to specialize in space operations. This corps of officers will provide space expertise to tactical, operational and strategic staffs, and will be able to articulate Army space requirements and capabilities in joint and national forums.<sup>55</sup>

The mission of the space operations officer is to “ascertain the scope of the command's need for space support and space operations integration.”<sup>56</sup> He can serve in numerous billets in both the Army and joint communities. As of March 2001, there were 102 authorizations for FA 40 officers within the Army

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<sup>54</sup> “Space Operations Support Study (Revision 2),” submitted by Team COLSA to Army Space Command, *Support for Space and Missile Defense Battle Lab (SMDBL) Director's Initiative*, CD-ROM, 19 October 2000, 3.

<sup>55</sup> *Ibid*, iv.

<sup>56</sup> “FA 40 Space Operations Staff Officer Tasks,” memorandum from U.S. Army Space and Missile Defense Command, Force Development and Integration Center dated 17 May 1999.

and joint communities -- 10 colonels, 38 lieutenant colonels and 54 majors. One-Hundred Sixteen officers have been designated CFD FA 40, with 65 assigned to FA40-coded positions, including positions at SMDC, ARSPACE, and USSPACECOM.<sup>57</sup>

The activation of space operations as a functional area was not without controversy within the Army. Some traditional branches such as the Military Intelligence Corps, Signal Corps, and to a lesser extent, the Corps of Engineers voiced their concerns that the roles used to justify FA 40 could be, and were, being carried out by members of their branches. For example, satellite imagery collection has been considered the purview of the Intelligence Officer on Army Staffs, and SATCOM that of the Signals Officer. This is perhaps a reason for much of the reluctance in embracing the FA 40 functional area in the conventional army.

The counter to these arguments is the in-depth expertise in space capabilities that the FA 40 officer brings to Army operations. In the past, officers of all branches were eligible to obtain a space skill identifier 3Y. The training requirements for this provided the officer a very basic, but adequate, understanding of space capabilities, and their potential impact on Army operations. It is the explosion of space capabilities technology, coupled with increasing global accessibility to space, that drives the requirement for a dedicated Army space operations officer corps. Today's space officer must do more than just tracking GPS satellites for navigation optimization or predicting SATCOM capabilities. Space officers must understand how the growing world of commercial, civilian, and military space assets pose both advantages as well as disadvantages for mission success. It is reasonable to assume that the FA 40 officer will remain a part of the OPMS XXI force structure and, moreover, the Space Officer Corps will continue to expand as the Army becomes more dependent on space assets.

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<sup>57</sup> "FA 40 PERSCOM Briefing dated March 2001," presented at the First Annual Space Officers Conference on 22-23 March 2001 in Colorado Springs, Colorado.

## **Force Structure**

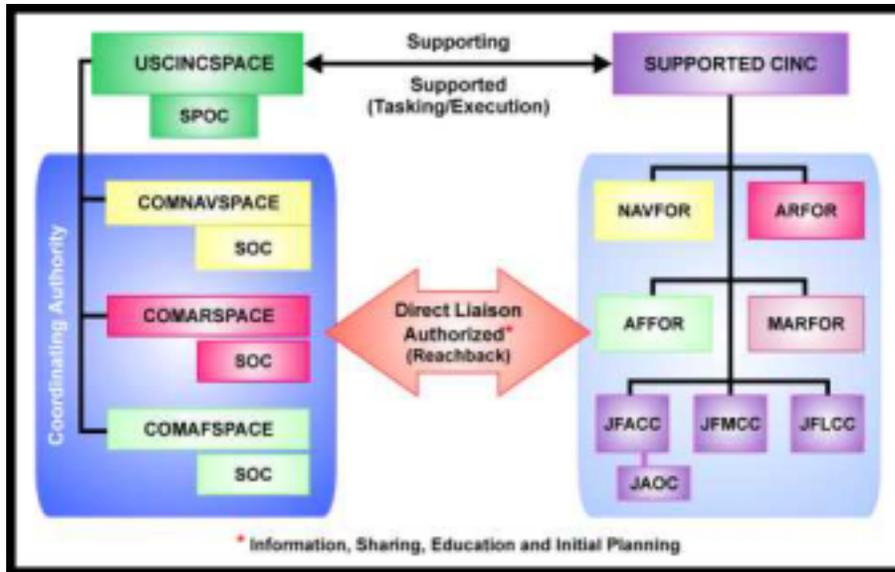
For a framework of understanding the actual mechanisms in the Army organization for its space community in supporting the ground force commander, it is important to look at the big picture first, and work our way down to the actual interface at Corps and lower level. One should begin with a cursory look at USSPACECOM, then a more detailed look within the Army itself – starting with SMDC. From here the focus will turn to Army Space Command, with responsibilities to both U.S. Space Command and U.S. Army Space and Missile Command, and then trace the structure from ARSPACE down to the Army Space Support Teams and Space Operations Officers.

### **Position within USSPACECOM architecture**

Joint Publication 3-14 (Draft) states that USSPACECOM is the “single operational military organization charged with the responsibility to oversee and operate virtually all DoD space forces.”<sup>58</sup> It operates assigned forces through the service space component commands (ARSPACE, NAVSPACECOM, and AFSPACE). It is the service components that train, equip, and provide space forces for USCINCSpace to employ in support of military operations. USSPACECOM retains combatant command of all DoD space forces as prescribed in the Forces For Unified Commands and Joint Strategic Capabilities Plan (JSCP). (See Figure 3-1).

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<sup>58</sup> *Joint Pub 3-14: Joint Doctrine, Tactics, Techniques, and Procedures (TTP) for Space Operations*, (First Draft V1.4), January 1999, I-3.



Source: U.S. Space Command, "U.S. Space Command Long Range Plan," March 1998, figure 7-15.

**Figure 3-1.<sup>59</sup> U.S. Space Command Wiring Diagram.**

USPACECOM also serves the vital liaison function between military space and civilian and commercial space sectors, both domestically and in the international space environment. As such, it "integrates and synchronizes space capabilities to ensure the most effective use of these global resources" into joint operations in support of all CINCs.<sup>60</sup>

### SMDC

U.S. Army Space and Missile Defense Command serves as the specified proponent for Army space operations and related issues under the direction of the Chief of Staff of the Army. As such, it provides a "consolidated and integrated approach to solving space issues."<sup>61</sup> The primary mission of SMDC is to provide space and missile defense capabilities for the warfighter and nation by accomplishing the following tasks:

<sup>59</sup> U.S. Space Command, "U.S. Space Command Long Range Plan," March 1998, figure 7-15.

<sup>60</sup> *Joint Pub 3-14: Joint Doctrine, Tactics, Techniques, and Procedures (TTP) for Space Operations*, (First Draft V1.4), January 1999, I-4.

<sup>61</sup> "Army Space Master Plan," ES-12.

- Serving as the Army’s specified proponent for Space and National Missile Defense (NMD)
- Integrating operational Theater Missile Defense (TMD) for the Army
- Commanding and controlling Army Space and National Missile Defense forces as the Army component to USSPACECOM
- Articulating Army requirements for joint programs for space and Missile defense
- Developing technology, experimenting, testing and fielding assigned space and missile defense systems
- Operating national test and range facilities: US Army Kwajalein Atoll and High Energy Laser Systems Test Facility

The strategic goals of SMDC are nested in such key national security and DoD policy and strategy documents as the National Security Strategy, the National Military Strategy, Joint Vision 2010, Army Vision 2010, Army Strategic Planning Guidance, USSPACECOM “Vision for 2020” and the Ballistic Missile Defense Organization “Strategic Vision. From these guidance sources on strategic vision for the US in matters of national security, SMDC synthesized its goals into the following:

- Delivering world-class space support to the warfighter and national space interests.
- Protecting the nation with a credible national missile defense system.
- Providing the world’s foremost integrated theater missile defense system to protect the warfighter and other national interests.
- Enhancing workforce excellence to ensure continued US leadership in space and missile defense.

The first goal is most closely related to the topic of support to Army operations at the corps and lower levels. This first goal of “delivering world-class space support to the warfighter and national space interests” recognizes space as a vital national interest to the military, civilian, and commercial sectors. To exploit space to its fullest potential requires “integrating space capabilities and applications into all aspects of U.S. military

training, operations and contingency plans.”<sup>62</sup> In respect to this study, it is important to understand SMDC’s “unique responsibility in leading the efforts to integrate space into all aspects of Army training and operations, and in providing space capabilities directly to the operator/warfighter.”<sup>63</sup> Encompassing these responsibilities, SMDC derives the following objectives:

- Establish space as an integral component of army and joint training, exercises, and operations.
- Strengthen SMDC’s role as the Army proponent and integrator for space, both within the Army and within National, DOD, Joint, and commercial space communities.
- Plan, develop, experiment, test, and transition technology for space applications.
- Successfully field, operate and sustain space capabilities.<sup>64</sup>

SMDC’s strategic plan also recognizes objectives affiliated with the fourth goal of “enhancing work force excellence.” Of these, two stand out as pertinent to the discussion. The first is to provide the “resources, information technology, adaptable organizational structure, and streamlined work processes to support a customer-oriented, responsive and productive team.” The second is to “define the SMDC Family,” including the military, civilian, and commercial (contractor) elements.<sup>65</sup> This objective is revealing in its need to “define” who the real players in SMDC are, demonstrating the command’s unsettled nature and continuing significant evolution. Overall, SMDC provides command focus for integrating all Army efforts in exploiting space assets, as well as assisting other services in the Joint arena.

## **ARSAPCE**

The present-day Army Space Command is the “Army Component Command to USSPACECOM and the single operational space element for the Army. ARSPACE

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<sup>62</sup> U.S. Army Space & Missile Defense Command Strategic Plan, September 1999.

<sup>63</sup> Ibid.

<sup>64</sup> Ibid.

<sup>65</sup> Ibid.

plans and executes space operations to include space control, space support, force enhancement, and force application.”<sup>66</sup> It provides the USCINCSpace a “chain of command to the Defense Satellite Communications Systems Operations Centers, Regional Space Support Centers, the Theater Missile Defense Joint Tactical Ground Station (JTAGS) program, and the ARSSTs.” ARSPACE is instrumental in providing USSPACECOM an “Army perspective in planning for DoD space systems support to land forces” as well as integrating Army requirements and policies, and in responding to USCINCSpace-directed taskings.<sup>67</sup>

ARSPACE is also a major subordinate command of SMDC, and “assists in developing Army space concepts and doctrine in support of SMDC.”<sup>68</sup> It provides space force enablers to the Army components of the geographical CINCs through the 1<sup>st</sup> Space Battalion.

## **1<sup>st</sup> Space Battalion**

The 1st Space Battalion was formed in December, 1999, as part of the continuing growth of space as a separate mission within the Army structure to support warfighters. The mission of the 1<sup>st</sup> Space Battalion includes providing “access and expertise to existing and emerging space-based technologies.” In addition, the battalion is tasked to provide in-theater tactical ballistic missile warning, and has the capability of performing space control operations. To meet such diverse missions, the battalion is organized with three line companies: the Army Space Support Company, the Theater Missile Warning Company (TMWD), and the Space Operations Company which includes the Electronic Warfare Detachment (SEWD).<sup>69</sup> (See Figure 3-2 below.)

In addition to the normal staff and support organic to most Army battalions, the 1st Space Battalion also contains the Mobile Technology Team. The MTT’s overarching

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<sup>66</sup> “Space Operations Support Study (Revision 2),” submitted by Team COLSA to Army Space Command, *Support for Space and Missile Defense Battle Lab (SMDBL) Director’s Initiative*, CD-ROM, 19 October, 18.

<sup>67</sup> U.S. Army Space Command Mission, <http://www.armyspace.army.mil/corevalues/mission.htm>.

<sup>68</sup> “Space Operations Support Study (Revision 2),” submitted by Team COLSA to Army Space Command, *Support for Space and Missile Defense Battle Lab (SMDBL) Director’s Initiative*, CD-ROM, 19 October, 18.

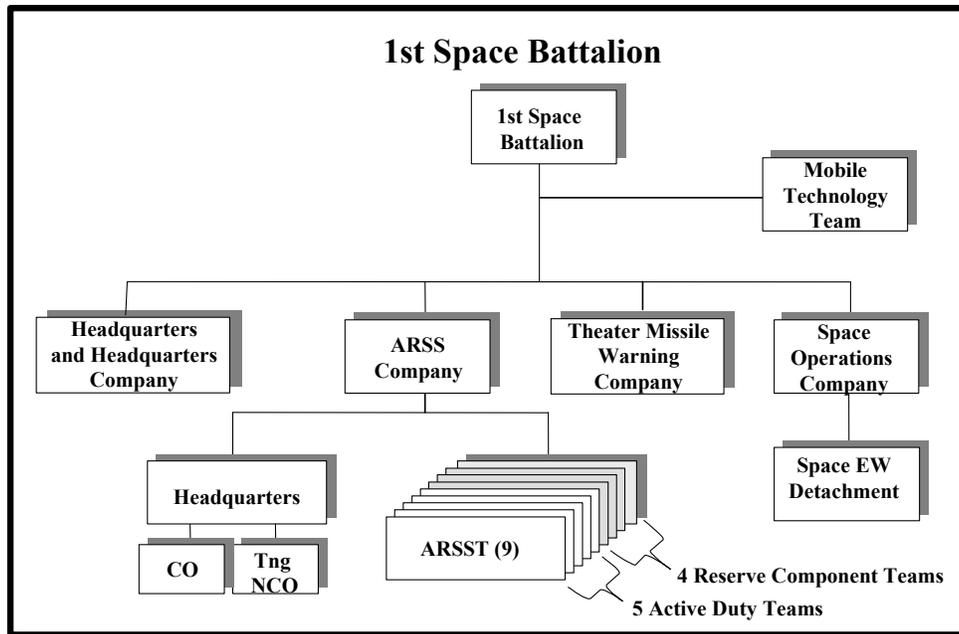
<sup>69</sup> 1<sup>st</sup> Space Battalion Command Briefing presented at the First Annual Army Space Officers Conference on 22 March 2001 in Colorado Springs, Colorado.

function is to ensure integration of the most up-to-date space technologies into Army operations. It works closely with the Space and Missile Defense Lab (SMDBL), sister services, interagency space organizations, and the commercial sector to obtain these technologies, and determine their applicability to the warfighter. Another important integration function provided by the MTT is to demonstrate new technology in the field, as well as gather feedback for future development or acquisition projects.

This new battalion was the result of continued emphasis of space support to the warfighter through the 1990s and it gave a recognizable Army support structure from which to provide support to soldiers, and to interface with field forces. Within 1<sup>st</sup> Battalion, the ARSST currently conducts the lion's share of direct space support to the Army commander in the planning and execution of military operations. The SEWD is still in the process of fielding jamming systems with capabilities that have the potential to support space control missions.<sup>70</sup> This potential, if matured, will offer an additional significant capability provided by the space operations officer to the Army commander.

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<sup>70</sup> Author's notes from the First Annual Army Space Operations Officers Conference, March 22-23, 2001 in Colorado Springs, Colorado.



Source: Information compiled from Field Manual 40-2, *Army Space Support Team Operations* (Second Draft), (Washington, D.C.: Headquarters, Department of the Army, April 2001), 1-3, and the 1<sup>st</sup> Space Battalion Command Briefing presented at the First Annual Army Space Officers Conference on 22 March 2001 in Colorado Springs, Colorado.

**Figure 3-2. 1<sup>st</sup> Space Battalion Wire Diagram.**

## ARSSC

The 1<sup>st</sup> Space Battalion Command briefing states that the mission of the Army Space Support Company (ARSSC) is to “provide on-call, space-based products, services and expertise, worldwide, in support of civil and military operations.”<sup>71</sup> As for organization, it is quite different from most Army companies in its small size. The company headquarters is quite small, and consists of only the company commander and the company-training sergeant. The heart of the company rests in the five active component and four reserve component six-man ARSSTs. The commander is responsible for ensuring the proper training of the ARSSTs and coordinating with supported commanders and the 1st Space Battalion staff. His focus is on providing

<sup>71</sup> 1<sup>st</sup> Space Battalion Command Briefing presented at the First Annual Army Space Officers Conference on 22 March 2001 in Colorado Springs, Colorado.

mission support to the corps commanders “consistent with [their] assigned geographic OPLAN.”<sup>72</sup>

## ARSST

Field Manual 40-2 states the mission of the ARSST is to “rapidly deploy worldwide to provide space awareness, expertise, and analysis to Army units during contingency operations and exercises.” In supporting this mission, ARSSTs provide space expertise, offer operational and tactical support, and actively participate in developing technologies. Their essential tasks, as outlined in FM 40-2, include integrating space analysis and products into the military decision making process (MDMP) of the supported unit and developing space support products.<sup>73</sup>

The current standard ARSST consists of three officers, two NCOs, and one enlisted soldier. This structure includes the Team Leader (FA 40 Major), Intelligence Officer (Captain), Signal Operations Officer (Captain), Topographic Sergeant, SATCOM Control Sergeant, and an Information Systems Operations Specialist. The five active duty ARSSTs are aligned with each of the Army’s four corps and USASOC.<sup>74</sup> The four reserve component ARSSTs assist in providing peacetime training support to the active duty ARSST. It also provides trained soldiers and fielded equipment ready to support the Army in times of war, and plays an essential role in providing space support during the conduct of two near-simultaneous major theaters of war, which is a key driver in the National Military Strategy.<sup>75</sup>

According to FM 40-2, the “Army views the planning and execution of its space operations from two perspectives.” The first is to provide force enhancement through space to the land forces. The second is for “Army forces supporting “joint space missions” intended to achieve dominance in space.” ARSST capabilities are “meshed” to accomplish these two perspectives. Currently, they focus more on the first perspective to provide space experts in rapid deployments to a theater of operations that involves

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<sup>72</sup> Field Manual 40-2, *Army Space Support Team Operations, Second Draft* (Washington, D.C.: Headquarters, Department of the Army, April 2001), 3-1.

<sup>73</sup> Ibid, 1-2.

<sup>74</sup> Ibid, 1-6.

<sup>75</sup> Author’s notes from the First Annual Army Space Officers Conference, Senior Leaders Seminar, 20-21 March 2001 at Colorado Springs, Colorado.

ground troops, and to deliver analytical space support service to transform space-based resources into combat multipliers for use by the ground force commander.<sup>76</sup> The following from the Space Operations Support Study offers a clarifying view of the role of the ARSST.

The Army Space Support Teams (ARSST) are the current primary force projection resource [for space support to the land force]. The ARSST provides space support to echelons ranging from the LCC to Special Forces operational teams. Their stated mission is to provide rapidly deployable space-based operational support to the LCC across the spectrum of military operations. The teams are organized to focus support for a specific Corps – however, their organization is routinely modified subject to mission requirements. Narrowly defined, the ARSST teams are responsible for addressing the capabilities, limitations and status of satellites to the tactical situation. Applied operationally, the teams perform space analysis, facilitate full exploitation of the Space Force Enhancements, and provide commercial imagery and terrain products to the supported commander.<sup>77</sup>

This study, presented as background information for the FASO/FA 40 Conference in March 2001, offers the most current description of the capabilities and role of ARSSTs. It notes that the ARSSTs are equipped and trained to perform space analysis tasks by employing state-of-the-art sensor and terrain modeling tools and by accessing various web sites (such as the 55<sup>th</sup> Weather Squadron for space weather products) via a SIPRNET connection. According to the report, they are responsible for providing the supported units with the following types of space products:

- Satellite Advance Notice (SATRAN) – data on potential threat satellites and their capabilities.
- Position/Navigation – data on the fluctuating degree of GPS accuracy at specific locations for a designated time.
- Space Weather – data on space weather events that could affect operation of UHF and SATCOM communications, GPS signal reception, radar performance, etc.

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<sup>76</sup> Field Manual 40-2, *Army Space Support Team Operations* ( Second Draft) (Washington, D.C.: Headquarters, Department of the Army, April 2001), 2-4.

- Imagery – data used to provide commanders and staffs imagery products beyond those provided by internal topographic units; such as, video-taped fly-throughs, 3-D images, perspective views, and image maps.
- Intelligence Support – data to assist in preparing the Space IPB as well as respond to space related requests for information from the intelligence community.
- SATCOM – communications to supplement the unit’s early entry connectivity using International Maritime Satellite (INMARSAT) equipment.<sup>78</sup>

Another important feature of the ARSST, especially applicable for the Army Transformation project, is its “capability to reach back to the Remote Sensing Lab in Colorado Springs to obtain additional imagery products, which can be forwarded to the team by various means.” Capitalizing on this capability, ARSSTs can task organize for deployment. They can deploy “as an early entry team with the Dell 7500 and an INMARSAT terminal to provide limited space support, or the team can deploy with its full equipment suite to provide space analysis and imagery support.” This provides the ARSST the “capability, mobility, and flexibility to provide space analysis and imagery support to the operational commander at various echelons within the Army.”<sup>79</sup> (Some argue that such advanced technology that makes access to space assets cheaper, easier, with more deployable hardware may spell the end of the FA 40 at Corps level or below, a topic discussed in more detail in the next chapter.)

A definite change in focus of the ARSSTs from the mid-1990s is a greater emphasis on integration and liaison with the ground forces rather than just providing technical capabilities. FM 40-2 notes that the ARSST is “one of the land-based warfighter’s primary interfaces to accessing space-based capabilities and products. The ARSST provides rapidly deployable space-based operational support as well as expertise, advice

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<sup>77</sup> “Space Operations Support Study (Revision 2),” submitted by Team COLSA to Army Space Command, *Support for Space and Missile Defense Battle Lab (SMDBL) Director’s Initiative*, CD-ROM, 19 October, 2.

<sup>78</sup> “Space Operations Support Study (Revision 2),” submitted by Team COLSA to Army Space Command, *Support for Space and Missile Defense Battle Lab (SMDBL) Director’s Initiative*, CD-ROM, 19 October, 51.

<sup>79</sup> *Ibid*, 52.

and liaison regarding the application of space capabilities for the corps.”<sup>80</sup> In the planning process, the ARSST provides “three distinct capabilities” to corps: integration of space expertise and services into the MDMP process, intelligence support, and space products<sup>81</sup>. It is during the planning process that the efficacy of dedicated space experience becomes more obvious. It is here, too, that the inherent weakness of the ARSST also becomes apparent. As noted in the last chapter, the concept of the ARSST hinged on operating out of a central location in order to provide a centralized training program for team members. The trade off is a “lack of influence upon regular training and pre-mission and pre-contingency planning in supported headquarters.”<sup>82</sup> It is in response to this issue that the Army began examining the need for a space operations officer assigned to the supported headquarters.

### **Space Operations Officer**

The current concept of space operations officers assigned to corps level headquarters is relatively new, with only about half of the headquarters yet assigned an FA 40 officer. The current plan envisions the corps SOO as “the member of the corps staff who is primarily responsible for determining the command’s need for space support and space operations integration. The officer is responsible for coordinating space combat operations and the timely delivery and incorporation of space products and space services support into the corps’ MDMP.”<sup>83</sup> This relieves the problem of a lack of continuous representation in the planning process for the ARSSTs. Not only does the SOO bring space expertise into the planning process, he or she also serves as a conduit for space education to the field commanders and their staffs.

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<sup>80</sup> Field Manual 40-2, *Army Space Support Team Operations, Second Draft* (Washington, D.C.: Headquarters, Department of the Army, April 2001), 1-1.

<sup>81</sup> *Ibid*, 4-1.

<sup>82</sup> Field Manual 40-2, *Army Space Support Team Operations, Second Draft* (Washington, D.C.: Headquarters, Department of the Army, April 2001), 4-5.

<sup>83</sup> *Ibid*, H-1.

Still developing is a plan to create an FA 40 cell of four to six members assigned to the corps. This may eventually relieve the need for ARSSTs. This, and other alternatives for organizing for space support to the ground force commander, is the focus of discussion in Chapter 4.

## Chapter 4

### DISCUSSION OF FUTURE ORGANIZATION

*Future success of Army forces will be critically dependent upon exploitation of space assets, capabilities, and products across the entire spectrum of military operations. In an environment of rapid political, technological, and economic change, Army access to national, civil, allied, military, and commercial space capabilities and products is essential to successful operations. ...The Army's future is inextricably tied to space.*

Togo D. West (Secretary of the Army), 1994 Army Space Policy

*There's great potential in space and the Army has to be an integral part of it.*

General John M. Keane, Vice Chief of Staff, U.S. Army, February 2000

The argument for changes in Army organization that will best integrate space capabilities boils down to a few essential elements. First, it is important to remember the scope, or focus, of this investigation oriented at the lowest level of integration of space assets to the fielded forces. In this case the question revolves around the continued use (and proliferation?) of ARSSTs versus a fully integrated FA 40 cell at least the corps level, or a combination of the two, as the most effective and efficient organization. Other issues include whether FA 40s will really be necessary in the future, or whether technology advances will allow other staff members to integrate space easily enough without a “space expert” present. These are the issues on which to build a foundation for conclusions and recommendations.

## **Recognizing Transformation: What FA 40 brings to the Fight**

The U.S. Army Space and Missile Defense Command (SMDC) strategic planning process identified priority issues to address in reaching its determined goals and objectives for the future. In the planning process, SMDC defined priority issues as “specific strengths that need to be bolstered, opportunities, weaknesses that need to be fixed, or threats to be mitigated or avoided.”<sup>84</sup> SMDC discussed the following as priority issues:

- Identify, define, and expand customer base, and develop customer strategies to surpass expectations.
- Assess, streamline, and synchronize Command and MSE processes and goals to function as the Army’s model MACOM.
- Identify and develop future opportunities and mission areas that capitalize on SMDC’s core tactical, technical, and operational competencies to better compete for, and maximize use of available resources.
- Develop highly competent, renowned, credible and adaptable workforce to achieve SMDC vision (recruit, train, retain).
- Exploit joint and commercial space opportunities to enable Force XXI and the Army After Next.
- Develop and wage an aggressive campaign that defines the Army’s role in space and exploits future space and missile defense capabilities through institutional and organizational training, modeling and simulations, and integrating these capabilities into joint and Army operations.<sup>85</sup>

### **Focus on the Warfighter**

As SMDC serves as the proponent agent for Army space operations, it is important to examine the impact of some key observations of the issues noted above.

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<sup>84</sup> “US Army Space & Missile Defense Command Strategic Plan,” September 1999.

<sup>85</sup> “US Army Space & Missile Defense Command Strategic Plan,” September 1999.

First is the need to focus and tailor support for the “customer” or warfighter. In interviews with General Horner, CINCSpace from 1992-1994, he spoke of a lack of focus and organization in the military space community in support of the major commanders.<sup>86</sup> He noted in 1992 that “the customer of Space is not the satellite manufacturer, the satellite producer. The customer of Space is the soldier in the fox-hole, the sailor on the bridge of a ship, or the pilot in the cockpit. We need to get Space to come together as a team that satisfies the needs of the customer.”<sup>87</sup> Though he spearheaded efforts to correct this deficiency, as well as the problems of command and control, he alluded that this still exist as a problem. He intimated that service parochialism, and parochialisms within the various “stovepipes” in the services, cause friction in developing the most efficient and effective systems for space support to the warfighter.<sup>88</sup> According to Horner, it was extremely important to break down these barriers, noting “the military value of space systems to the commander is best measured on the battlefield. The full impact of space systems can only be realized when CINCs and their component commanders know what space can do, how they can get it, and how they can use it.”<sup>89</sup>

### **Transforming to the Objective Force**

In regard to integrating into a changing Army, the references to Force XXI and Army After Next in the SMDC Strategic Plan dated in September 1999 reveal the speed of change. Since 1999, the Army’s vision for the future has turned to a more radical transformation to the Objective Force. This new structure focuses on providing a more “responsive, deployable, agile, versatile, lethal, survivable, and sustainable force” to meet the envisioned international security environment of the early to mid 21<sup>st</sup> Century.<sup>90</sup>

The Army plans to achieve this Objective Force by pursuing three paths simultaneously. It is important to discussions related to the Army’s Transformation to

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<sup>86</sup> General Charles Horner, USAF (retired), interviewed by the author via e-mail 16 February 01.

<sup>87</sup> *USSPACECOM 1992 Historical Summary* (U), (Headquarters, U.S. Space Command Office of History), 17. (Secret - NOFORN) Information extracted is unclassified.

<sup>88</sup> General Charles Horner, USAF (retired), interviewed by the author via e-mail 16 February 01.

<sup>89</sup> *USSPACECOM 1992 Historical Summary* (U), (Headquarters, U.S. Space Command Office of History), vii 17. (Secret - NOFORN) Information extracted is unclassified.

<sup>90</sup> “The Army Transformation,” accessed at [http://www.army.mil/army\\_vision/transform.htm](http://www.army.mil/army_vision/transform.htm).

understand the terminology and basic concepts of these three paths. The first path focuses purely on developing the Objective Force with “characteristics and capabilities” that will allow worldwide deployment of “a combat capable brigade ... in 96 hours,” a division in 120 hours, and five divisions in a theater in 30 days.<sup>91</sup> Toward this end, the Army’s science and technology community is wrestling with ways to reduce the weight of Army heavy forces while maintaining its lethality and survivability. The Army’s goal is to provide the technological answers needed to begin development of the Objective force by 2003. While striving for the Objective Force, the army will maintain a Legacy Force, the current force structure, as a viable fighting force until the Objective Force is fielded in the next 15-20 years. Vital to this force is a continuing aggressive modernization plan to include upgrading to the digitization technologies currently being tested and fielded with the 4th Infantry Division. The third separate but simultaneous path includes the Interim Force. The Interim Force fills the gap between the current deployability limitations of the Legacy Force and the long-term fielding of the Objective Force. It leverages off-the-shelf technologies to begin the process of validating the Initial Brigade Combat Teams that will serve as a more deployable fighting force until the Objective Force is fielded.<sup>92</sup>

SMDC and ARSPACE are working to adapt goals and objectives aligned with the Transformation. It is obvious that space will play an important role with all parts of this project. The Objective Force relies heavily on magnitude increases in information gathering and dissemination to accurately and rapidly acquire and engage enemy forces at much greater distances than current capabilities allow. Fielding of the Interim Force underway at Fort Lewis, Washington, is working to accelerate integration of space capabilities with these goals in mind. Digitization of the Legacy Force is inextricably linked to space assets.

## **Commercial Space**

The SMDC Strategic Plan correctly emphasizes the growing need to understand the integration of commercial space capabilities into military operations, both from a friendly and adversarial perspective. Access to space capabilities is part of Globalization

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<sup>91</sup> Ibid.

<sup>92</sup> “The Army Transformation,” accessed at <http://www.army.mil/armyvision/transform.htm>.

and Information Revolution trends in the international environment, as noted by such international relations experts as Thomas L. Friedman<sup>93</sup> and Alasdair McClean.<sup>94</sup> This provides greater impetus for integrating space expertise at the Army corps and below.

FM 100-18 (*Space Support to Army Operations*) describes the function of ARSSTs in garnering commercial satellite imagery through such systems as the French SPOT and Japanese MOS-1 satellite systems. It also speaks to the function of ARSSTs in providing direct operational support through analysis of the space situation.<sup>95</sup> FM 40-2 (2<sup>nd</sup> Draft) notes the increased capability the ARSST and SOOs bring to the MDMP process in regard to space analysis, including space intelligence preparation of the battlefield (IPB). The *Space Warriors* study notes the following in regard to advances in space technology, increased space education in Army Professional Military Education (PME) programs, changes in doctrine, and creation of the FA 40 Space Operations functional area.

These ongoing initiatives and ideas represent a significant expansion of the role that space-borne systems will play in supporting Army operations in the future. They also highlight the Army's need for space experts able to translate space capabilities into 'tools' for the ground commander.<sup>96</sup>

As the Army continues to pursue a force projection doctrine, "full-integration of space-related capabilities" will become paramount for conducting missions in the "global environment."<sup>97</sup>

## **Controlling Space?**

An additional capability that may give greater emphasis to future space operations officers lies in the field of space control. A controversial area in regard to standing DoD

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<sup>93</sup> Thomas L. Friedman, *The Lexus and the Olive Tree*. New York, N.Y.: Anchor Books, 2000.

<sup>94</sup> Alasdair McLean, *Europe's Final Frontier: The Search For Security Through Space*. Commack, New York: Nova Science Publishers, Inc. 1997.

<sup>95</sup> FM 100-18, "Space Support to Army Operations," Headquarters, Department of the Army, Washington, DC. 20 July 1995, Chapter 4 (accessed at [http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/100-18/f0018\\_7.htm](http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/100-18/f0018_7.htm) on 14 December 2000).

<sup>96</sup> "Space Warriors: The Army Space Support Team," a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 5-8.

<sup>97</sup> FM 100-18, "Space Support to Army Operations," Headquarters, Department of the Army, Washington, DC. 20 July 1995, Introduction (accessed at [http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/100-18/f0018\\_7.htm](http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/100-18/f0018_7.htm) on 14 December 2000).

and National Space Policy, many see space control as an inevitability for the future. ARSPACE's Space Electronic Warfare Detachment offers ARSPACE some of its newest, and perhaps most significant capabilities and potential for space control operations. Growing out of the test and evaluation community, the SEWD capabilities dramatically change the way ARSPACE will contribute to the joint fight.<sup>98</sup>

## Assumptions

*Space Warriors*, a study of the ARSST in 1999, listed the following as the Long Range Planning Assumptions for future force structure.

- The space capabilities of United States adversaries will increase.
- The dependence of the United States on space systems will increase.
- Highly capable space systems will be available commercially, and might be available to an adversary during hostilities.
- Commercial satellite communications capabilities will continue to improve.<sup>99</sup>

These assumptions are still valid in 2001, and form a starting point from which to begin analyzing options for future space organization. In addition, one needs to assume that the U.S. Army will continue to pursue the Transformation to an Objective Force dependent heavily on C4ISR capabilities integrally tied to space capabilities.

## Options for Future Structure

From the discussions in this and previous chapters, I have noted several organizational options for more efficiently and effectively supporting the ground force commander with integration of space capabilities. The first relies on maintaining a heavy dependence on ARSSTs with minimal SOO support assigned to the supported units. The second includes a heavy dependence on a Space Support Element assigned to the supported units with little or no standing ARSSTs (but retaining the reserve component

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<sup>98</sup> "Integrating Space into Ground Operations." An U.S. Army Space and Missile Defense Command briefing dated February 2001.

<sup>99</sup> "Space Warriors: The Army Space Support Team," a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 5-6.

ARSSTs). The third looks at a balanced combination to these. Lastly, I examine the possibility and efficacy of a reduction of the FA 40 force as opposed to the current trend of continuous growth. This option is dependent on the development of technology to allow other specialties in the supported unit staffs to accomplish space integration tasks.

### **Army Space Officers' Conference of 2001**

Most of the background information for this research on visions for future Army space operations came from the First Annual Army Space Officers Conference held in Colorado Springs, Colorado in March 2001. The senior Army space operations leadership set aside two days prior to the main conference to discuss the future of Army space operations, and focused much of their energies on structure and doctrine. The working group for future structure looked at several various future structures concerning ARSSTs and embedded SOOs within the framework of the Transformation Plan.

Apparently an initiative to incorporate a six-man space support element (SSE) of SOOs and NCO's and enlisted personnel with a background in space operations into the Interim Division has received initial support from the Army leadership. Although this demonstrated a commitment from the Army for integrated space support, it addressed a change that will see little, if any, implementation before the end of the decade. Also, inclusion in the early planning stages for the Interim Division structure does not protect the SSE or the concept of embedded SOOs in the division staff. The members of the working group for the most part agreed with this concept. One point of contention was the role ARSSTs would play in support of the Interim, and later Objective Force. The group was roughly split between very limited ARSSTs infrastructure, consisting of perhaps one active duty team for MTT duties. The U.S. Army Reserve and National Guard ARSSTs would remain, possibly downsized to only two instead of four, to warehouse institutional knowledge and provide support for major conflicts. Building on the "approved" concept of the SSE for the Interim Force, planners assumed a continuation of this basic plan for the Objective Force. Because the timeline for the Objective Force was both distant (15-20 years was one estimate used) and unsettled, members of the workgroup did not address space support structure beyond recognizing its probable increase in importance.

Examining the Legacy Force provided the most varied opinions. Because this course of action impacts realized space support integration and organization in this decade more than the others, it received additional focus. As discussed in the last chapter, almost all space support to the supported commander currently occurs through the ARSST. Though it can be conducted directly with units below the corps (or USACOM) headquarters, it is at this level that integration from the space community to the commander is centrally controlled. As noted in the draft version of FM 40-2, there is an initiative in the implementation process of assigning one or two SOOs to the corps or higher headquarters. This stems from problems identified early in the development of the ARSST as discussed in Chapter 2. As long as ARSSTs are centrally located, and parceled out to support Army commanders on a temporary basis, these commanders are robbed of a full time FA 40 officer to provide continuous input into the unit's planning, execution, and training. Conversely, assigning the ARSST permanently to these units robs the team members of a means of centralized hands-on training on the latest space capabilities. Colorado Springs offers the unique advantage of having the preponderance of space support activities located there from the U.S. Army, U.S. Air Force, and USSPACECOM.

### **Other Force Structure Considerations**

*Space Warriors* examined three long-term visions for the future of ARSSTs that resemble, to some extent, the ones discussed above. The first envisions a self-contained, deployable, more robust team. The team would deploy with an organic tactical vehicle customized to accommodate space support specific equipment. Currently ARSSTs must use supported unit vehicles and field equipment. The second vision involves a single liaison officer with minimum equipment (perhaps only an advanced laptop) in lieu of an ARSST. In this plan, the LNO would “provide planning and space analytic support to the supported commander and ... staff.” All production functions would be conducted at ARSPSCE, and forwarded to the LNO through normal communication networks. The last long term vision is like the second, except that Space Operations Officers would be permanently assigned to the supported headquarters. ARSSTs would remain to

demonstrate new technologies to the field (*ala* today's MTT).<sup>100</sup> These visions for future force structure encompass the major concepts under consideration by the Army space operations community.

### **Future of the Army Space Officer Corps: SOOs**

Another important portion of the Army Space Officers Conference was discussion on the future of the Army Space Officer Corps under OPMS XXI personnel initiatives for the FA 40 (space operations officer), as well as their embodiment in Army combat organizations as Space Operations Officers. The Army Space Master Plan (ASMP) addressed the importance of imbedded SOOs in stating “the concept of a special staff section for space at corps, divisions, and separate brigades has the potential to revolutionize the manner in which space is integrated into planning, readiness, and operations. The FA 40 must spearhead the effort to integrate space into corps and division staffs.”<sup>101</sup> It went on to note that “as part of the Corps redesign process for the Force XXI corps headquarters, the Army is conducting an effort to establish a space organizational entity in the Force XXI headquarters staff.” The purpose of these organizations will be to “plan and integrate space operations into corps operations....”<sup>102</sup> The ASMP acknowledged that the “process for integrating a space organization into the Army’s force structure is underway,” but until that process is complete, ARSSTs will continue to “bring Army space capabilities to the warfighter.”<sup>103</sup> From the ASMP, it is apparent that a concept for a space operations organization within Army unit headquarters is being developed and will be staffed for approval. It added that “through the Corps Design Analysis process, [planners wish to] ensure Functional Area 40 officers are included in Force Structure recommendations in the right quantities and in the right organizational “shape”.<sup>104</sup> Challenges to the implementation of Space Operations Officers include Army Force Structure limitations such that there will be a greater need for space

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<sup>100</sup> “Space Warriors: The Army Space Support Team,” a special historical/lessons learned analysis prepared by the Office of the Command Historian, U.S. Army Space and Missile Defense Command and Science Applications International Corporation, March 1999, 5-15.

<sup>101</sup> “Army Space Master Plan,” ES-14.

<sup>102</sup> “Ibid,” 4-12

<sup>103</sup> “Army Space Master Plan,” 7-7.

<sup>104</sup> Ibid, 7-6.

literate and experienced officer in staff positions than there are available FA 40 officers.<sup>105</sup>

Currently one SOO resides in the headquarters of 3<sup>rd</sup> Army, 8<sup>th</sup> Army, XVIII Airborne Corps, and I Corps, and these have been in place for approximately only one year. III Corps and V Corps are planned to receive their first FA 40 SOOs this summer, with two slated for III Corps. Future plans call for various sized elements of FA 40s to be assigned to supported units headquarters. For example, FM 40-2 (2<sup>nd</sup> Draft) calls for four SOOs at the corps headquarters: a lieutenant colonel in G3 Plans, a major in G3 Effects Coordination Cell, a major in G2, and a major in G6.<sup>106</sup>

### **Future of the Army Space Officer Corps: FA 40s**

The continued growth of FA 40 under OPMS XXI force structure seems reasonable to assume. FA 40 is projected to have a total of 165 officers at a steady state in FY03 (the original OPMS Task Force in 1999 called for 127 by FY03).<sup>107</sup> In a time of downsized military forces and zero-sum game policies in creating new positions, this shows a dedication to the FA 40 from Army leadership.

The Army Space Master Plan states that “PERSCOM and SMDC are working actively to institutionalize the new Functional Area 40 (Space Operations Officer) to exploit the capabilities of space systems. These officers will bring capabilities and knowledge for application of space-based products to support commanders in the 21<sup>st</sup> century.”<sup>108</sup> It goes on to iterate the importance of a space emphasis in all aspects of Army planning and execution.

Since space capabilities affect all elements of the Army, there must be a conscious effort to ensure that space doctrine is integrated into all the functional doctrine publications. To completely operationalize space, Army leaders must continue to embed space capabilities and an understanding of their limitations in all they do. Planning, operations, and exercises must fully address space.<sup>109</sup>

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<sup>105</sup> Ibid, 7-6.

<sup>106</sup> Field Manual 40-2, *Army Space Support Team Operations* ( Second Draft), (Washington, D.C.: Headquarters, Department of the Army, April 2001), H-1 – H-6.

<sup>107</sup> “Original & Future Plan for FA40,” an Information Paper for U.S. Army Space and Missile Defense Command, dated 18 April 2001, 3 pages.

<sup>108</sup> “Army Space Master Plan,” 7-5.

<sup>109</sup> “Army Space Master Plan,” ES-14.

A briefing by SMDC notes that “the duties of space operations officers will only increase and diversify as space assets increase...to coordinate space control, force enhancements, and force applications across the battlefield.” It list proposed missions for future Space Operations Officers to include the following:

- Analyze space mission requirements and available space assets
- Prioritize and coordinate space force enhancement support IAW the commander’s intent
- Integrate and supervise support from USSPACECOM and its units attached in theater
- Integrate space in to the IO Campaign Plan
- Recommend actions in all staff areas affected by space
- Space Analysis & Estimates
- Annex N (Space Operations)
- Space IPB and Space Targeting (Space Control)
- Support
  - Precision Engagement
  - Dominant Maneuver, Focused Logistics & Battlefield Circulation
  - Full Dimensional Protection
  - Information Superiority<sup>110</sup>

In the quest for advancement of FA 40 expertise, the Force Development and Integration Center (FDIC) of SMDC is conducting the first Space Officer Qualification Course in June 2001. The course is programmed for 16 officers, is considered a requirement for all FA 40 officers, and will be conducted either annually or semi-annually. The seven-week course focuses on 24 critical tasks deemed essential to an FA 40 officer, and deal with integration of space capabilities into the ground commander’s plan. Toward this end, the course culminates with a week long Corps Level Command

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<sup>110</sup> “Integrating Space into Ground Operations.” An U.S. Army Space and Missile Defense Command briefing dated February 2001.

Post Exercise involving direct interaction with a simulated corps MDMP and execution phase.<sup>111</sup>

### **“High-Teching” Yourself Out of Business**

One last issue addressed by several members of the main conference was the possibility that space capabilities are becoming so “user friendly” that Army commanders will not require FA40s in the field. One example used was the dependence of GPS for current and future Army forces. Because the satellite system supporting GPS is global (ubiquitous), it does not require any “maneuvering” in support of ground forces. In regard to GPS use, FA40s do play an important role informing commanders of optimal times for GPS use. Because the accuracy of the system does fluctuate to some degree, such information could prove important to planners of artillery or missile strikes, or deep attack aviation missions, to ensure optimal navigation. However, as noted at the conference, a system that would provide this information quickly and in useable form to the non-space expert would be easy to develop, and exists to some degree today.

The response to these concerns was that the SOO derives his or her value from undertaking an analytical approach to space concerns during the development and execution of the commanders plan. The SOO is able to provide the unique capability of understanding the Army planning process as well as staying abreast of the latest impacts of space assets, both military and commercial systems under the control of friendly, enemy, and neutral nations. This issue and the options for space structure addressed above are the focus of the last chapter.

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<sup>111</sup> “FA 40 Update,” a briefing given by LTC Fallen, Chief, Proponency Organization and Training Support Division, Force Development and Integration Center, at the First Annual Space Operations Officers Conference, 22-23 March 2001.

## Chapter 5

### CONCLUSION

*From Desert storm to every exercise and use of force since, we've come to know that all military operations depend on space-based capabilities. Space will become even more important in the future. For the needs envisioned in the next decade, our already smaller military force will be much more effective because of the information available to it. Much of this information will come from space-based sensors and virtually all of it will flow through space at some point before reaching our forces.*

USCINCSPACE, March 1998

*The Army's land power is hinged in space.*

General Gordon Sullivan

### Impetus for Change

The impetus for the evolution of Army space support organization is increasing for several reasons. The primary driver appears to be the Army Chief of Staff's emphasis on the Army's transformation to the Objective Force. This force "lightens" the combat power of the Army divisions, especially the heavy armored forces. This new organization will rely on superior intelligence, maneuver, and standoff attack capabilities to overcome reductions in armor protection and organic firepower. The Army Chief of Staff believes that this transformation is required to meet the changing international security environment that envisions a reduced possibility for the massive tank-on-tank battles of Desert Storm or envisioned by the Cold War era. The new organization is expected to be rapidly deployable, and maneuverable through all types of terrain, including cities. This requires an exchange of Army heavy armored vehicles for lighter,

more maneuverable vehicles. The concept can be succinctly stated as “trading inches of armor for better information.” Space capabilities are critical to these improvements in gathering and disseminating information.

Another faction pushing for change in the Army comes from within the FA 40 community. As the ARSSTs grow in their integration with the fielded units, and space capabilities continue to gain more focus in the curriculum of the Professional Military Education programs throughout the services, Army commanders increasingly appreciate their dependency on these systems. After Action Reviews (AARs) from the field show that field commanders are more readily acknowledging the importance of space support in planning and executing operations.

Finally, civilian and military leaders alike are publicly and officially calling for increased emphasis in using and advancing space technologies. This is noted in many publications, official policy, and by a variety of policy experts.<sup>112</sup> One of the most recent examples comes from the “Space Commission Report” released in January 2001, which stated that the Commission unanimously believed that “the U.S. has an urgent interest in ... developing the technologies and operational capabilities that its objectives in space will require.”<sup>113</sup> Essentially, other nations will continue to improve their capabilities to exploit space for their national interests. Can the United States afford to lag behind? Can the Army fall behind in improving in its ability to leverage space capabilities to enhance its capabilities and mission success?

## **An Element of Change**

As the Army modernizes on the path to modernization, it needs to recognize that space is a major element in the equation of change. The Army Space Master Plan provides a framework for the next steps toward the operationalization,

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<sup>112</sup> Pertinent examples include comments in such official policy documents as the “National Space Policy,” National Science and Technology Council, The White House, 19 September 1996 and the Secretary of Defense Memorandum, “Department of Defense Space Policy” (U), 9 July 1999. Much of the *Report of the Commission to Assess United States National Security Space Management and Organization*, chaired for the most part by now Secretary of Defense Donald H. Rumsfeld and published in Washington, D.C., January 11, 2001, seems to intensify the emphasis on space capabilities for future DoD strategy. See also footnote number 2 in Chapter 1.

<sup>113</sup> *Report of the Commission to Assess United States National Security Space Management and Organization* (Washington, D.C.: January 11, 2001), 5.

institutionalization, and normalization of space for the warfighter and implementing a coherent Army space strategy. It is a serious and necessary attempt by the Army to integrate and synchronize Army space support for the soldier. Future iterations of the Army Space Master Plan will expand upon this effort, to include strategies and timelines to address operational concepts and space mission areas. The long-term intent is to shape and influence decision-making processes and science and technology development within the DoD and other agencies to ultimately develop an interoperable set of space and terrestrial architectures.<sup>114</sup> The Army Space Master Plan states that this

detailed review of the Army's involvement in space activities concludes that “space” in the Army remains focused on vertical developments and is not benefiting from horizontal integration. In addition, although elements of space-related missions exist in most organizations and agencies, to a large degree they are specialized, of lesser importance, and often secondary if not tertiary duties. In light of the Army's recognized importance and reliance on space-based capabilities, this plan supports the migration from a compartmented space capability to one that is fully institutionalized and operationalized.<sup>115</sup>

Determining the right structure for Army space support to the fielded units will play an important role in institutionalizing, operationalizing, and normalizing space capabilities within the Army.

### **Need for FA 40s to Provide Army Space Support?**

One important issue discussed in Chapter 4 involved the notion that advances in technology and reachback capabilities may lead to a situation that negates the need for FA 40s integrated in to the combat commands. An obvious problem with this position is that it is based upon technological advances that have yet to be developed. As noted it is conceivable that GPS accuracy information normally considered the purview of a corps SOO or supporting ARSST, will be transmittable to the corps or division planning cell in a usable format. Determining peaks and valleys on this chart will prove easy enough for a “non-space” planner to discern basic information. Less obvious is the space analytical function the integrated FA40, or SOO, brings to the Army commander and his or her

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<sup>114</sup> “Army Space Master Plan,” ES-14.

<sup>115</sup> “Army Space Master Plan,” ES-13.

staff. In evaluating this issue, one must assume space capabilities across the spectrum of military, civilian, and commercial for both friendly, enemy, and neutral nations will continue to grow. While GPS may be “dumbed-down” for general use, a comprehensive understanding of the growing space environment and its impact on planning and executing operations will probably require a greater rather than lesser need for space experts.

It seems misleading to examine FA 40 support only in the frame of products produced from space. The true value of ARSSTs and space operations officers is probably more qualitative and that is difficult to measure. The primary example of this is the integration of space expertise in the military decision making process (MDMP). This requires a combination of an officer schooled in both the intricacies of Army doctrine for planning and executing missions as well as the space capabilities available to the warfighter. Key to this will be the conduct of an intelligence preparation of the battlefield that informs the commander and staff of the possible threat from numerous space-based systems of other nations. It is this level of synthesis of space and mission planning and execution that, in my judgment, vindicates the value of space operations officers in the Army corps and division staffs. It is important for not only understanding the need for space support; it also points to a balance weighted more heavily toward embedded SOOs vice ARSSTs for space support.

### **Options for Army Space Integration to the Field**

It seems reasonable to assume that space support assets will continue to grow within the Army organization. From previous chapters, it is evident that proper Army space support will require some balance in organization between ARSSTs and imbedded SOOs (to include a space support element). Should the Army realize this growth in more ARSSTs or more space support elements (SSEs)? What information in this study can evaluate the advantages and disadvantages of a balance weighted toward ARSST support versus an integrated SSE? Is a more evenly balanced option truly a golden mean in this case? Does the history of Army space support provide answers for those seeking the best organization to integrate space support with Army operations?

## **ARSST Heavy**

To address these questions, we first turn to the concept for Army space support prevalent in the 1990s. The discussion in Chapter 2 showed that the concept of emphasizing the ARSST was favored during the evolution of Army space support organization in the last decade. The essence of the argument was that the highly technical equipment of the ARSST required centralized maintenance, and personnel tasked to operate it required centralized training. This required all the ARSSTs to be based out of one location, and Colorado Springs offered the most logical choice because of the rich space support environment. Numerous space activities reside in or around the Colorado Springs area, to include the U.S. Army Space Command, U.S. Air Force Space Command, and U.S. Space Command.

The primary deficiency in this centralized approach was recognized as not providing the supported unit full time access to space expertise for space support integration into its operations. The Army space support community toyed with supporting units, such as the XVIII Airborne Corps, with permanently assigned LNOs. It also conducted a study of permanently attaching the ARSST to its habitually supported command. These options were rejected based mostly on the lack of adequate resources in equipment and personnel, additional cost, and the above-mentioned need for centralization.

### **Embedded Space Operations Officer (Space Support Element) Heavy**

The Army has accepted the idea of an integrated SOO with the supported unit at the corps level under current force structure, though not all of the corps have one assigned as yet. Planners for the Interim Force have committed in the initial stages of the development of this force to a robust six-person space support element (SSE), basically a permanently assigned ARSST without the expensive, highly technical equipment. There is a plan within the Army space operations community to push for as many as four SOOs in the corps headquarters, with a corresponding increase to special operations forces. These plans exist to answer the problems of a lack of space officer permanency in the field units noted under the ARSST system of space support.

While the Army has a plan to integrate FA 40 officers into the fielded units, its focus on ARSSTs seems unclear. The problem here generates from the zero-sum game nature of modifying Army organizations. To add a FA40 officer to a headquarters staff, the commander must agree to cut some other occupational specialty. As noted in Chapter 4, the Army space operations community has experienced some success in bolstering overall numbers in Army structure. It is reasonable to assume this emphasis on space support by the senior Army leadership will influence the process of increasing the number of SOOs on the combat units' staffs. However, the increases in FA 40 officers have not been large. Compromise between fully manning the Legacy Force corps and division units with fully manned SSE and growing the active duty ARSSTs will continue to be a key issue, especially when one considers the other requirements within the military community for Army space officers.

### **Recommendation**

Stephen Rosen notes in *Winning the Next War* that “peacetime innovation has been possible when senior military officers with traditional credentials, reacting not to intelligence about the enemy but to a structural change in the security environment, have acted to create a new promotion pathway for junior officers practicing a new way of war.”<sup>116</sup> This statement applies to the issue of advancing space support to the Army commander. If space offers tremendous, untapped potential for conducting Army operations, Rosen’s assertion seems to favor a SSE weighted option. Embedded SOOs provides for growth of FA 40 officers within the Army mainstream combat unit structure while educating the Army on the current and potential capabilities of space.

Indications of trends in changes in the security environment, such as proliferation of space capabilities and the perceived urgency for transformation in the military, seem to favor a more rapid implementation of fully equipped SSEs to the current Legacy Force than currently planned by the Army. Increased emphasis, and dependence, on space capabilities offset earlier arguments for keeping space expertise centralized, and therefore unintentionally isolated to a degree from the supported field commands. Though the process of compromise would probably result in a reduction in ARSST growth, an effort

should be made to maintain several to fulfill mobile technology team (MTT) type duties and act as reinforcements for times of conflict or increased use in peacetime. The Army Reserve units should go unchanged because they do not reflect in the zero-sum game considerations in Active Army manning issues.

### **Testing the Water**

Earlier the study addressed whether there was true value in integrated FA 40 officers or space support elements to the Army field units. Perhaps Rosen's premise has a corollary that can apply to this issue. Filling the Legacy Forces, and all Army Force structures, with SSEs will provide answers to the questions that cannot be answered in any other way. If the SSE has true value, and consists of quality space experts and savvy Army planners, the SSE and SOO will flourish. If advances in near-term technology, or a lack of truly value-added capabilities prove them superfluous, they will wither.

Most indications addressed in this study show that a space operations structure weighted toward embedded SOOs in an SSE as the best course of action for future space operations support organization. In the end, as in so many innovative ideas toward improving militaries, only time will tell the efficacy of this option. However, based on the changing security environment and the move for transformation to an Army more dependent on space assets, Army leaders are justified in pursuing an accelerated plan for implementing SSEs in the corps, division, and special forces group headquarters at the expense of ARSST growth.

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<sup>116</sup> Stephen Peter Rosen, *Winning the Next War* (Ithaca, N.Y.: Cornell University Press, 1991), 251.

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