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Space and the Nation's Security

the Army Space Journal

Communicating Space to the Warfighter

The U. S. Army Space and Missile Defense Command publishes the Army Space Journal quarterly, with special editions as required. The publication consists of four sections, FROM THE TOP – Leadership Updates; JOURNAL FORUM – Space Topics; TIP OF THE SPHERE – SMDC Features; and FLIPSIDE – Space Cadre News /Features.
The Journal provides a forum through which Space operations professionals can disseminate professional knowledge and furnish information within the U.S. Army. The purpose is to increase the effectiveness of Space operations through a professional discussion of events and lessons learned. It is also intended to inform the Army warfighter on Army Space issues.

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What you didn't know ...

As the presses begin to roll on this edition, the news from space is once again good.

Probably the neatest story to tell is about the great efforts Bill Coffey and LTC Richard Dow from SMDC's Future Warfare Center are making with the Space Support Elements (SSE). When the 3rd Infantry Division assumed the Task Force Baghdad mission in February 2005, they did it with an SSE assigned, trained and equipped. Dow's latest update on what the SSE can do is printed on page 24, with an associated article about the 3rd ID. As MG William G. Webster Jr. commands his Division in helping to make Iraq free and secure, we look forward to hearing how our four Space cadre Soldiers are helping in the task. We will be equally interested in further developments on the Space side as Coffey and Dow grow the SSE concept into other operational elements.

This brings to mind Lew Bernstein's excellent perspective on page 1F in our Flipside section on forming Army Space Support Teams in the 1980s and 1990s. Bernstein, from SMDC's history office, explores the various ways the Army delivered Space support to tactical commanders during this timeframe. This all provides the ground-base for not only the SSE with the 3rd ID, but the remainder of the Space team helping the warfighter today. This includes Army Space Support Team 1 from the 1st Space Brigade who is supporting the 18th Airborne Corps in Baghdad, along with the Brigade's Joint Tactical Ground Station providing early missile warning from Qatar and the Commercial Exploitation Team for the Multi-National Corps-Iraq and U.S. Central Command in Bahrain. In Qatar, we have LTC Sandra Yanna who is serving as the FA40 Space officer assigned to the U.S. Central Command Air Force.

A classic example of the teamwork between the FA40 and the operational capabilities of SMDC/ARSTRAT is illustrated in the Flipside on page 14F. The article talks about our Spectral Operations Resource Center providing commercial satellite imagery to Eighth U.S. Army in South Korea and Pacific Command in Hawaii to assist in the Tsunami relief efforts. Our FA40 Space operations officers MAJs Sam Amber and Rich Lewis, assigned to Eighth Army in 2003 and 2004 respectively, knew to tie in this Space capability to their command's efforts of providing relief to the disaster victims.

Let me update you on some behind-the-scenes aspects of the ASJ. This edition, we've divided our content into four clear sections: From The Top, Journal Forum, Tip of the Sphere and The Flipside. In our Leadership Updates section, we've introduced a new perspective that we hope will be a regular in upcoming editions. CSM David Lady, SMDC's senior enlisted Soldier, discusses the contributions our enlisted Soldiers bring to the Space arena. In the Journal Forum section, we've brought in a Pro and Con aspect where Charlotte K. Scharer and Miller Belmont square of on a lightening rod issue. Our Tip of the Sphere section continues to focus on SMDC features but, within The Flipside section, we've added FA40 Space news written by LTC Mike Powers who is the chief of the FA40 and Space cadre office in SMDC.

Finally, the ASJ staff looks forward to the upcoming FA40 Conference in Long Beach, Calif. We see this as an opportunity to learn about issues important to the Space cadre community and learn how you think our publication can better serve you.

Happy reading.

— Michael L. Howard
Editor in Chief

Tsunami relief support

I was contacted shortly after the tsunami by the deputy G-2 of Eighth U.S. Army to see if there was anything that we could provide to assist in planning efforts in support of the emerging relief effort.

The capabilities of the Spectral Operations Resource Center (SORC) immediately came to mind. I am very limited in my imagery capabilities but I have an organization (ARSTRAT) that is designed to support me in serving the warfighter's needs. I went to the SMDC classified Web site to submit a request for information that would get the SORC started on products I knew would be critical in planning relief efforts. This is what I call "Space recon." I noticed that the SORC had changed ownership from the G-3 to the G-2. The Web site allowed me to quickly and directly request support from the SORC.

Through a series of very timely emails and phone calls (even after hours in the States) I was able to explain the areas that we were planning for and the type of information we needed.

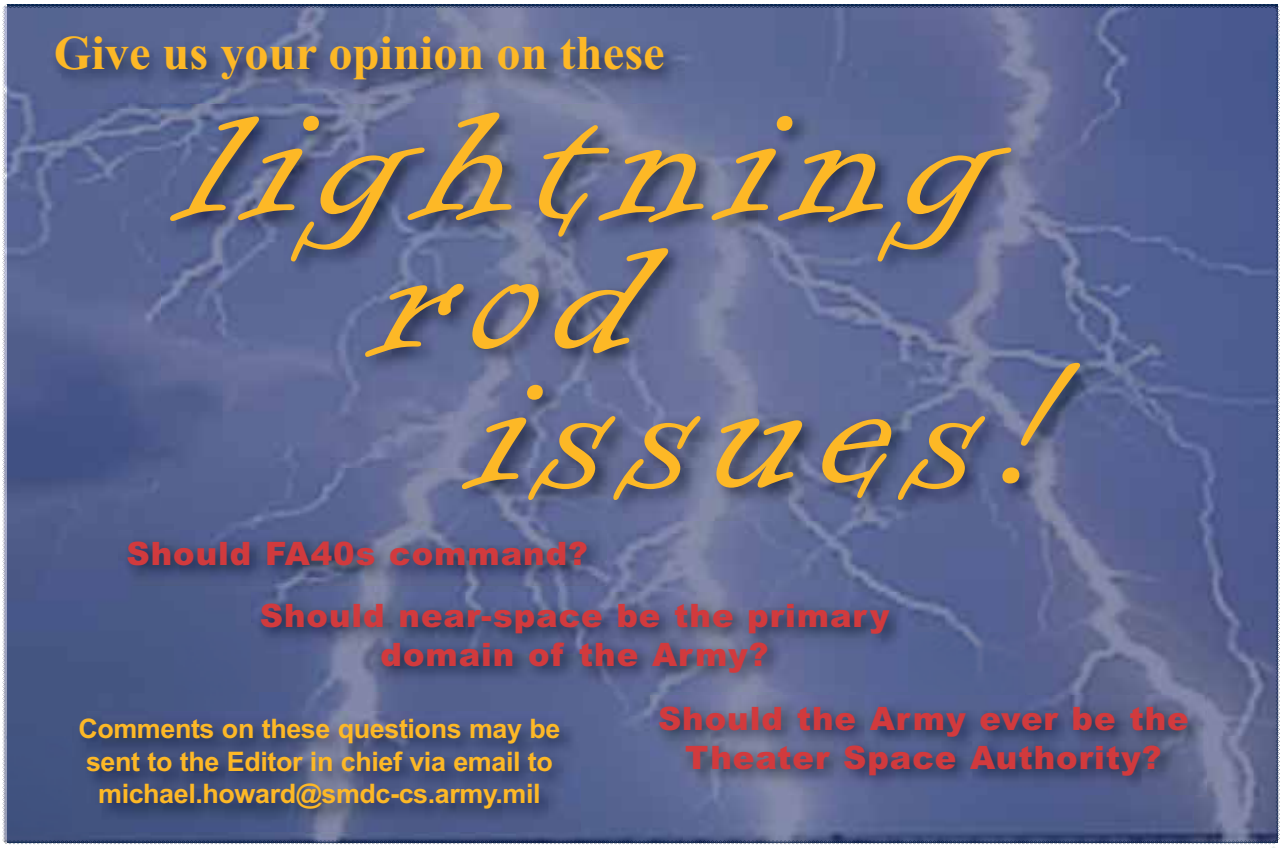
The SORC quickly jumped onto the project and provided products in a very timely manner. Some data I was able to pull directly off the FTP server. Some data was too large and the SORC FEDEXed this data to us.

The information was very helpful to our geospatial Soldiers in putting together the planning tools necessary for the units identified to deploy.

This effort served two purposes. 1) It provided timely "Space recon" planning products for units preparing to deploy. 2) Educated the command on the capabilities Army Space officers can quickly tap into to meet mission requirements.

— MAJ Richard Lewis

Letters to the editor are welcome and encouraged. The Army Space Journal reserves the right to edit for brevity and clarity. Unfortunately all letters cannot be printed due to space. You may send letters to the editor in chief at michael.howard@smdc-cs.army.mil



Space: The Evolving Importance of the Final Frontier

LTG Larry J. Dodgen
Commanding General,
U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command

By LTG Larry J. Dodgen

The U.S. military's transformation to the post-Cold War era was convincingly demonstrated during Operations Enduring Freedom (OEF) and Iraqi Freedom (OIF). The initial phases of both operations, targeted at determined and capable enemy forces, were characterized by well-synchronized ground and air combat enabled by Space-based capabilities. The repressive regimes of the Taliban and Saddam Hussein were toppled with unparalleled speed and overwhelming military power.

OEF and OIF validated the great potential of advanced technology in the hands of trained professionals. Modern technology and joint operational concepts now routinely provide joint warfighters capabilities considered extraordinary just a few years ago. Foremost among these capabilities are those which harness Space technology and systems. Space-based systems enhance or enable a wide range of capabilities, including expeditious delivery of information, enhanced situational awareness, higher operational tempo, greater lethality, increased survivability and reduced planning times.

Analysis of the lessons from the initial phases of OEF and OIF is ongoing; however, three key points are resoundingly clear:

- The value of Space systems has been proven repeatedly in Afghanistan and Iraq
- Space must be part of military operational planning at the earliest opportunity
- Space-based capabilities must focus on support to the warfighter (Space to Mud)

Supporting the Current Fight: Keeping it Relevant

The 21st century is showing itself to be an era of uncertainty and unpredictability. Our nation's strategic environment is different than the past. Threats from adversaries and the missions our military are increasingly called on to perform are fundamentally changing. Ongoing combat operations in Afghanistan and Iraq also show that lightning assaults, Space-based technologies and precision strike capabilities alone are insufficient to defeat the current enemy. Compounding the challenge for our military forces are insurgent forces who attempt to blend into the local population, making it easier for them to elude advanced surveillance technology and precision strikes. As a result, the capabilities and the manner in which they were employed with such resounding success against the Taliban and Baathist regimes will need to evolve to defeat the asymmetric threats of the future.

Insurgent forces in Afghanistan and Iraq, waging asymmetric warfare, possess and employ a wide variety of irregular means in attempts to avoid our strengths and exploit our vulnerabilities. They have planted and detonated prolific numbers of technologically crude but deadly improvised explosive devices (IEDs). These IEDs have been extraordinarily varied in design and imaginative in their employment. In addition to coalition forces, the targets of these attacks have even been international institutions, noncombatants, individuals affiliated with nongovernmental charitable organizations and commercial companies involved in reconstruction. Shoulder-fired rocket propelled grenades, explosive-laden vehicles, suicide bombers and insurgents fighting tenaciously house-to-house have added additional risk and complexity for the coalition forces.

In an insurgent environment, one might believe that Space is irrelevant. Nothing could be further from the truth. The relevance of Space is important and its significance continues to grow. However, focus, adaptiveness and innovation are required to ensure Space-based systems and products remain relevant to the current fight. The goal of providing relevant support to our warfighters is to furnish them capabilities necessary to

The 21st century is showing itself to be an era of uncertainty and unpredictability. Our nation's strategic environment is different than the past. Threats from adversaries and the missions our military are increasingly called on to perform are fundamentally changing.

keep pressure on enemy forces. Achievement of this goal will require our emphasis in four areas:

Support must be responsive and assured to the warfighter on the ground.

Warfighters need immediate access to actionable information. However, as observed by GEN James E. Cartwright, Commander, U.S. Strategic Command, "Thanks to satellites, the military can gather information more quickly than high-level leaders can react to it." The result is that our ability to collect information has eclipsed our ability to process it into actionable information.

Warfighters often encounter data-overload, making it a challenge for them to identify what they need to know. In this regard, two points are relevant: "Shared information does not automatically, if ever, lead to shared understanding" and "Higher quality information does not necessarily increase performance." An example was cited by an intelligence officer in an after action report from OIF: "Intelligence sections at all levels were inundated with information and data that had little bearing on their mission or intelligence requirements. Information was not disseminated based on a proactive evaluation of what supported commanders needed; it was just disseminated."

There are many variables in determining what information is valuable to commanders and planners. As a result, intelligence and Space professionals working with supporting agencies must strive to understand how warfighters will use selected information in different scenarios, and then proactively seek to support those information requirements. It is also important that relevant operational requirements for warfighters remain the primary focus of attention rather than the implementing architecture and its processes.

Support must be timely.

Support must be provided "in time" to be relevant to warfighters; support that arrives late serves as but a historical side note. For example, in preparation for possible combat operations prior to OIF, "in time" support was provided by Space and Missile Defense Battle Lab (subsequently reorganized as part of SMDC/ARSTRAT's new Future Warfare Center) in fielding applied technology in the form of the Space Support Element Toolset – Light for the Army Space Support Teams (ARSSTs). This capability enabled the rapid delivery of large data files to the ARSSTs without directly competing for the supported units' limited wideband communications assets.

Tremendous efforts are being expended to expedite delivery of the most relevant equipment to our warfighters. The Army Posture Statement notes, "Many technologies are already being fielded to our frontline Soldiers to dramatically improve their capabilities. Specific science and technology initiatives will improve existing capabilities to: detect and neutralize mines and improvised explosive devices; identify friendly forces in combat; identify hostile fire indicators; and enhance survivability, training systems and robotics."

In an effort to expedite relevant support, technologies and capabilities being developed in support of the future force are being leveraged to support current force requirements. For example, in July 2004, the Army restructured the Future Combat Systems (FCS) Program to accelerate delivery of crucial new capabilities to the Current Force. By accelerating FCS, promising technologies are being "spiraled" sooner than initially planned in support of Soldiers. Technological solutions like the Warlock, designed to interfere with IEDs detonated via electronic transmissions, are being initiated in direct response to warfighter requirements. The Army is aggressively implementing other similar initiatives in an effort to expedite technological solutions in support of our deployed warfighters:

- The Rapid Fielding Initiative (RFI) is designed to fill Soldier equipment shortfalls by quickly fielding commercial off-the-shelf technology rather than waiting for standard acquisition programs to address these shortages.
- The Rapid Equipping Force (REF) program typically uses commercial and field-engineered solutions to meet immedi-

(See Final Frontier, page 44)

Looking back/ looking ahead

Our role in transformation

CSM David L. Lady
Command Sergeant Major,
U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command

By CSM David L. Lady

We are an Army at war, supporting a nation at war. We are transforming our Army to win the current war and deter or win future wars.

U.S. Army Space and Missile Defense Command/ U.S. Army Forces Strategic Command (SMDC/ ARSTRAT) exists to deliver Space-based capabilities to the nation. As we think about this, one point I want to drive home is that the Army's Space cadre, delivering critical Space-based capabilities to our nation, includes many excellent enlisted Soldiers. We have enlisted Soldiers operating and monitoring early missile warning, satellite control and Space support systems, all in our global war on terrorism.

The responsibilities of junior Soldiers on the Defense Satellite Communications System Operations Center floors, in the Joint Tactical Ground Station vans and at the Regional Satellite Communications Support Centers are greater than I exercised even as a brigade-level command sergeant major! Crucial decisions are regularly made by these Soldiers, often with mere minutes to react to enable satellite communications throughout the globe and to warn theater headquarters of possible enemy missile activity.

With this in mind, SMDC/ARSTRAT will do its part to transform the Army while fighting the current war. And we will be ready for future wars.

Progress has been made in the three critical mission areas that our commanding general identified at the beginning of 2004. SMDC's support of the global war on terrorism has paid a large national dividend. In the past year, our Space Support Elements (SSEs) have been assigned into the first three Units of Employment (UEx), and our troopers with the first UEx, 3rd Infantry Division, are certified and have deployed. Their experiences and successes in Iraq will convince the Army of the proper organic Space support structure in maneuver headquarters, and will determine the way ahead for further "normalizing" of Space operations in the Army.

Each of these teams contains enlisted Soldiers, in a combination of assigned and augmenting personnel. Our Soldiers on the Army Space Support Teams (ARSSTs) and the SSEs are not only facilitators of reach-back capabilities, communicating needs and assisting in the creation of Space-enabled products, they are also Space peer-proponent moving among their fellow enlisted Soldiers in the supported headquarters. They offer insight and suggest ways Space capabilities can be brought to bear against the problems at hand.

Our Soldiers are serving well, and our role as SMDC/ARSTRAT leaders is to transform this enlisted force to be even more capable members of the Army Space cadre. This is the thrust of SMDC/ARSTRAT's Noncommissioned Officer Development Program. This program has two key aspects: to inform the enlisted leaders of Army and SMDC/ARSTRAT priorities and to develop individual and small unit training programs that enable our Soldiers to be full partners in accomplishing these priority missions.

To this end, two very important NCO development conferences informed our enlisted force

Participant of the 2005 SMDC/ARSTRAT Command Sergeant Major Senior Noncommissioned Officer Conference

in January 2005: The Sergeant Major of the Army's Nominative Command Sergeant Major Conference, and the SMDC/ARSTRAT Senior NCO Conference. This was the fifth Sgt. Maj. of the Army Nominative Conference, but the first SMDC/ARSTRAT Senior NCO Conference in at least three years.

Secretary of the Army Francis J. Harvey and Chief of Staff GEN Peter J. Schoomaker were keynote speakers, emphasizing that America is a nation at war. To win this war, America must meld all elements of the national power in a determined and relentless campaign to defeat enemies who challenge our way of life. This is not a "contingency," nor is it a "crisis." It is a new reality. This new reality requires that Soldiers and Army civilian workers adopt a new mindset: a joint and expeditionary mindset. We will always fight as part of the joint armed forces team. We will be based largely in the U.S., but will regularly deploy as expeditionary units into forward areas, for training as well as for operations against the worldwide enemy.

They discussed how the Army has changed policies to stabilize Soldiers and families at stateside installations for a larger part of their military careers. They defined how the Army is restructuring active and reserve components to place specialties in greatest demand into the active component, reducing war zone reliance on the Reserves and National Guard.

At the SMDC/ARSTRAT Senior NCO Conference, LTG Larry J. Dodgen and his deputies emphasized the place of SMDC/ARSTRAT within both U.S. Strategic Command and U.S. Northern Command. Fleet Command Master Chief William N. Nissen and Marine Sergeant Major Dennis S. Frye, attended our conference to review the role of NCOs in all the services as all services transform to be more effective in fighting this war.

Our SMDC/ARSTRAT leaders spoke on the transformation of this organization, reviewing the support the command will continue to provide warfighting organizations and initiatives such as fielding SSEs into the deploying divisions to provide further and even more effective Space support to warfighters.

Our SMDC/ARSTRAT brigade commanders both renewed their commitment to leader development and restated their reliance on the NCO Corps to accomplish all missions and to take care of Soldiers and families.

Schoomaker stated, "… the institutional Army must be as adaptable as the operational Army." The officer and NCO education systems must adapt to provide education to leaders at the right time in their careers; promotion policies must be re-examined to see what changes will better support an Army at war. Force developments and acquisition processes must change to keep pace with the needs of deployed units. At the SMDC/ARSTRAT Senior NCO Conference, Michael Schexnayder, deputy to the commander for Research, Development and Acquisition and Kirby Brown, Battle Lab director, Future Warfare Center, highlighted the ability of this command's Future Warfare Center to rapidly create or update Space operations doctrine and to supply advanced equipment to our ARSSTs and other deployed elements.

Both conferences were great opportunities for leaders to hear and answer their Soldiers' concerns and questions. Both are capstones to Army and SMDC/ARSTRAT professional development programs. Both have such great value that they will take place next year despite the pace of current operations.

(See Looking Ahead, page 49)

Medaris award recognizes GMD Team, Missile Defense Program

Michael C. Schexnayder
Deputy Commander for Research, Development and Acquisition, U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command

By Michael C. Schexnayder

The Huntsville, Ala., chapter of the National Defense Industrial Association honored the U.S. Army Space and Missile Defense Command in October 2004 as part of the Ground-based Midcourse Defense (GMD) Team, which was recognized with the John B. Medaris Award[1]. The award honors the memory of MG John B. Medaris, who provided the leadership and direction that resulted in significant contributions in the field of missile systems technology. He was the first officer in Army history given complete responsibility for research, development, production and deployment of a major weapons system, the Jupiter Intermediate Range Ballistic Missile (IRBM).

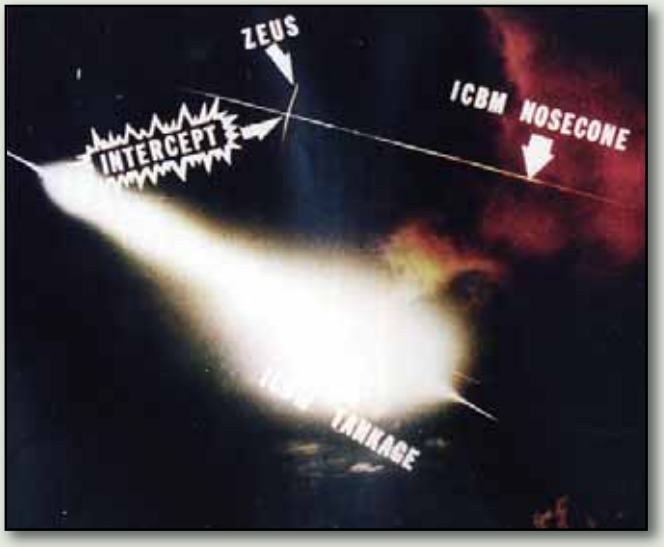
The GMD team was led by the GMD Joint Program Office, Missile Defense Agency, and included the prime contractor, the Boeing Corporation with its subcontractors; the Army Corps of Engineers; and the U.S. Army Space and Missile Defense Command — all recognized for their significant contribution to the technical progress of this national defense program.

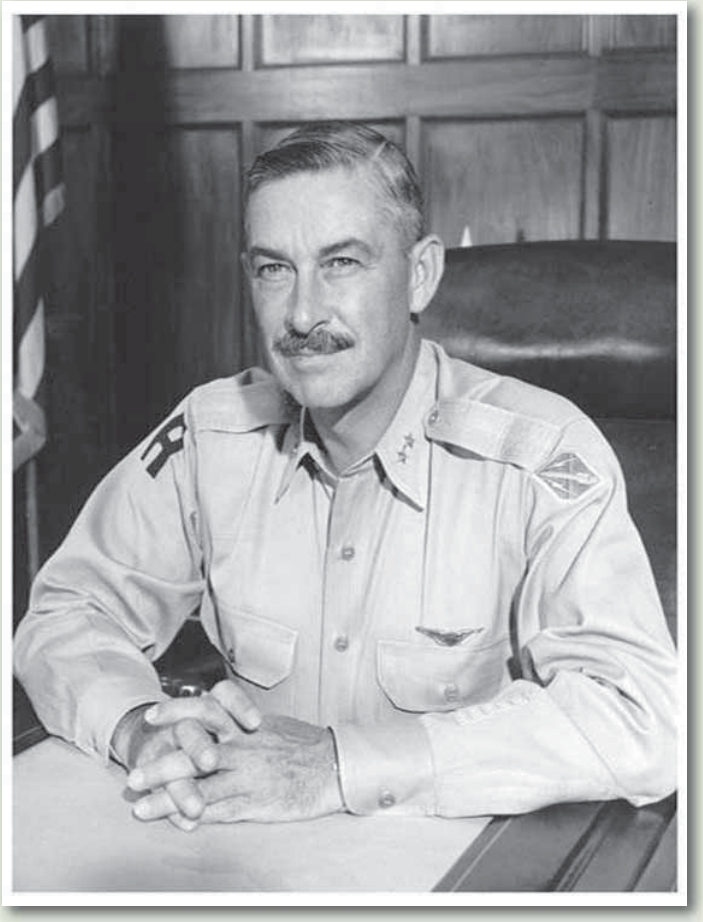
While the Medaris Award recognized the team, it also acknowledged all the people and organizations involved in developing missile defense from its beginnings. The Army's roles and missions in Space and missile defense stem from its oldest assignment, protecting American territory from foreign invasion. While the means of performing the task have changed from coastal defense forts in the 19th and 20th centuries, to antiaircraft and air defenses in the 20th and 21st centuries, the intent has remained unchanged.

At the end of World War II, two new weapons, the atomic bomb and the guided missile, complicated this mission, presenting the Army with unprecedented technological challenges. These new factors in the national defense equation led the Army to expand its investigations and experiments with missiles, Space-based communications and sensor technologies to field new weapons systems. General Medaris was one of the leaders of these Army efforts.

By the mid-1950s, under the threat of Soviet nuclear attack, the Army and Bell Laboratories, a major defense contractor, concluded that ballistic missile defense was both technologically feasible and affordable. The Army's efforts in developing guided missile technology resulted in the first successful American missile flights, earth orbiting satellites, lunar and solar probes, safe live primate launch and recovery, as well as the first communications, meteorological and reconnaissance satellites. Many of these early Army efforts were the work of Dr. Wernher von Braun and his rocket team, who worked under General Medaris' direction, at the Army Ballistic Missile Agency (ABMA) at Redstone Arsenal.

Through 1959, the Army's efforts in rocketry, missile defense and sensor technology were complementary. That year the Eisenhower Administration broke this synergy when it reallocated military Space missions among the armed services and formed the National Aeronautics and Space Administration (NASA) to civilianize Space exploration. While retaining proponency for ballistic missile defense, the Army was stripped of its Space assets. The new agency inherited some of the missile programs and the Redstone Arsenal missile development facilities, renamed the Marshall Space Flight Center. It also received the Explorer satellite program, all the rocket and missile contracts the Army had with the California Institute of Technology's Jet Propulsion Laboratory, as well as responsibility for developing the 1.5 million-pound thrust Saturn rocket. The Army also transferred technical expertise (approximately 6,500 people) from the ABMA Development Operations Division to NASA. The Air Force gained control of the Jupiter-C IRBM program and responsibility for developing an intercontinental ballistic missile (ICBM).





Above, on Dec. 12, 1962, the NIKE-ZEUS Project Office achieved the first fully successful intercept of an ICBM. This photograph illustrates beyond a doubt the Army's achievement.
Right, MG John B. Medaris.

Forced out of Space, the Army continued to make technological progress in pursuit of ballistic missile defense, culminating in the deployment of the only Ballistic Missile Defense (BMD) system in the western world. In the 1950s and 1960s, as it created various missile defense systems, Nike-Zeus, Nike-X, Sentinel and Safeguard, the Army missile defense organizations evolved into entities that combined research, development, testing, evaluation and acquisition functions.

Despite the successes of the Nike-Zeus in intercepting an ICBM in 1962 and its successful satellite intercept the following year, Secretary of Defense Robert S. McNamara generated controversy when he determined that the missile defense system was neither technologically feasible nor cost effective. He assumed the Soviets would overwhelm it by launching more missiles than could be intercepted. His own preferred solution was mutual assured destruction[2]. In 1965, after China developed and tested nuclear weapons and missiles, strategists referred to an "Nth" country threat to stability. McNamara eventually agreed with the premise and announced a decision to deploy the Sentinel system to protect urban and industrial areas[3] against a possible Chinese attack. Development work proceeded.

In the 1960s, missile defense research developed the Sprint and Spartan missiles as part of the Sentinel system — a BMD system designed for light area defense against low level ballistic missile attack. Sentinel later became the SAFEGUARD System — midcourse and terminal phase defense for ICBMs[4]. As arms control negotiations began with the Soviet Union, diplomats on both sides used their anti-missile systems as bargaining chips to obtain concessions. In November 1966, Secretary McNamara announced that the Soviet Union had deployed an ABM system around Moscow. Sixty-four launchers surrounded Moscow, equipped with the Galosh, a nuclear-tipped interceptor with an estimated range of 200 miles. In the 1970s, the Army activated the only missile defense system in the West, the Stanley R. Mickelsen Safeguard Complex in North Dakota. The SALT I talks eventually produced the Anti-ballistic Missile (ABM) Treaty, which limited each signatory to deploying ballistic missile defense systems at two sites each: one near the National Command authority, and the other near an ICBM complex. The Senate ratified the treaty in 1972. Further restrictions were placed on the ABM program after a protocol to the treaty, limiting each country to one ABM site either the National Command Authority or an ICBM complex was signed in 1974. This agreement went into force in May 1976.

In October 1975, the Stanley R. Mickelsen SAFEGUARD Complex (SRMSC) became the first and only ABM system in the western world. On that same day, the House Appropriations Committee recommended the SAFEGUARD site be deactivated by the end of the fiscal year, reasoning that its operating costs, combined with the limitations imposed by the ABM Treaty and the development of Soviet MIRVed missiles, would make its benefits negligible

In December 1975, the Joint Chiefs of Staff ordered the SAFEGUARD Command to terminate the ballistic missile defense mission and ordered the deactivation of SAFEGUARD in February 1976. The missiles and warheads were removed by September 1976 and in September 197, the SRMSC entered caretaker status.

Despite this setback, the Army's scientists and engineers continued to develop and test a missile defense concept through the Ballistic Missile Defense Organization (BMDO), the organization that consolidated all ballistic missile defense efforts under a single manager[5]. The period between 1974 and 1983 began with congressional limitations in ballistic missile defense initiatives, expanded interest in Directed Energy weapons (Neural Particle Beams and lasers) and was followed by a rush to accelerate development of a defense for American ICBMs.

BMDO's engineers explored using airborne and/or Space-borne sensors to discriminate between targets. These experiments demon-

(See Test Site, page 46)

Stay Engaged

COL Jeffrey C. Horne
Deputy Commander for Operations, U.S. Army Space and Missile Defense Command/ U.S. Army Forces Strategic Command

By COL Jeffrey C. Horne

Employment of Space-based capabilities has become so seamless that some aren't consciously aware that we are using them. Even as a Soldier is using his cell phone to call home, it might not occur to him that he's using Space-based technology. Operations Enduring Freedom and Iraqi Freedom provide multiple examples of Space-based combat power enablers:

- First, use of Space control in support of military operations
- Global, embedded, real-time precision navigation and targeting
- In-theater, direct downlink missile warning
- Reliable, wideband, on-demand communications
- National intelligence, surveillance, and reconnaissance in support of theater commander requirements (Embedded dissemination and processing capability greatly reduced timelines to divisions.)
- Near real-time, accurate geospatial intelligence from Department of Defense (DoD) and commercial venues
- Deployment of cohesive, trained Space units and professionals (See ASJ, April 2004 for more information)

The experiences and lessons from Operation Iraqi Freedom have served to crystallize the need for additional capabilities in intelligence, surveillance and reconnaissance (ISR), satellite communications and Space control. We've learned that today's combat operations advance so quickly that our ground-based communications assets can't always keep up - they don't always have the time to stop and set up. One of the Army's top-most priorities for the future is to improve our communications on the move capability. Small numbers of Airmen used Space-enabled communications with their unmanned aerial vehicles (UAVs) to track down and attack the enemy, run reconnaissance missions and provide battlefield damage assessments - tasks formerly accomplished with large units supporting reconnaissance aircraft, both on the ground and in the air. Enhanced unmanned aircraft supported by worldwide Space-based platforms have enabled our Soldiers and Airmen to be employed in other areas, expanding our warfighting capabilities.

The secretary of defense recently stated, "Space and information are not only enablers, but core warfighting competencies." Space operators have a lot to live up to. We must continue to advocate Space-based capabilities for the land forces and stay engaged with our joint and Army partners to complete our gap analysis and develop joint solutions.

The 2005 Army Modernization Plan states that the Army will use today's capabilities to sustain our current global commitments and expand the search for future force capabilities to enhance our dominance as a joint land force. Space operators must view this task through the eyes of both our operational formations and the work of our research and development teams. We will serve with existing capabilities while seeking the latest, cutting edge technology for early transition to our operational formations. We must do this with constrained resources, within a joint architecture and within a joint concept of operations.

The Army Plan's attitude of "purposeful reliance" requires us to engage and team with branch proponents and the Army staff to ensure that the Army's Space-based needs are met. Space operators and leaders know that Space-based assets enable maneuver, fires, combat service support, mobility, survivability, command and control, and air and missile defense. But, given constrained resources, how does the Army select our most critical and promising capability enhancements?

We must continue to expand our horizons to provide joint task force and combatant commanders with ever expanding options to achieve strategic responsiveness, precision fires and operational maneuver. Partnerships, planning, creation of forums for key decisions at both the Army and joint level are emerging to help us accomplish these tasks.

The Army Space Master Plan (ASMP) and the Army Space Council (ASC) will support this task. Over the past two years U.S. Army Space and Missile Defense Command's (SMDC's) Directorate of Combat Developments compiled, wrote and coordinated a new ASMP. We anticipate the document to be signed in May 2005, the first update since 1997. The ASMP identifies key Space-related tasks, capability gaps and provides a roadmap for the Army to address the challenges presented. The plan addresses doctrine, organization, training, materiel, leadership, personnel and facilities (DOTMLPF) solutions to Space mission needs, and takes a first shot at integrating our current-to-future science and technology plans. Additionally, the document links various proponent efforts to achieve the goals, objectives and characteristics of the future force and the Army Campaign Plan and links our efforts to DoD efforts, specifically the National Security Space Plan.

The ASMP will assist the Army Space Council, a new three-star forum comprised of key members of the Army Staff, Training and Doctrine Command and SMDC, by identifying key issues and decisions facing the Army. This effort will enhance unity of effort within the Army as we plan, coordinate, integrate, synchronize and execute Space-related activities and interface with the joint community. We anticipate that the ASMP will be used as a basis for Army leaders to constructively engage and approve annual execution plans and coordination of long-term budget decisions.

None of this should hinder cross-proponent integration or decision processes. An example is provided through our work with the intelligence community to optimize the Spectral Operations Resource Center (SORC). Since 1990, it has been using Space-based assets and teaming with the National Geospatial-Intelligence Agency (NGA) and other government agencies to provide geospatial information (image maps and products) to Army Space Support Teams, in-theater warfighters, DoD and government organizations and non-governmental agencies. Over time the SORC was expanded to include multi- and hyper-spectral analysis. Recently we resolved competing perspectives between various communities by agreeing to expand and transform the SORC into a Measurement and Signatures Intelligence (MASINT) Node supporting U.S. Strategic Command. It will become part of an Army-wide network of nodes supporting regional combatant commands with an initial operational capability by July 2005.

MASINT is technically derived intelligence that detects, locates, tracks, identifies and describes the unique characteristics of target sources. Capabilities include radar, laser, optical, spectral, acoustic, nuclear radiation, radio frequency and seismic analysis. It can be used for military operations, counter-narcotics, fire fighting, treaty verification, environmental monitoring and more. MASINT covers the entire electromagnetic spectrum from low frequency and sound waves through infrared and visible light to high frequency nuclear radiation. The SORC will continue with its current spectral expertise and expand to include capabilities throughout the entire electromagnetic spectrum. This change didn't take away from the SORC's capabilities or its support to warfighters; it merely expanded it.

Partnerships like these enable us to provide our Soldiers, Sailors, Airmen, and Marines with the best tools available. We must continue to expand our horizons to provide joint task force and combatant commanders with ever expanding options to achieve strategic responsiveness, precision fires and operational maneuver. Partnerships, planning, creation of forums for key decisions at both the Army and joint level are emerging to help us accomplish these tasks. While we expect great fiscal challenges, we believe the future of Space professionals and the capability they provide is very bright due to the efforts we've discussed here and the great work all of you are doing in the field. Space operations is on the cutting edge of the Army's future thanks to Space professionals around the world.

The View From (Army) Space ...

By COL James R. Pierson

Welcome back to the Army Space Journal. In this edition we've added a twist — a controversial Space professional topic (Does our nation need a separate Space Force?) — where both sides of the issue are discussed. What we anticipate doing is generating thought and discussion on this "lightning rod" topic and hopefully others as well. After all, if we're all thinking alike, then maybe we're not thinking hard enough.

Balance! Balance is critical in just about everything we do. The New England Patriots had a unique balance between very good offensive, defensive and special teams personnel that have thrust them into discussions of another football dynasty. Great basketball teams, like the Duke Blue Devils, also have a delicate balance between offensive and defensive excellence. Each one of us is fully aware of the need for maintaining that delicate balance between our professional military lives and our personal lives. Finally, our tremendous military has developed a superb balance between defensive and offensive capabilities — each being observable almost on a daily basis.

This concept of balance also carries over into a discussion about Space. Quite often, our focus is on increased collection at the expense of exploitation and dissemination. But an ever increasing collection capability without a corresponding increase in exploiting or disseminating the collected information (especially for that "last tactical mile") does not produce the increase in warfighting capabilities that we need. Similarly, a warfighting dependency on Space capabilities mandates that these capabilities be protected to ensure their assuredness for the warfighter. As we continue to exploit emerging Space technologies and operational concepts, we must also be aware that our potential adversaries are keenly observing what we are doing and quite likely, developing strategies to counter our current and planned advantages. This quickly leads into a discussion between the necessary balance between force enhancement capabilities (e.g., comms, PVNT, weather, intelligence, surveillance and reconnaissance, and missile warning) and Space control capabilities (e.g., protection, surveillance, prevention and negation).

Recent geo-political events have caused a shift in our focus from large scale wars to smaller scale conflicts and stability operations. The need for Space control at the lower end of the spectrum of conflict is much less than at the upper end where our nation may be expected to face a peer competitor. Will we be ready when the pendulum swings back toward being prepared for a near peer fight? Does the concept of "no more Task Force Smith's" apply to Space? Was the assertion of a potential "Space Pearl Harbor" in the 2001 Space Commission report outlandish or a wake-up call? The challenge we face as Space professionals is to understand how best to fully leverage current Space capabilities in support of today's priorities (the fight for freedom and democracy in Iraq and Afghanistan), being aware of "tipping points" that would cause the strategic landscape to radically change again and to achieve a "good enough" resource balance between the needs for today's Army and the future force.

As MG (Ret) Robert Scales, a noted military historian and former Commander of the Army War

Space Operations Officer Qualification Course 04-02

Back Row (left to right): MAJ Kurt Hoch, CPT Paul Sanders, LTC Kevin Janes, MAJ David Harriman, MAJ Scott Gensler, LTC Jorge Rangel, LTC Richard Wolfe, CPT Gary Blount, CPT Sang Lee, MAJ Robert Redding, MAJ Tod Pingrey. Front Row (left to right): COL Kurt Story – 1st Space Brigade Commander, MAJ Joseph Papenfus, CPT Rain Jones, SFC Robert Miller, CPT Gary Blount, MAJ Michael Pepe, CPT Travis Gilbert, MAJ Phillip Speth. (not pictured: MAJ Andrew Riter and MAJ Brian Soldon) *Photo by SFC Dennis Beebe*

College, states in an editorial titled "Studying the Art of War" (Feb. 17, 2005 Washington Times) our Army must also have a balance between the physical and the intellectual. Scales states that the Achilles' heel of the British military system in the 19th and early 20th century was intellectual rather than physical. The demands of defending the British Empire created an army too busy to learn and thus hastened the demise of their Empire. He goes on to assert that there are striking and disturbing parallels between the British Army then and the American Army of today. Whether you agree with the General's assertion or not, you would probably agree that the need to learn has never been greater. We must continually learn not just about new tactics (e.g., defense against improvised explosive devices) and technologies (e.g., directed energy, near Space) but also about foreign cultures (e.g., Islamic) and emerging organizations (e.g., Modularity Units of Employment, Joint Functional Component Commands and Standing Joint Task Forces).

So where am I going with this, you say? Do we have the proper balance between our commitment to executing today's challenging tasks with an intellectual commitment to thinking about or studying the art of warfare (Space warfare in our case)? What should this balance look like? How can we achieve it? Achieving this balance requires an institutional as well as a personal commitment.

Right now, our Space education is good at the entry level — educating FA40s at the early field grade stage. However, we lack a continuing program of Space education and learning (read more about this in MAJ Bob Guerriero's ASJ article titled "Improving Space Training" starting on page 28). We are taking steps in that direction. For almost a year, we have been integrating our Space education efforts with the Air Force at the National Security Space Institute (NSSI). In the near future, the NSSI will commence a Space 300 course — what I liken to a Space Advanced Course. As the Space cadre continues to grow, the often overlooked element of Space education must also grow with the cadre. Additionally, as the concept of education shifts from formal (e.g., established schoolhouses) to informal learning (e.g., CompanyCommand.com), how do we leverage these shifts within the Space community? How can we share valuable lessons and insights from across the FA40 community on a continual basis? Certainly, the ground that is being plowed by LTC George Andary, and his Space Support Element embedded with 3rd Infantry Division, will reap tremendous insights for the FA40 community and the Army. What about the often unsung efforts of our FA40s on the Army staff, Soldiers like MAJ Jim Pruneski (DA/G8) and LTC (P) Bruce Smith (DA/G3)? Or the efforts by LTC Tom James (Directorate of Combat Development - Future Warfare Center) in developing next generation Space capabilities? There is a saying — Cooperate and Graduate. Maybe that needs to change to — Collaborate and Graduate! If the need for learning has never been greater, will collaboration across time zones and regions help us learn more effectively? How can we collaborate so we are continuously improving?

As MG (Ret) Scales says so eloquently, "War is a thinking man's game and only those who take the time to study war are likely to fight it competently." Are we, the Army's Space professionals, taking the necessary time to think about and to study both the art, and the science, of warfare — air, land, sea and Space warfare?

If not, let's move in that direction.

To read MG (Ret) Scales' full editorial as seen in the Feb. 17, 2005 Early Bird, go to: http://ebird.afis.osd.mil/ebfiles/e20050217352541.html

Space and the Nation's Security

Articles written by
LTC Curt Stover

Winter Focus

The explosion in the use of Space assets has resulted in the unparalleled access to information for the U.S. Army and the nation's leaders. As the transformation of the military progresses, Space will be embedded in virtually all Army formations and systems. Space will be a principal enabler of the characteristics of the Army "future force" needed to support the joint concept of operations (CONOPS). The Army and joint force of the future cannot perform across the full range of operations without leveraging current Space-based capabilities and maximizing their technological potential for future Space activities.

The cost and complexity of building, maintaining and operating these critical systems are staggering. The involvement of multiple stakeholders in procuring and using the information provided by these Space systems serves as the impetus to bring these diverse interests to the table.

The Army is the largest user of Space products and services and must remain engaged with the Space community to ensure that Army priorities for support from Space are included in all future Space system requirements. The Army must continue working Space issues within the context of Army and joint doctrine, drawing on experiences and lessons learned from currently deployed forces. The Army must remain engaged to ensure its requirements are known as new Space capabilities are developed.

Fully integrating Space capabilities into the Army's land operations is critical. For the bridge to be built from current capabilities to the interdependent network-centric warfare envisioned in the future joint fight, fully networked battle command capabilities must be embedded in the future force. The Army must leverage Space assets to achieve sustained connectivity and interoperability to support Soldiers on the future battlefield.

The Army Space Master Plan articulates a vision for the future of the Army in Space. Army Space policy supports the future force and the focus areas identified by the Chief of Staff.

Architectures set the strategic direction and are used to ensure interoperability and to effect procurement. The Army's current uses and its future requirements of Space must be synchronized by the Army leadership.

When developing architectures, the Army must consider innovative approaches in applying new technologies and in devising CONOPS. It is critical that the Army maintain a professional Space cadre in the right places as part of the joint Space team. Every Army Soldier must have a fundamental understanding of Space and how it supports his or her mission. Space professionals are the link between what Space can provide and what the warfighter needs.

The capabilities of Space provide a reach across all mission areas and play a vital role in Army transformation. Clearly articulating requirements is the key to ensuring the capabilities that are fielded meet the needs of the Army in executing its core missions and its support to joint operations.

Space — Serving the Nation's needs

The capabilities that Space brings are critical to the Army and the nation. These capabilities allow American policymakers to know more about the world situation, global issues and crisis situations than any set of leaders before them. Military Space systems have allowed American military commanders to know more about their adversaries, see the battlefield more clearly and strike more quickly and precisely than any military leaders in the history of the world. Space systems are inextricably woven into the fabric of America's national security.

The nation's Space capabilities serve a wide variety of military, intelligence and other government customers. That is, they are national security Space capabilities, not strictly military or strictly intelligence. The players in "national security Space" are not just the defense and intelligence communities; but also varied groups whose interactions are complicated. Valuable contributions for national security Space also come from a variety of federal and commercial organizations. Additionally, Space capabilities are becoming more interrelated and linkages among Space and terrestrial capabilities are becoming more complex. This complexity is both technological in terms of how the systems are designed and built, and organizational in terms of how the systems are employed, controlled and tasked, and how the products are developed and delivered.

National Security Space Perspective

Because of these complex interrelationships, it no longer makes any sense to develop a "new Space enabled" capability without ensuring that all community stakeholders are involved. In 2004 the Under Secretary of the Air Force and Department of Defense's (DoDs) Executive Agent for Space, Peter B. Teets, stated the priorities for our Space forces:

- Achieve mission success in operations and acquisition.
- Develop and maintain a team of Space professionals.
- Integrate Space capabilities for national intelligence and warfighting.
- Produce innovative solutions for the most challenging national security problems.
- Ensure freedom of action in Space.

Because there are many organizations pursuing these priorities, the Army must remain engaged with the Space community to ensure Army priorities for support from Space are included in all future Space system requirements. The Army must continue working Space issues within the context of Army and joint doctrine, drawing on experiences and lessons learned from currently deployed forces. The Army must remain involved to ensure its requirements are known as new Space capabilities are developed.

Fully integrating Space capabilities into the Army's land operations is critical. For the bridge to be built from current capabilities to the interdependent network-centric warfare envisioned in the future joint fight, fully networked battle command capabilities must be embedded in the future force. The Army must maximize leveraging Space to achieve sustained connectivity and interoperability to support the future battlefield.

Army Perspective

Today, Space enables virtually everything the Army does: commanding and controlling forces deployed around the world using Space-based long-haul communications; understanding the battlespace as a result of intelligence and weather satellite data; knowing our position and other friendly force positions, maneuvering rapidly and engaging with precision as a result of our global positioning system constellation; tracking critical supplies and enabling complex logistical operations in near real time with Space-based systems such as OMNITRACs; detecting missile launches and broadcast warn-

The Army must:

- Incorporate Space operations, Space control and Space systems into all land operations.
- Leverage current Space-based capabilities and maximize potential future Space activities.
- Clearly articulate requirements to ensure fielded capabilities meet the needs of the Army.
- Have a credible "Space cadre" to be accepted for full membership on the joint team.
- Determine where and how to exert influence in the national security Space community to achieve its vision.
- Leverage Space capabilities in order to be relevant and ready.

The nature of warfare is changing and a key to success for Army transformation is Space!

ing information in order to intercept them and deal with the effects if necessary. The ability to move and exploit large amounts of data electronically takes on an increasingly significant role in modern warfare. The global society, U.S. economy and military forces rely on advanced information networks.

An excellent example of Space support to a mission area is the use of Space capabilities to successfully execute the missile defense mission. A time-phased anatomy of a threat missile event highlights this fact. Space support to missile defense begins well before an actual missile launch. During the preboost phase, Space-based systems support the activities aimed at preventing or negating an enemy's ability to launch a missile. Measurement and signature intelligence (MASINT), signals intelligence (SIGINT) and imagery intelligence (IMINT) are continuously building the intelligence and defense communities' knowledge of potential hostile capabilities and intents. Should an adversary launch a threat missile, the time-critical command and control, notifications, decisions and actions required to intercept the missile are all enabled by Space-based assets.

Today's Defense Support Program's (DSP's) overhead non-imaging infrared (ONIR) systems provide the launch detection and characterization that is critical to the missile defense mission area. Future systems, such as the Space-based infrared system (SBIRS) and the Space tracking and surveillance system (STSS) will significantly enhance our ability to engage and destroy ballistic missiles around the globe. Throughout the phases of a threat missile's flight, numerous Space systems provide key information to our nation's decision makers and warfighters. The support that Space systems provide across the missile defense continuum must be developed to support future Army requirements in other mission areas.

Each service has a role and a responsibility to come to identify requirements and to work joint concepts in order to achieve sustained interoperability. Even though the Air Force is the Executive Agent for Space, the Army has some key responsibilities as a major user of Space. The Army Space Policy articulates a vision for the future of the Army in Space. This policy supports the "way ahead" and the focus areas identified by the Chief of Staff. The Army must determine where and how to exert influence in the national security Space community to achieve its vision.

Some of the critical questions that the Army faces in the drive to execute its Space policy are:

- What is most important to the Army in terms of Space-based capabilities?
- What should be the top Army Space priority for the upcoming year's program objective memorandum (POM)?
- What benefits are there to the Army as a result of DoD's large investment in the unclassified Space budget?
- What is the Army currently spending on Space capabilities and how much is it investing in Space for the future?
- Is the Army satisfied with the trade-off analysis between Space-based capabilities and airborne or ground-based platforms to deliver a desired capability?
- How does the Army want to use Space to further enhance its capabilities as a member of the joint team?

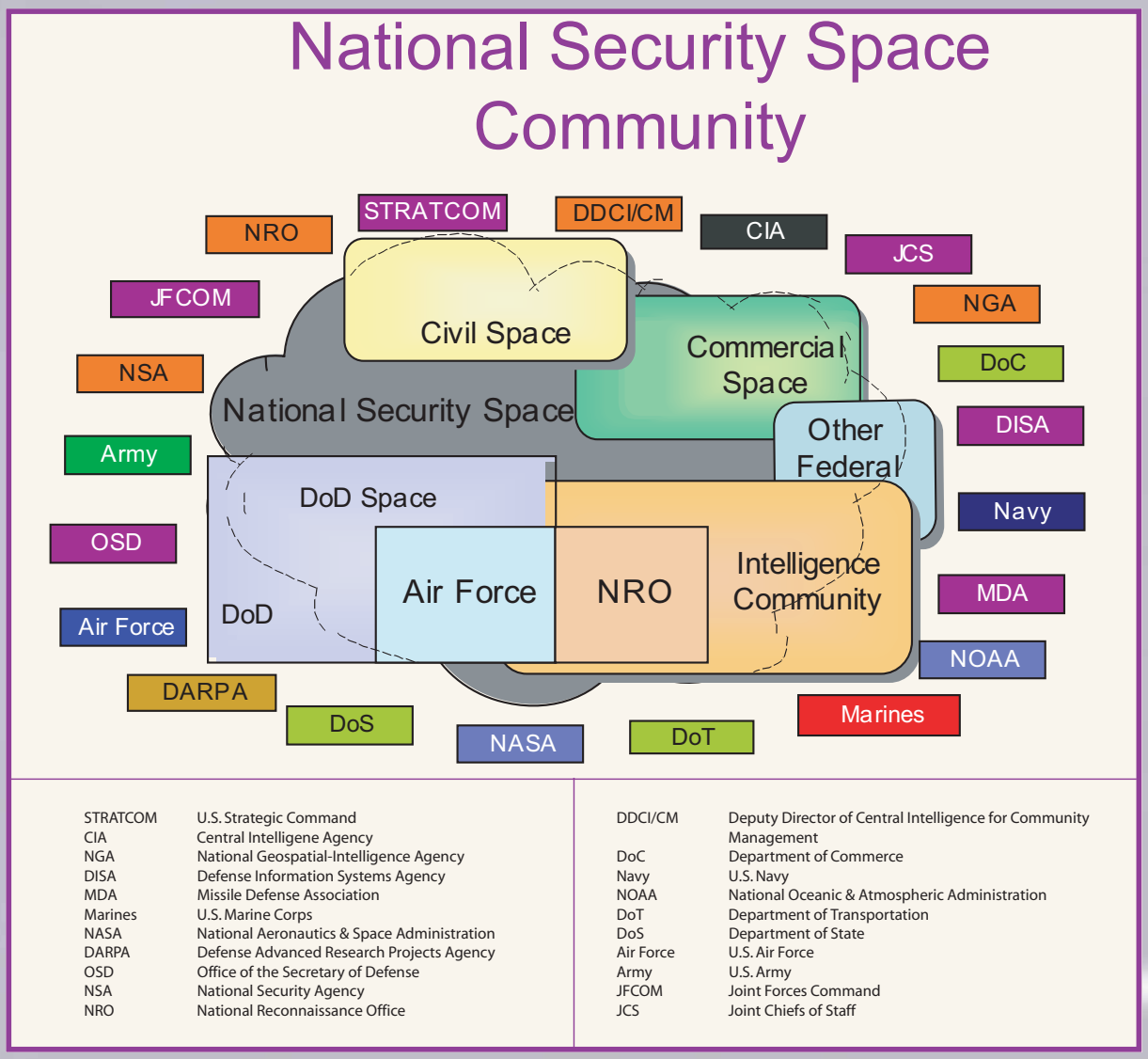
The Role of Architectures

Architectures are a cornerstone to enable a relevant and ready force and to achieve the Army way ahead. The Army's current uses and its future requirements of Space must be worked in a synchronized fashion by the Army leadership. The importance of this synchronization plays out in every architecture that is developed.

To successfully develop architectures, a pool of very talented people with innovative ideas is required. The skills and vision of the architecture development teams are critical to the establishment of long-range goals for future Space capabilities. The Army must not just look to in-house contractor support, but also to those who build future capabilities as well.

Innovative approaches in applying new technologies and in devising concepts of operations (CONOPS) must be considered when developing architectures. Inputs from the national security Space community and industry for solving the most dif-

The FA40 provides a career path for Army officers to specialize in Space operations. These professionals are the link between what Space can provide and what the warfighters need.



ficult problems must be captured in these architectures.

The Army Space Bench

It is critical that the Army maintains a professional Space cadre in the right places as part of the joint "Space" team. Army Space professionals are placed in key positions in the acquisition community, Army staff and the warfighting units. Space isn't just a job for Functional Area 40s (FA40s).

Every Army officer must have a fundamental understanding of Space and how it supports their mission. Soldiers having earned the 3Y special skill identifier, DoD and Department of the Army civilians and many others have a tremendous impact on the Army and Space.

Space is inherently "joint" to include the intelligence community and other government agencies. To be indispensable members of the joint team, the Army must play a more active role in providing resources that features assigning officers to key positions. The Army must have a credible "Space cadre" to be accepted as full members of the joint team. As is the case in many other facets of the military, if you don't participate, you don't get a vote.

The FA40 provides a career path for Army officers to specialize in Space operations. These professionals are the link between what Space can provide and what the warfighters need. For example, FA40s assigned to the National Reconnaissance Office leverage national technical means to conduct Space reconnaissance operations for deployed forces.

The Army must continue to grow and sustain a "bench" of Space professionals to be able to articulate Army requirements, work joint CONOPS, work within the national security Space community and support the Executive Agent for Space.

What Must Be Done

The bottom line is the nature of warfare is changing and the success of transformation depends on Space. The reality of today's world situation demands that the nation provide new means, processes and concepts to exploit the Space medium to help solve the toughest military and intelligence problems. The capabilities that Space provides reach across all mission areas. A day without Space would be devastating to warfighters. Clearly articulating requirements is the key to ensuring the capabilities that are fielded meet the needs of the Army. Architectures set the strategic direction and are used to ensure interoperability and to effect procurement. The Army must ensure that the capabilities it desires are captured in the architectures to successfully execute its core missions and joint support roles.

To support the joint warfighter, the Army's future force will incorporate Space operations and Space systems into all its land operations. Joint interdependency, network-centric warfare and actionable intelligence, in particular, are critical for the Army way ahead. The Army and joint force of the future cannot perform across the full range of operations without leveraging current Space-based capabilities and maximizing their technological potential for future Space activities.

Torchbearer Message

In 2003, the Army Chief of Staff outlined the Army Vision. Understanding and leveraging the nation's Space assets are keys in achieving this vision and is necessary for the Army, as a key member of the joint team, to remain strategically dominant across the full spectrum of operations. The bottom line is that the nature of warfare is changing and much of the success of transformation depends on Space. The reality of today's world situation demands that the nation provide new means, processes and concepts to exploit the Space medium to help solve the toughest military and intelligence problems.

The unique set of core competencies and capabilities the Army brings to the table are enabled by Space. Equipping Soldiers with technologies that leverage our nation's Space assets allow smaller units to be more lethal. The Army must recognize how Space can best be used now and as it expands its capabilities to successfully transform to the future force. Space plays a crucial role in how the Army fights in close combat, holds key assets and terrain, decisively ends conflict, controls the movement of people, protects resource flows and maintains post-conflict stability. It is vital as the Army trains Soldiers and leaders that it has knowledge of Space systems and the capabilities they bring to the fight.

The joint team depends on Space capabilities to execute its mission. The Army and joint force of the future cannot perform across the full range of operations without leveraging current Space-based capabilities and maximizing their technological potential for future Space activities.

To deliver relevant and ready land combat power to combatant commanders and the joint team, the Army future force will incorporate Space operations and Space systems into all its land operations. To conduct interdependent, network-centric warfare successfully, the complementary use of Space capabilities by all members of the joint team is necessary. Space enables the Army to retain dominance on land by providing information that leads to enhanced agility, versatility and strategically responsive forces completely integrated and synchronized with other members of the joint and interagency team and with our coalition partners.

The Army needs Space capabilities in order to be relevant and ready.

LTC Curt Stover is an FA40 officer assigned to the National Security Space Office located in Chantilly Va. His professional experience includes 18 years as an Air Defense Officer, having served in a variety of command, staff and joint assignments in the United States and overseas, as well as a GPS Planner/Analyst at Falcon (now Schriever) Air Force Base, Colo. LTC Stover would like to credit retired BG Rick Geraci for portions of this article.

lightning rod

Time for a new Space force?

The sooner the better

By Charlotte K. Scharer

EDITOR'S NOTE: The intent of the Pro and Con section of the Army Space Journal is to encourage conversation on lightning rod Space issues. It provides a free flowing discussion by people involved with the issues. We want to stimulate ongoing dialog among Space professionals. The opinions expressed in these articles are those of the author and do not necessarily reflect the views of the Army Space Journal, U.S. Army Space and Missile Defense Command or the Department of the Army.

Much has been written in favor of organizing and managing "Space" for future warfighting. The concept of a separate Space force is not a new idea. Many have recommended this concept. Revising the organization, training, and equipping of Space assets and forces have been subjects of debate for many years and many meetings. But has the Army lost the ability to adequately plan for the future? Have we gotten so caught up in the problems of today that we have lost the ability to formulate a realistic vision and path toward making a separate Space force a serious consideration or course of action? How do we balance the investment required against today's pressing warfighter needs? How do we tell when the new organization has matured sufficiently before it is required to perform on the battlefield? Where does a separate Space force fit in the transformed future force and when will it be ready for the change? While the Army has made great strides to integrate Space and make it useful to Soldiers on the battlefield, I argue that the right time is sooner than most would think.

A separate Space force will require commitment and significant resources. Congress directed the Space Commission to consider four organizational approaches: (1) A new military department for Space; (2) Space corps within the Department of the Air Force; (3) creation of a new Assistant Secretary of Defense for Space; and (4) identification of a major force program for Space. It bears repeating that the Space Commission's recommendation left the possibility for a separate Space force open and recommended creation of an Under Secretary of Defense for Space. Though the Bush administration has raised the profile of Space and somewhat contained the routine budget raids to fund other programs that were a standard operating procedure under past administrations, more commitment from the commander in chief is needed. From many perspectives, the current administration has not yet gone far enough to lead the charge to break technology barriers or form the needed foundational relationships with industry. These actions would require additional resources and sustained tenacious commitment. If it is going to happen, it needs to be done during this administration's second term. Change and commitment are expensive as evidenced recently in the national Space community. The merger of U.S. Space Command and U.S. Strategic Command is just one example of a sweeping change that has continued to demand resources, time and attention within a "zero sum" gain. New legislation that allows for the possibility of far-reaching changes in the intelligence community is another example. Advantages to additional change, including a separate Space force, could and should be seriously considered.

In early 2001, the Space Commission reported that there was not yet a critical mass of qualified personnel, budget, requirements and missions sufficient to establish a new department. The Space Commission further directed near- and mid-term organizational adjustments should be

fashioned so as not to "preclude" eventual evolutions toward a Space department if that proved desirable. It is 2005 already. While many of the best-formed visions and plans have gone the way of the dodo bird, the operational need for effective Space assets and a potential Space force to manage them has not.

The Space Commission discussed policy, procedural and leadership changes at length . I will not attempt to comment on every one. I would assert, however, that we have made little progress since the commission did its work. We are not where we need to be. A separate Space force could act with greater force in resolving many issues. Forces should be separate when the doctrine, lexicon and operations are significantly different from those of the original organization and the reorganization creates the potential to better achieve strategic objectives in assigned mission areas. Specialized pockets of knowledge about Space systems and their operations have long existed within all the services and several national agencies.

I do not buy into the notion that Space is merely a transit point for information. Space and Space assets have inherent technical advantages. An effective Space system not only makes information available, but also ensures the necessary analysis by Space forces to make the information useful to the troops. Information distribution is, in my mind, a problem for the Global Information Grid. We are essentially funding and maintaining multiple Space forces. Combining these service and agency assets could have many inherent advantages.

The broad mission areas of intelligence, information operations, Space situational awareness, Space control, electronic warfare and force application have been recognized as overlapping. In June 2003, Department of Defense Directive 5101.2 assigned responsibility to the Secretary of the Air Force for planning, programming and acquisition of Space systems within the Department of Defense (DoD). A large step toward integrating Space and intelligence was taken in designating the Under Secretary of the Air Force to also serve as the Director of the National Reconnaissance Office (NRO). The Air Force assumed new responsibilities for providing Space assets to the warfighter. But is this management structure effective enough? The emerging "joint interdependent" construct could and should be used for Space. When pitted in heated budget battles, general officers would have to rob a separate agency instead of their own coffers for reallocating resources. Imagine if the Navy and the Army recognized and acknowledged that an interdependent relationship would provide the optimal benefits from Space to their success rather than engaging in a funding competition for another ship or armored vehicle. A separate Space force would have responsibilities to manage assets effectively for the benefit of all Soldiers, Sailors, Airmen and Marines.

The General Accounting Office reported in August 2004 that the services are at varying degrees of maturity in implementing and effectively managing human capital and Space personnel. This report cites that DoD has published a strategy with goals and objectives, but lacks specific timelines and evaluation measures to implement this strategy. Each service has taken a separate approach in performing force management analysis and proposing courses of action. Personnel development improvements are difficult particularly when the benefits are long term and not easily achieved or measured. Besides the unique missions and specific technologies and systems, there is a lot to know when aspiring to be a Space cadre member. The basic building blocks such as the principles of mathematics, physics and engineering are an integral part of a cadre member's required knowledge base and skills. This base readily transfers to other scientific and technical endeavors, lending credibility to the assertion that there is a critical retention problem with the current Space cadre.

The technical difficulties with assessing "effectiveness" are complicated by the government's general problems in assuring incentives and accountability measures are in place. Further, multiple service organizations (for the Army there are three: Army Space and Missile Defense Command, Army Human Resources Command, and Operations and Plans within Headquarters, Department of the Army) have responsibilities for management of parts of the service Space cadre. As an Army organization that continues to change, we forget the people whose careers and lives are affected by change. How is that measured and incorporated in the decisions that affect whole communities?

I would argue that, in fact, it is an often overlooked reality. It is assumed away based on the amazing ability of people to adapt. The quality of the people that make up the Space cadre will most likely make it work whether it is a service-based organization or a separate Space force.

The newly renamed Future Warfare Center, Directorate of Combat Development (formerly known as the Force Development and Integration Center) is responsible for conducting the Army Space Cadre Force Management Analysis (FORMAL) and is charged with acting as the single office managing and coordinating the ongoing Space cadre studies. The process is taking considerable resources to map out the needed analysis, actions and decisions. It will take multiple years and thousands of man-hours to complete.

As an early result, the Army has begun additional partnering efforts and is now providing high quality experienced Space officers as staff members to the Air Force's National Security Space Institute. A separate Space force could ease the organizational pain of these difficult service decisions by advocating from the highest levels that the benefits to the future force are

(See Positive View, page 50)

lightning rod

Time for a new Space force?

Not so fast!

By Miller Belmont

EDITOR'S NOTE: The intent of the Pro and Con section of the Army Space Journal is to encourage conversation on lightning rod Space issues. It provides a free flowing discussion by people involved with the issues. We want to stimulate ongoing dialog among Space professionals. The opinions expressed in these articles are those of the author and do not necessarily reflect the views of the Army Space Journal, U.S. Army Space and Missile Defense Command or the Department of the Army.

One of the most memorable events at the 2002 Space Symposium in Colorado Springs, Colo., was the address by David Thompson, President and CEO of Spectrum Astro, a small satellite manufacturer recently acquired by General Dynamics. Thompson spoke of his experience with the National Reconnaissance Office (NRO). In the mid-1990s, the NRO launched a satellite with the extra capability of a power system that enabled it to continue operating at full capacity instead of having to go into partial shutdown mode during its period of solar eclipse. They were able to do this for a mere $200 million. This $200 million, according to Thompson, produced a rechargeable battery to provide an additional five days of full operating capability a year. Those of us who have to produce a receipt to get reimbursed when our parking at the Colorado Springs Airport exceeds $25 might have trouble understanding how anyone could justify a decision to expend that much money for so little return. The answer is quite simple. It's about accountability … or a lack of it. This same big risk would exist with an independent Space force.

Ever since troops had their family members mail them commercial global positioning system (GPS) receivers from home during the first Gulf War, the Army has made great strides integrating Space and making it useful to the Soldiers that shape the battlefield. This integration is where we, the Army's Space forces, show our value to the "Big A" Army. But a separate Space force would reverse the progress we've made over the last 15 years.

Here are a few of the dangers of an independent Space force. First, The Army's Space force has had to sell every Space program we need to the warfighter. In a resource constrained environment, selling Space is not easy. Space programs do not turn enemy tank battalions into glass, make loud noises on the battlefield or otherwise make a big impression on the Army generals that dole out the money. It's tough enough to make these sales pitches when you wear the same uniform. The Space force would have to try it as another service. Imagine if the Air Force had to get the Army to contribute payment for F-15 Strike Eagles. One thing the community has to do, though, is demonstrate the utility of Space programs to the maneuver forces. Not because we need their support to build and employ these systems (we do), but because we need to employ these systems to help the infantry and armor succeed on the battlefield. That is our responsibility to them. We are accountable to the Soldiers in Iraq and Afghanistan. To be accountable requires a common understanding of operations and the needs of the tactical Army.

Even though the Army needs these programs, we have had only marginal success in convincing Army leadership of the cost benefits.

The Soldier will tell you that he needs GPS, his cell phone, his computerized map, a weather report and his intelligence briefing, but he does not need "Space." Educating leaders that position/navigation, satellite communications, joint tactical

ground station (JTAGS) and intelligence, surveillance, and reconnaissance products need to be integrated is part of the ongoing education and advocacy aspects of underlying Army operations up and down the chain of command. While recent lessons learned, wargames and exercises have been generally supportive, the Army has not given a "strong buy" recommendation to other enabling programs such as Space control, a reserve force structure for Space, or integrated commercial imagery beyond an ad hoc basis.

Joint Support

When Leonid Brezhnev initiated the coup against Nikita Khrushchev, one of his first moves was to rearrange all the phone numbers in Moscow. As a result, Khrushchev was unable to locate any of his supporters. This is essentially what U.S. Strategic Command (USSTRATCOM) did when they merged with U.S. Space Command and acquired Space as a mission area. One senior officer said: "We're going to take all the pain at once."

Although this approach proved effective for the coup in the Soviet Union, it has not worked quite as well in the reorganization of military Space. The reorganization of offices (down to the office symbols), mass relocation of active duty personnel and the acquisition of additional mission areas beyond Space left USSTRATCOM in a state of continuing reorganization and reprioritization. Military Space never emerged as a major focus. In addition, the exodus of many in the civil service and contract work force left USSTRATCOM with only a handful of civilian Space experts and a military cadre with rapid turnover averaging two years on station. As a result, there is little in the way of a joint force to draw from to establish a separate Space force.

Cold War Mentality

The remaining option, then, would be to form an independent Space force with the Air Force as the core. This presents its own set of problems. It isn't just the difference in uniforms or services, that's just superficial.

There are significant differences in the mindsets of the various service Space forces. The Air Force Space acquisition force, for instance, is still mired in the Cold War standard of what Space programs need to do. Air Force Space Command's unhealthy attraction to big budget Cold War programs like Space-Based Radar (SBR) and Space-Based Infrared System (SBIRS) belie this problem. Although SBR would prove useful in tracking motorized rifle divisions moving across the Fulda Gap or armored units of the People's Liberation Army reinforcing North Korea, no one can articulate how it would help track Al Qaeda as the terrorists walk back and forth between Pakistan and Afghanistan, or discern Toyota Land Cruisers packed with Semtex from all the other traffic on the streets of Baghdad.

This is where the Army's fight is and will be for the foreseeable future. It may also be why the Congressional budget proposal for the Pentagon slashes SBR funding from $327 million to $75 million. This takes it off the acquisition track and relegates it to a much lower level of effort.

The Air Force on occasion complains that they must carry the burden of funding for military Space programs, while the Army and Navy get a free ride. This complaint is not totally inaccurate. According to the General Accounting Office, the watchdog agency of Congress, the Air Force controls 86 percent of the 2002-2007 military Space budget. The Army's share is a paltry 3 percent. At the same time, the Air Force Space forces have to defend themselves against continuous budget raids from the air power programs. Because these are all legitimate concerns, the Air Force Space supporters use these arguments to make a strong case for an independent Space force.

A budget line for an independent Space service would be free of much of the political mud wrestling that takes place now between air and Space. An independent budget could provide the Space acquisition community more flexibility to overcome cost overruns before they cripple programs like SBIRS.

These arguments are more about protecting budgets than about fighting wars. The benefit of a streamlined budget process provides no guarantee that forming a Space service under these circumstances would provide better service to Army and Marine tactical units. Rather, an independent Space service could very well reduce the ability of Space to help shape the battlefield by removing it from the forces it needs to serve. Right now the Army and the Marines shape the battlefields in Iraq and Afghanistan. The Air Force admits as much in the press as they grapple with the same problem of integration that the Army faces.

U.S. Air Force LTG Norty Schwartz, director of operations for the Joint Chiefs of Staff, laments "the lack of a traditional warrior culture" among Space forces. One example of the effects of this absent culture is seen in how the Air Force mans Space. In the Air Force, the missile wings are essentially a separate service of the Air Force and largely excluded from the operational side of wars and deployments except for their security forces, which rotate through the hot spots. As the missile forces drew down during the 1990s, they provided a large pool of manpower for Air Force Space operations. Thus, many in the Air Force's Space and acquisition programs have never worked the tactical Air Force. Only after extensive in-theater service in the Air Operations Centers do the Space forces gain a sense of tactical understanding. It isn't much of a coincidence that the new Air Force Space badge is now a Space and Missile badge. These integration issues could make a separate Space force a bad deal for the Army's muddy boots and treadheads. The civilian researchers at the Federally Funded Research and Development Cor-

(See Not so fast!, page 50)

The Army's first Space Support Element (SSE) ...

Manned, Trained, Equipped and Combat Ready!

By LTC Richard Dow

After more than seven years of materiel experimentation and four years of concept and doctrinal development, the U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command (SMDC/ARSTRAT), in direct support to the Army's Task Force Modularity, equipped and activated the Army's first unit of employment X (UEx) Space Support Element (SSE) in August 2004. Our Army's first SSE is comprised of three Space operations officers, LTC George Andary (chief), MAJ Cliff Hodges and MAJ Jim Rozzi, and one noncommissioned officer, SSG Ronnie Anglin (MOS 31S). As this article is being published, the 3rd Infantry Division (3ID), along with its SSE, is deployed in Iraq serving with the Multinational Division – Baghdad.

Organization

The original UEx SSE modified table of organization and equipment that prescribed four Space operations officers and two NCOs was revised because of an Army decision to only partially convert the 3ID to a UEx. Its Tactical Command Post No. 2 was not manned, thus reducing its SSE by one Space operations officer and one NCO. To mitigate this reduction, SMDC/ARSTRAT has provided two additional NCOs, SGT Jennifer Swift and SGT Tobias Mitchell, as augmentation from the command's 1st Space Battalion, to the 3ID SSE. This augmentation provides an increase to the SSE's combat support capabilities and provides SMDC/ARSTRAT a basis for the doctrinal analysis of a six-Soldier SSE.

Materiel

The 3ID SSE was equipped with one Space Support Element Toolset (SSET). This SSET (version 2) is considered a "proven prototype" in that its components (the Space operations system workstations and the SATURN (Space Application Technology User Reachback Node) communications suite) have been continuously deployed, tested and proven in both Iraq and Afghanistan since January 2003. The SSET provides the requisite analytical tools to the SSE to assess Space and its impact on operations. Through its organic satellite communications, the SSET provides the ability to reach throughout the Iraqi theater of operations and around the globe to other Space forces. The collaboration of all Space forces throughout the world allows for the timely sharing of Space products, analyses and reports in support of all commanders and staffs.

Training

The 3ID's SSE training program from June to October 2004 consisted of two major efforts: the SSE Qualification Course and the 3ID/UEx Mission Rehearsal Exercise.

The SSE Qualification Course consisted of four weeks of individual training on the new SSET equipment, one week of doctrinal training that focused on SSE tactics, techniques and procedures, and a four-day SSE Qualification Command Post Exercise (section training). This exercise provided a venue for the SSE to perform its doctrinal tasks by using the SSET capabilities in a master scenario events list-driven exercise. This qualification course was considered a "pilot course" and will serve as a basis for developing the formal course requirements for all Soldiers who are in, or are being assigned to, tactical or operational level Army Space positions.

The SSE culminated its collective Space training during the 3ID's October 2004 Mission Rehearsal Exercise. During this exercise, the SSE was able to integrate its support into many of the staff sections. Examples of its planning, integration and coordination activities throughout the exercise included the following:

- Developed requirements and standard operating procedures for personnel recovery missions (to include combat search and rescue and downed pilots).
- Developed and formed the Imagery Requirements Working Group from the SSE, the Geospatial Information and Support Section and the Imagery Section of the G-2. This working group met periodically to discuss how the many UEx and brigade combat team imagery requirements could best be satisfied.

LTC Elizabeth Kuh, MSG Alan Hentemann, MAJ Cliff Hodges and MAJ Jim Rozzi work with the 3rd Infantry Division during a Space Support Element Command Post Exercise, Sept. 12-17, 2004, in Fort Stewart, Ga.

- Analyzed real-world Space weather effects on satellite communications.
- Analyzed the technical and operational architectures (and their relationship to and dependence on satellites) for real-world blue-force tracking (BFT) devices throughout the Iraqi theater of operations and those organic to 3ID.
- Requested the development of customized spectral products from SMDC/ARSTRAT's Spectral Operations Resource Center to support a notional hostage recovery mission.
- Produced a three-dimensional "fly-through" of the Baghdad area of responsibility for terrain familiarization.
- Integrated and assessed national and commercial imaging and overhead nonimaging infrared assets into the division collection plan.
- Provided global positioning system (GPS)/navigational accuracy predictions to the effects coordination cell for the employment of GPS-aided munitions into urban environments.
- Requested GPS enhanced theater support during periods of critical combat operations when the employment of precision weapons was anticipated.
- Provided Space expertise and analysis to all daily meetings, to include the effects coordination cell, the battle update brief, the commander's update brief, crisis action planning meetings and the chief of operation's "huddles."

Garrison Support

From August to December 2004, the 3ID SSE provided significant Space expertise and support to its staff sections. Some of the highlights of its support included:

- Coordination with G-2 and Geospatial Information and Support to acquire and archive existing national and commercial imagery to establish a "basic load."
- Coordination with Geospatial Information and Support for imagery software training with SMDC/ARSTRAT's Spectral Operation Resource Center.
- Supported G-3 with the operational integration of BFT devices into the main command post battle command workstations.

- Developed unit standard operating procedures for G-3 and

(See Combat Ready!, page 48)

3rd Infantry Division Assumes Task Force Baghdad Mission

By SPC Emily J. Wilsoncroft, USA
American Forces Press Service

BAGHDAD, Iraq, Feb. 28, 2005 — The 3rd Infantry Division officially jumped back into action here Feb. 27, when a transition-of-authority ceremony transferred command of Task Force Baghdad from Army Maj. Gen. Peter Chiarelli, 1st Cavalry Division commander, to Maj. Gen. William G. Webster Jr., 3rd Infantry Division commander.

The 1st Cav. has had elements in Iraq since relieving 1st Armored Division soldiers. Now, after more than a year serving as Task Force Baghdad headquarters, 1st Cavalry soldiers are heading back to the United States.

With the giant crossed-swords statues looming over the parade grounds, the transition was presided over by Army Lt. Gen. John Vines, Multinational Corps Iraq commander.

"Today, we welcome Maj. Gen. William Webster and Task Force Rock of the Marne back to Iraq," Vines said. "Twenty-two months ago, your division spearheaded coalition forces' attacks as it fought its way to Baghdad, leading to the toppling of Saddam Hussein and his imposed tyranny on the Iraqi people. Twenty- two months ago, you stood on this very ground in victory."

Vines congratulated Chiarelli and the 1st Cavalry Division for a job well done, referencing Iraq's successful Jan. 30 elections and other benchmarks of progress. "Together, you and our Iraqi partners improved the way of life for the Iraqi people, conducting more than 800 civil engineering projects totaling more than $104 million in Baghdad," he said.

"You've sponsored 14 Iraqi police academies, rebuilt 600 schools, conducted more than 70 electrical projects totaling $1.8 million, and contributed $8.3 million in grants to Iraqi businesses," he continued. "Finally, under Task Force Pegasus Tutelage, the 40th Iraqi National Guard Brigade took control of its own operational area in Baghdad, marking the first time an Iraqi brigade has done so. Without question, you have positively touched every aspect of Iraqi life — truly a phenomenal feat!"

Vines also emphasized the need to continue the hard work that began with the elections. "As great and historic a day as Jan. 30 was for the Iraqi peo-

(See 3ID, page 48)

Evolving Missions:

Force Development and Integration Center merges with Battle Lab

By Brian Hermes

The Future Warfare Center (FWC) is the new organization formed by the merger of the Space and Missile Defense Battle Lab and Force Development and Integration Center. This restructuring is designed to allow the work performed by the two organizations in different phases of force development to be consolidated and streamlined. FWC has five integrated sub-elements, and while the essential mission remains unchanged, it continues to evolve in the strategic direction provided by the Army Space Master Plan (ASMP).

The ASMP road map of 1999 established the goals of "normalizing," "operationalizing" and "institutionalizing" Space throughout the force structure so that Space capabilities and services were more effectively integrated into military operations. The successful fielding and embedding of Space capabilities throughout all echelons of the Army have normalized Space. The focus now has necessarily turned to the goals of operationalizing and institutionalizing Space. The new FWC, in its role as Space combat and materiel developer, integrates and synchronizes solutions across the doctrine, organizations, training, materiel, leadership and education, personnel and facilities (DOTMLPF) domains in support of these goals. Operationalizing Space requires the proper design of Space organizations such as the Space Support Element (SSE) to successfully integrate Space into all phases of planning and operations. Institutionalizing Space to ensure that the Army moves along a clear path in its current and future uses of Space capabilities requires the updating of Space doctrine, the devising of a road map for the Army's use of Space in the near to far terms, and the development of a cadre of Space professionals.

Space Support Elements

The Army SSE is designed to be the focal point for fully integrating and synchronizing Space assets into support of operations. With the Army's reorganization of its 10 Active component divisions scheduled to continue through FY 2007, SSEs are planned to be introduced into each of these modular divisions (unit of employment [x] (UEx)).

An SSE at UEx level consists of four officers and two noncommissioned officers serving in the Force Applications Cell. The SSE will support UEx plans, orders and operations by:

- Ensuring that the Space portion of the battlespace is fully understood by commander and staff.
- Providing assured access to all available Space-based products and services.
- Ensuring full exploitation of military and civilian Space assets for intelligence, surveillance and reconnaissance; environmental monitoring; missile warning and battlefield characterization; blue force tracking, combat identification and precision engagement; and integrated tactical warning and attack.

The Army's first SSE is supporting the 3rd Infantry Division in Iraq. An assessment team will follow the Space operations conducted by the 3ID's SSE in Operation Iraqi Freedom (OIF). The assessment team will collaborate with SSE Soldiers to integrate emerging lessons, requirements and recommendations into all DOTMLPF domains. The assessment is critical to the development and refinement of Space doctrine/tactics, techniques and procedures (TTP), Space organizations such as the 1st Space Brigade and Army Space Support Team, equipment design of the Space Support Element Toolset and training and force development issues. It is envisioned that as lessons are validated they will be posted to the SSE Collaboration Site and integrated into SSE TTP to immediately benefit SSE Soldiers. In addition, the insights will be used to produce a new appendix to Field Manual (FM) 3-14, Space Support to Army Operations. The experiences of the 3ID's SSE in OIF in a stability and support operational environment will prepare the way for follow-on SSEs.

Space Doctrine

The revision of the cornerstone of Army Space doctrine, FM 3-14, was completed in November with LTG Larry J. Dodgen, commanding general, U.S. Army Space and Missile Defense Command giving his approval to publish

this FM. The successful adjudication of Army-wide comments of this much-needed revision of the original publication (July 1995) is history. In addressing Space operations in Part I, FM 3-14 uses the mission-area foundation established in Joint Publication 3-14, Joint Doctrine for Space Operations. A direct connection is made between Space capabilities and Army operations in the four mission areas of Space control, force enhancement, Space support and force application.

TTP are addressed in Part II from the perspective of the G-3. As the conditions and requirements of the battlespace change and courses of action are considered, the G-3 uses the Army "plan, prepare, execute and assess" process to evaluate which Space capabilities can be employed. The process is designed to allow Army field commands to make maximum use of Space assets as they employ units to accomplish specific missions.

The seven appendices provide information on the Space contribution to the commander's intelligence preparation of the battlespace; Army Space capabilities found at locations such as the Space and Missile Defense (SMDC) Operations Center, Satellite Communications (SATCOM) and SATCOM Support Centers and the Spectral Operations Resource Center; employment of ARSSTs and Space operation officer tasks when supporting an Army unit; Space support to the UEx (SSE); a diagram of Space operational organizations internal to SMDC; and normalizing, operationalizing and institutionalizing Space with detailed discussion of the ASMP.

Later this Winter, it is anticipated that FM 3-14 will be posted to both the SMDC Web site and the Reimer Digital Library maintained by the U.S. Army Training and Doctrine Command.

Army Space Master Plan

The ASMP is the road map for the Army's use of Space. This follow-on to the original ASMP published in 1999 defines nine key Space functional areas and identifies what capabilities the Army must have in each specific area to perform required tasks in the near term (2006-2011), the mid-term (2012-2020), and the far term (2021-2030). The plan identifies the DOTMLPF solutions to Space mission needs and provides links between Army prioritized capability needs and proposed Space solutions.

The ASMP seeks to identify those Space capabilities that will affordably accomplish the five essential Space operation tasks detailed in the Army Space Policy (2003):

- Support situational understanding and joint battle command en route, "off the ramp" and on the move.
- Support precision maneuver, fires and sustainment.
- Contribute to continuous information and decision superiority.
- Support increased deployability and reduced in-theater footprint.
- Protect the force during all phases of the operation.

The Space planning process used to develop the latest draft ASMP proved to be a lengthy one. Mission teams in each of the key functional areas took a full year to reach their conclusions and to complete worldwide staffing. The ASMP is scheduled for publication at the end of calendar year 2005. The plan for subsequent ASMPs

(See Evolving Missions, page 49)

Merger strengthens proponency efforts

The Space and Missile Defense Battle Lab and the Force Development and Integration Center merged to form the new Space and Missile Defense Future Warfare Center on Nov. 28, 2004. The two organizations, both within U.S. Army Space and Missile Defense Command, merged to become the single organization that will execute Space and ground-based missile defense proponency.

The merger was announced in September 2004 by Michael Schexnayder, deputy to the commander for Research, Development and Acquisition, and was pending final negotiations with the American Federation of Government Employees at Redstone Arsenal, Huntsville, Ala. According to Larry Burger, director of the new Future Warfare Center, negotiations are complete.

"We had two organizations working different phases of force development. We worked well as separate organizations, but as a single organization we can work better," said Burger.

Schexnayder stated, "We will achieve a structural alignment to our mission and business base. The reason is to make us more successful as an organization and make us more valuable."

The combination of the two organizations will allow a more efficient relationship with the Army's Training and Doctrine Command's (TRADOC) Futures Center, a new organization in itself that was stood up this past year.

"By merging the Battle Lab and FDIC along with aligning the resulting Future Warfare Center with the operational arm of the command, we hope to build synergy which will ultimately help the warfighter," said Col. Jeffrey Horne, SMDC deputy commander for operations.

The structure for the Future Warfare Center consists of five sub-elements: the Innovative Ventures Office; Operations Division; the SMD Battle Lab, which provides a strong name recognition; Directorate for Combat Development, formerly FDIC, the new name is known and recognized within TRADOC; and Simulations and Analysis Directorate.

IMPROVING SPACE TRAINING

A Career Model for FA40s

By MAJ Robert A. Guerriero

Training is the foundation that our professional Army is built upon. Starting in pre-commissioning training and continuing throughout an officer's career, achieving and maintaining excellence in today's Army is a constant learning process. Formal training courses, in conjunction with unit training, training exercises, professional development programs and senior-leader mentorship are key components in the development of confident and competent officers. This is as true for FA40 Space operations officers as it is for any branch or specialty in the Army. FA40 training has continued to evolve and improve since Space operations was established as a Functional Area in 1998. As we continue to refine our Space training process, we should ensure that the FA40 career model supports the training and development of our Space officers throughout their careers.

There is no doubt that the nation and the Army need well-trained Space professionals. Under Secretary of the Air Force Peter B. Teets, the Department of Defense's Executive Agent for Space, recently stated that in order for the United States to achieve Space dominance, we need a strong and enduring commitment in several areas. "The first, and unquestionably the most important, is the development and maintenance of a strong professional cadre of military and civilian government personnel," he said.[1] The Army also recognizes the need for a trained cadre of Space professionals. The Army Space Master Plan states, "The Army must have a well-trained and innovative cadre of Space-literate personnel who understand warfighting requirements and the benefits that Space can bring to the Army."[2] The establishment of Space operations as a Functional Area was a first step toward achieving this goal. The FA40 community has made substantial progress in establishing a sound training program to build its cadre of Space-literate personnel. A critical component of this training program that we must cultivate is the Space experience that will make our professional cadre true Space experts.

The current training program for FA40s consists of the 11-week Space Operations Officer Qualification Course (SOOQC) taught in Colorado Springs, Colo. This course will soon be expanded to a 12-week curriculum. SOOQC is an excellent introduction to a wide range of Space systems and Space capabilities, and also provides an introduction to the roles and responsibilities of FA40s. A planned enhancement of the SOOQC is the incorporation of the Air Force's Space 200 course. This will provide an even better understanding of Space capabilities and offer insights into joint Space operations. The SOOQC is a good start for an FA40, but it does not, nor was it designed to, produce a Space expert. An FA40 who completes SOOQC has a solid base of training to build upon, and is prepared to continue the training process to become a Space expert. SOOQC produces Space officers with a great breadth of knowledge, so the challenge for the Army Space community is to increase the depth of this knowledge in every FA40.

Following SOOQC, many FA40s are assigned as Space operations officers (SOO) on corps and Army staffs, or as members of Army Space Support Teams (ARSST). With the rapid transition from divisions to

FA-40 Officer Career Path		
1st Assignment	2nd Assignment	3rd Assignment +
National Organization Space Support Element ARSST Leader	Space Operations Officer (Corps) Space Support Element Leader National Organization SMDC/ARSTRAT	Army Staff Joint Staff SMDC/FWC-DCD National Organization SMDC/ARSTRAT

Table: Potential FA40 Officer Career Path

Units of Employment (UE), many FA40s are also being assigned to these staffs as members of Space Support Elements (SSE). These are some of the most important and visible positions within the Army Space community, because the SOOs, SSEs and ARSST leaders are the ones who must deliver our Space capabilities to the warfighters. The value of FA40s to the Army will in large part be judged by what these officers can bring to the fight.

There is some formal Space training for FA40s that can be found outside of SOOQC. The 1st Space Battalion, for example, has established a certification process for its ARSST leaders, and conducts individual and unit training to build Space skills. A collective training and staff integration program has also been established for SSEs. As the Army Space community gains more experience in employing Space capabilities, this training will continue to evolve and improve.

When an FA40 arrives at a corps or a UE, he or she is expected to be a Space expert from the start. FA40s working on a corps or UE staff generally don't have the luxury of being able to grow into their jobs, but must be immediately able to clearly and convincingly articulate the added value that they bring to the unit in terms of Space capability. A failure to do this has significant consequences for the individual, the unit and for the FA40 community as a whole.

An FA40 that cannot convince a corps or UE that Space capabilities enhance the unit's ability to accomplish its mission runs the risk of not being dedicated to providing Space support. This officer will likely be assigned other duties, with little time left to integrate Space into the staff planning process, or to develop professionally as a Space operations officer. This compounds the problem, because the FA40 loses the opportunity to master a highly specialized skill set, and that unit continues to have the false impression that there isn't a large benefit to be gained through Space capabilities. This situation also has implications beyond an individual Space operations officer being misutilized. The result of an assignment like this is that the FA40 in the field gets experience, but not Space experience. The FA40 community as a whole then suffers, through the lack of this Space experience from the field to develop and train our Space cadre.

Unfortunately, based on conversations with many FA40s, assignment of Space operations officers to areas outside of Space functions seems to be a systemic problem in Army units. This may be an indication that there are some shortfalls in the preparation of the FA40s who are expected to deliver Space support to the warfighter.

One shortfall that might contribute to this problem is in the area of national Space assets. A significant and critical portion of our Space capability is resident with national systems, yet for the most part the Army's professional Space cadre does not get enough exposure to these systems. Although national Space assets represent a subset of U.S. Space capabilities, we must understand the capabilities, limitations and means of employment of national assets just as thoroughly as we understand all other Space assets. Part of our credibility as Space experts is based on the fact that we have a working knowledge of all Space capabilities, not just some capabilities. An FA40 who understands and can employ all Space capabilities is in a much better position to describe the benefits of Space support than an officer with substantial gaps in knowledge concerning some constellations.

Another indication of a possible shortfall in the preparation and training of FA40s is in an August 2004, Govern-

(See Training, page 52)

SMDC/ARSTRAT conducts senior NCO conference

By SFC Dennis Beebe

FORT CARSON, Colo. — Senior Non-commissioned Officers from across U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command gathered at the Elkhorn Conference Center on Fort Carson, Colo., from Jan. 25-28. They were assembled for the 2005 SMDC/ARSTRAT Senior NCO Conference, which was sponsored by the command's Command Sergeant Major, David Lady.

"SMDC Senior Non-commissioned Officers wanted to come to this conference and were rewarded by coming," said Lady.

"Through this conference, they received a great deal of information about the command and were given the opportunity to further their development as non-commissioned officers."

Lady graciously spoke of the support received from the Officer Corps at the very highest level of the command to ensure senior NCOs were able to attend.

"I was surprised that so many came from our companies and detachments from overseas. I gave leeway by saying that I knew all of the senior NCOs might not come, but they brought them all and I now believe it was critical to do so. I believe it will be the correct thing to do again next year, to bring them all in," added Lady.

"The greatest value from this conference will be when all the senior NCOs return to their home stations and spread the word about what they heard and experienced here. So I ask each of you to carry the message home."

SMDC's Commanding General, LTG Larry J. Dodgen, appeared as the keynote speaker for the event. He also spoke of professional development and taking the messages from the conference home.

"SMDC's global presence is on four continents and an atoll, providing Space-based products to the warfighter," said Dodgen.

"When I have gone to visit these places, I have witnessed something I really like to see — Soldiers concerned about professional development and professional advancement. That's something I believe is the charge of the non-commissioned officer: to make sure their Soldiers are thinking about how they can become better servants of our nation, how they can progress and what they can do to work toward that end. You need to train them to think that their lives are their responsibility and they can be as good as they want to be. It's a pretty solid responsibility that we as leaders have — to ensure that our Army continues to serve our nation the way it has for well over 200 years," said Dodgen.

COL Jeffrey C. Horne, deputy commander for Operations, speaking on transformation of the Army said, "Forty years from now, you will be reading about this period in history that you lived through, as one of the greatest periods of change since the 1930s. Perhaps even earlier in the 1860s or 1870s with the introduction of the repeating rifle, then, in the 1930s, moving to armored vehicles and aircraft from horse cavalry. That was a whole different way of doing business. This is happening again now and is going on in a global scale," said Horne.

In addition to Dodgen and Horne's comments, the senior sergeants were given overviews of various sec-

Attendees of the 2005 Senior NCO Conference converse during one of the breakout sessions. Photo by Sgt. 1st Class Dennis Beebe

tions of SMDC by speakers such as Michael C. Schexnayder, deputy to the commander for Research, Development and Acquisition; COL Patrick Rayermann, SMDC G-3; COL Gary Baumann, commander, 100th Missile Defenses Brigade (GMD); LTC Eric Henderson, Executive Office of the 1st Space Brigade; and Kirby Brown of the Future Warfare Center. Even U.S. Strategic Command's Senior Enlisted Adviser, Command Master Chief William Nissen, (U.S. Navy), and U.S. Northern Command's Senior Enlisted Adviser, SGM Scott Frye (U.S. Marine Corps) were present to discuss SMDC/ARSTRAT's role within their organizations.

Command sergeants major of the Signal and Air Defense Regiments and sergeants major of the Non-commissioned Officer Education System and Enlisted Promotions at the Pentagon were present to brief the transformations of their branches, and to discuss professional development within the Army.

Former Sergeant Major of the Army (Ret.) Jack Tilley gave a presentation on financial planning, MSG David Atchison of SMDC G-1 spoke on counseling and assessing enlisted troops, and Rob Holmes of the Veterans Administration presented a detailed briefing on Veteran Affairs and programs available to retirees. A very familiar face to some of the members of SMDC was that of SGM Tammy Coon of Enlisted Promotions at the Pentagon, who gave a briefing and presided over one of the breakout sessions concerning promotions and other Adjutant General concerns. Coon was the former first sergeant for the 1st Space Brigade's Headquarters and Headquarters Company.

On the final day of the conference, the senior NCOs split into two groups to go on tours of the Cheyenne Mountain Operations Center (CMOC), and were able to see up-close and firsthand how this unique facility operates and how closely many of their jobs interact with the facility's mission.

"The 2005 SMDC Senior NCO Conference was a unique opportunity for SMDC NCOs from across the globe to come together in one location and talk about Space and our role in it," said 1SG Darren Hamilton, 1st Space Company, 1st Space Battalion. "For my unit in particular (JTAGS), it was the first time in many years that senior NCOs from all of our forward and CONUS-based detachments were assembled face to face," Hamilton said. "The cross talk and discussions ranging from operational lessons learned, the conduct of weekly warrior based training and the professional briefings from truly exceptional leaders highlight the many milestones achieved during the week. From my standpoint I can say for our unit that the conference was an overwhelming success."

With the conference concluded, Lady gave his overall comments on the event following the after action review.

"I was gratified with the positive reaction of all my NCOs to this conference," said Lady.

"We wanted a conference that would bring them up to date on the issues of the transformation of the Army, and of the transformation of this command … to be more ready and relevant in support of warfighting organizations. My NCOs have indicated to me that the mission was accomplished. By looking at their critique sheets and listening to their comments, I know now that we gave them the right level of briefings, we briefed them on the right subjects, and provided them a fitting capstone to this year's NCO Development Program within Space and Missile Defense Command. They received a MACOM level view of this organization and an Army issues level view of what our service is going through right now. A very successful conference!" concluded Lady.

1st Space Battalion sends Soldiers to Iraq, Qatar

By Ed White

SSG James Fix, 2nd Space Company, 1st Space Battalion, gets a special hug from Anthony Roth, during a send-off ceremony held at Peterson Air Force Base, Colo., Dec. 16, 2004. The ceremony honored 18 Soldiers from Peterson Air Force Base and Fort Bliss, Texas, deploying to Iraq and Qatar in support of Operation Iraqi Freedom. The Soldiers are scheduled to be deployed for one year. *Photo by SFC Dennis Beebe*

PETERSON AIR FORCE BASE, Colo. — A farewell ceremony conducted Dec. 16, 2004 honored 18 Soldiers from the 1st Space Battalion as they deployed from Peterson Air Force Base, Colo., and Fort Bliss, Texas, in support of Operation Iraqi Freedom.

The 1st Space Company, Theater Missile Warning, (TMW) deployed five Soldiers from Colorado Springs and seven from El Paso to Qatar for a one-year tour.

"These are our finest Soldiers. They trained hard and have built solid teams. Now they are going off to do their mission and nothing is more important. They are prepared and ready," said LTC Jeffrey Farnsworth, commander of the 1st Space Battalion.

The deployed TMW team members are, Team Leader CW2 Christopher Hall, SFC Ronnie Price, SGT Dawn White, SGT Alexander Appleby and SPC Michael Scott from Colorado. The El Paso contingent consists of SSG Christopher Lamb, SSG Tracey Rosser, SGT Darrell Jones, SGT Gilbert Garcia, SGT Eric Robinett, SPC Nicholas Carpenter and SPC Joshua Williams. There are also three Soldiers who went out in advance of the larger deployment. They are SSG Jeffrey Crane, SPC Jonas Moody and PFC Theodore Fuller.

The 2nd Space Company also deployed six Soldiers of Army Space Support Team (ARSST) 1 to replace the members of Team 2 who have been manning the system in Baghdad for the past year. They are MAJ Tod Pingrey, 1LT Lauren Miller, SSG James Fix, SGT Jason Martinez, SGT Paul Lizer and SPC David McQuay. The ARSST team supports the warfighter with products and information derived from Space-based capabilities. Items such as satellite imagery maps, blue force tracking, satellite communications and satellite weather are funneled directly to those who need them at all levels from planners to operators.

Three Soldiers receive medals; six NCOs make E-7 promotions list

By Ed White

PETERSON AIR FORCE BASE, Colo. — Three Soldiers from U.S. Army Space and Missile Defense Command were awarded medals in a recent ceremony. SGT Katherine Braun received the Army Commendation Medal for service in Iraq and SGT Brandon L. Deaton and SPC Genoveva J. Gonzales received the Army Achievement Medal.

"Sergeant Braun was the Multi-National Coalition-Iraq's (MNC-I) subject matter expert on commercial imagery, how to get it and how to use it," said MAJ Tim Haynie, commander of the Commercial Exploitation Team (CET) in Iraq and Braun's boss. "She helped increase the MNC-I use of commercial imagery from seven to 10 requests in a year to more than 30 in six months. Without her liaison work the Commercial Exploitation Team would not have been as effective or aggressive in providing commercial imagery to MNC-I."

The CET team was stationed in Bahrain and according to Haynie, Braun was assigned to the team as a liaison officer. "Sergeant Braun eagerly went forward to Baghdad and never once made an issue of the disparity," Haynie said. "She loved her job up there. She performed her duties with all the eagerness and dedication one would expect from a top-notch NCO."

Deaton of the 2nd Company, 1st Space Battalion received the Army Achievement Medal for his selection as the Battalion non-commissioned officer of the quarter for the fourth quarter of fiscal year 2004. He was specifically recognized for his "superb performance in the areas of military courtesy, bearing and knowledge."

Gonzales received the Army Achievement Medal for her selection as Soldier of the quarter for the fourth quarter of fiscal year 2004. Gonzales also was praised for her "superb performance in the areas of military courtesy, bearing and knowledge."

LTC Jeffrey Farnsworth pins the Army Commendation Medal on SGT Katherine Braun for her recent contributions while serving with the Commercial Exploitation Team in Bahrain. *Photo by SFC Dennis Beebe.*

When asked to comment on her success, Gonzales said, "Never quit! Never quit! It pays off."

LTC Jeffrey Farnsworth, commander, 1st Space Battalion, also recognized six staff sergeants who have been chosen for promotion to sergeant first class.

The group of future sergeants first class includes SSG Jerry Teter, SSG Andy Bryce, SSG Clifton Goodwin, SSG Daniel Kesinger, SSG Mark Lopez and SSG Jeremy Jones.

"This is a huge milestone in every NCO's career," Farnsworth said. "I liken it to the promotion from company grade to field grade in the officer corps. It clearly demonstrates that the Army is placing an immense amount of trust and confidence in the individual based on their demonstrated leadership ability."

The battalion's top NCO, CSM Daryall Sumpter congratulated the sergeants and said, "These NCOs make the whole Army better."

Soldiers brave sub-zero temperatures for Force Protection Exercise

By SPC Jack W. Carlson III
49th Missile Defense Battalion (GMD)

FORT GREELY, Alaska — The Soldiers of the 49th Missile Defense Battalion (Ground-based Midcourse Defense) who took part in the most recent Force Protection Exercise here had to brave sub-zero temperatures.

Before the start of the exercise, which ran Jan. 19-23, the wind chill factor brought the air to a daunting 64 degrees below zero.

The exercise assessed the unit's ability to conduct security tasks such as site defense and civil disturbance. The security forces element here consists of a platoon of military police (MPs) and a platoon of infantry augmentees.

This particular exercise, fourth in a series, focused on testing the security force's ability to react to indirect fire. Mortar and artillery simulators added flash and bang realism to the pristine white mountains of snow. Patrols mounted on snowmobiles scouted for intruders.

The MP platoon's executive officer, 1LT Scott Slaughter, commended the unit's performance.

"The mortar attack was in reality a feint designed to draw the MPs from guarding the enemy's main objective. It didn't work — the security force did the right thing, and sent only a small force to observe and detect the enemy position, while the main force maintained the proper security," Slaughter said.

The above mentioned intruders, native Eskimo Scouts from 1/297th Infantry Battalion, Alaska Army National Guard, were trained as an insurgent force by Special Forces Soldiers, and did their best to infiltrate the site. The heavy snow in this case helped the defending force, since it made tracking easier.

The extreme cold made this exercise more difficult than previous training, even for Alaska native and military policeman SPC Duane Ostrowski. "It's the wind that gets you — you have to make sure you are not exposing any skin to these unforgiving temperatures," Ostrowski said.

"It's amazing that we don't have that many cold weather injuries up here in Alaska," said LTC Dan Garcia, exercise executive officer and executive officer for the 49th's parent unit, the 100th Missile Defense Brigade, (GMD), based in Colorado Springs, Colo. "It really says something about these Arctic Warriors."

Above: LTC Jim Gierlach, right, SMDC/ARSTRAT Operations Center director, trains Eskimo Scout members of the 1/297th Infantry Battalion, Alaska Army National Guard, on the ins and outs of insurgency warfare, readying them to act as opposing forces during a Force Protection Exercise held at Fort Greely, Alaska.

Left: SPC Kevin Rupp, 49th Missile Defense Battalion, stands guard during a fiercely cold Force Protection Exercise at Fort Greely, Alaska. Cold weather gear was helpful in protecting against the 64 degrees below zero temperature.

Photos by SPC Jack W. Carlson III

COMMAND IN BRIEF

Space Focus Day unites mission partners

By Mike Howard, SMDC Public Affairs

PETERSON AIR FORCE BASE, Colo. — Key leaders from Department of Defense organizations responsible for bringing Space-based products to the joint warfighter met here Jan. 31. Approximately 25 leaders participated in a U.S. Strategic Command-sponsored Space Focus Day. The event, hosted by U.S. Army Space and Missile Defense Command, focused on the challenges faced when providing Space-based products and capabilities to warfighters.

The daylong discussions included information briefs explaining how the Army, Navy and Air Force are currently organized to deliver Space-based products. Examples of Space-based products include satellite communications, satellite imagery, early missile warning and blue force tracking.

"We are very pleased to host this event today," said COL Jeffrey C. Horne. Horne is the deputy commander for operations for SMDC/Army Forces Strategic Command, the organization responsible for Space initiatives in the Army. "We are just one of the partners in the joint Space business. We think the number one challenge facing us as a Space community is how we fit into contingency operations. We want to come to the table quickly with Space-based capabilities that can help the joint warfighting commander save lives and win. If we get this right, everything else will come together.

"I think the biggest thing we accomplished today is an agreement that we need to put together our collective plan for how we are going to (get) Space into the hands of our warfighters in the future," Horne said.

The event presented a new opportunity, according

Col. Patricia Baxter addresses the audience during the Space Focus Day Jan. 31. The event brought to light the need to make Space a joint effort. *Photo by SFC Dennis Beebe*

to U.S. Air Force Maj. Gen. Douglas Fraser, who is the director of Air and Space Operations, Headquarters Air Force Space Command, Peterson Air Force Base, Colo.

"We are going to have to do the Space mission as a team," he said. "Each service has its own heritage in Space. We need to break down walls and build compromise. Today I think we set a firm foundation for this team approach. None of us have the manpower to do this mission alone."

Discussions on Space fit in to a larger, over-arching objective, according to Rear Adm. Frank M. Drennan. Drennan has been named the deputy commander of a newly forming organization within STRATCOM that will focus on Space and global strike — named the Joint Forces Component Command Headquarters for Space and Global Strike. STRATCOM is also working with its components to establish joint organizations for Global Network Operations, Information Operations, Intelligence, Surveillance and Reconnaissance, Missile Defense and Nuclear Warfare.

"GEN James E. Cartwright has decided upon a new command structure for U.S. Strategic Command, which includes standing up a Joint Component Command Headquarters for Space and Global Strike," said Drennan in his opening comments. "So our intent today is to establish connection with our mission partners in these two mission areas, gather information and walk out of here with an action plan of how we can leverage existing ways of doing business."

STRATCOM has not released a timeline for implementing the new structure. However, SMDC/ARSTRAT is the lead for the Army in establishing the Joint Component Command Headquarters for Integrated Missile Defense.

Organizations represented at the Space Focus Day included: STRATCOM, U.S. Air Force Space Command, 14th Air Force, 21st Space Wing, U.S. Navy Network Warfare Command, National Security Space Office, the Joint Space Control Negation Joint Test and Evaluation Office, the Naval Network Space Operations Command, and SMDC/ARSTRAT.

Schriever III wargame explores critical Space issues

Air Force Press Release

NELLIS AIR FORCE BASE, Nev. — The Space Warfare Center conducted its third Space wargame at Nellis Air Force Base, Nev., Feb. 5-11.

The Schriever III wargame, set in the year 2020, explored critical Space issues in depth and investigated the military utility of new Space systems.

The objectives of the wargame centered on exploring options to employ Space forces, command and control of those forces and examining Space technologies and concepts.

The details of the scenario were classified; however, the game set friendly "blue" forces against enemy "red" forces with a worldwide range of conflict that stresses Space systems.

The first two Space wargames, "Schriever 2001" held in January 2001 and "Schriever II" held in February 2003, were significant successes identifying system capabilities and requirements.

The Space Warfare Center conducted this effort on behalf of the U.S. Air Force, the Department of Defense's executive agent for Space.

The U.S. Army Space and Missile Defense Command was among the approximately 250 military and civilian experts from approximately 20 agencies around the country as well as Australian, Canadian and British officials invited to participate in the wargame. Other invited agencies included: Air Force Space Command, Naval Network and Space Operations Command, the National Reconnaissance Office, the National Security Space Office, Air Combat Command, Office of the Secretary of Defense, U.S. Joint Forces Command, U.S. Pacific Command, U.S. Strategic Command, U.S. Southern Command, U.S. Transportation Command, U.S. Special Operations Command, U.S. Northern Command, the Defense Information Systems Agency, the National Geospatial Intelligence Agency, the National Security Agency, NASA, the Department of Homeland Security, the Department of Transportation, the Department of State and the Department of Commerce.

Experiment looks to identify requirement for Space operations officers in the future force

By Debra Valine, SMDC Public Affairs

HUNTSVILLE, Ala. – One of the objectives of the Omni Fusion Build 1 experiment is to determine how Space operations officers can best support joint warfighters in the future force.

Omni Fusion, held from Jan. 18-Feb. 11 at Fort Knox, Ky., Fort Leavenworth, Kan., and Redstone Arsenal, Ala., in-

cluded 19 military, government and contractor participants from the U.S. Army Space and Missile Defense Command's Future Warfare Center. Other participants included all Training and Doctrine Command schools, centers and battle labs; the Army Special Operations Battle Lab; Communications Electronic Research Development and Engineering Command, Army Research Laboratory, Army Test and Evaluation Command and the Lead System Integrator for Future Combat Systems.

"Build 1 analyzed the future force concepts of the Future Combat System Unit of Action (FCS UA) and the Tactical Unit of Employment (UEx)," said Michael Florio with the Space and Missile Defense Battle Lab in Colorado Springs, Colo. "The FCS UA is a Brigade Combat Team level unit whose proponent is the Unit of Action Maneuver Battle Lab at Fort Knox, Ky. They are running the Build 1 experiment and provide Experiment Control.

"The UEx is an enhanced division-level unit with some corps capabilities whose proponent is the Battle Command Battle Lab at Fort Leavenworth, Kan.," Florio said.

SMDC objectives in the experiment included:

- Integrating Space operations functionality into the Future Combat System UA and UEx staff structure by refining the staff relationship between the UA Space operations officer and the UEx Space Support Element.
- Refining the role of the Near Space Platform (NSP) by integrating NSP intelligence, surveillance and reconnaissance (ISR) sensor platforms into Army and joint ISR operations and developing the NSP as a communications relay/augmentation platform.
- Continue SMDC's technical support of JISR and joint effects in Army Concept Development Experimentation Plan experimentation by operating the Simulation of the Locations and Attack of Mobile Enemy Missiles and Extended Air Defense Simulations from the Huntsville Simulations Center via the Battle Lab Collaborative Simulation Environment.

"SMDC is looking at how to integrate Space operations into these future force units," Florio said. "CPT Michael Belton of the Battle Lab, Huntsville, represented the Space operations officer (FA40) at the FCS UA and LTC David Hotop of the Battle Lab, Colorado Springs, represented the Space Support Element at the UEx. These organizational concepts have been written into the UA Organization and Operations document and into the UEx White Paper documents.

"Our analysis from the insights gained from the experiment will validate the requirement for Space operations at these tactical echelons and contribute toward developing the tactics, techniques and procedures for required future staff interactions and Space-based capabilities for the future force," Florio said.

Deputy commander wows record crowd at Huntsville luncheon

By Giselle Bodin, SMDC Public Affairs

HUNTSVILLE, Ala. – The U.S. Army Space and Missile Defense Command's deputy commander for Operations spoke at the Tennessee Valley Chapter (TVC) of Women in Defense (WID) and National Defense Industrial Association (NDIA) luncheon Jan. 21 at the Huntsville Marriott.

Col. Jeffrey C. Horne used his role as guest speaker for the organization's winter event to update the group on key operations issues.

Speaking on "Developments for Space and Missile Defense," the message that Horne delivered was focused on Army Transformation.

He mentioned the changing processes, institutions, culture and technologies the Army and SMDC are supporting to work toward a joint, Interdependent Force. Horne also mentioned the additional 10 brigades the Army is adding and the large job shift that is going on within the Army infrastructure.

"We believed having Col. Horne speak at our function would be beneficial to the defense community," said Lisa Gilbert, president of the WID-TVC. "These 'Updates to Industry' provide opportunities for professionals to increase their knowledge of current activities."

The WID-TVC is a National Security Organization and subsidiary of NDIA. It works to cultivate and support the advancement and recognition of women in all aspects of national security. WID-TVC provides its

members with opportunities for professional development and networking, cultivating the advancement of women leaders in government and industry. The members host luncheons with a guest speaker on a quarterly basis. This event had 125 guests pre-registered — the largest group ever for a WID luncheon.

"The response to Col. Horne as a speaker for this venue was tremendous," Gilbert said.

Cristina Hinkle, the WID-TVC program director, agreed. She was very pleased with the event as a whole. "Col. Horne was a very charismatic speaker," she said. "He brought in an amazing crowd."

Horne said he was happy to be in the Rocket City to support both WID and NDIA and to speak to the group on SMDC's role in Army Transformation. Citing Army Astronaut, LTC Nancy Currie as an example, Horne also commented that "women are leading the way like never before." Naturally, the crowd appreciated these comments.

COL Jeffrey C. Horne, deputy commander for operations, U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command, discusses Army Transformation Jan. 21 in Huntsville, Ala. *Photo by Giselle Bodin*

"I very much enjoyed the information about women he slipped into various parts of his presentation," Hinkle said.

Another interesting part of Horne's presentation included the new Army Battle Dress Uniform, which he wore. Horne showed off the new look by walking through the crowd and commenting on the advantages of it, such as the Velcro used for closures on pockets and for unit insignias. Soldiers also like the fact that it upholds its condition for an extensive time and is "wash and wear" without the need for ironing.

"I enjoyed him so much, I already have a new project to get him here to speak again!" Hinkle said.

GMD brigade and battalion begin pro-shifter training

By SGT Sara Storey, 100th Missile Defense Brigade

COLORADO SPRINGS, Colo. – Staff members of the 100th Missile Defense Brigade (Ground-based Midcourse Defense) here began specialized training this month.

The training, labeled "pro-shifter training" serves a dual purpose – one, educating brigade staffers on the system to improve their overall understanding of what the operators do, and two, enabling them to serve as temporary augmentees on crews to increase training and mission flexibility. The 49th Missile Defense Battalion, (GMD) located at Fort Greely, Alaska, completed similar training last month.

These units, staffed by Colorado and Alaska Army National Guardsmen/women, provide the first part of the nation's emerging missile defense program, designed to protect against accidental or intentional launches of ballistic missiles. Both units have five-person crews (operators) on shift 24/7 to operate the GMD system.

Pro-shifters are currently undergoing training that will allow them to fill in for an operator in a temporary capacity, according to CSM Dan Marques, command sergeant major, 100th MDB.

Traditional operators complete the Air Defense Artillery course at Fort Bliss, Texas, go through a 10-week operator course in Colorado Springs, Colo., and attend positional training here or in Alaska. The pro-shifter training is a six-week course designed to give graduates the necessary knowledge to fill a crew position as a replacement crew member for a short period of time, according to Marques.

After completing the training, operators and pro-shifters complete a demanding certification process and are required to pass a recertification process every six months. Pro-shifters will also be required to pull shift at least two times each month to maintain their proficiency on the system.

"Training staff members to be pro-shifters really helps the unit in three ways," Marques said. "It gives the staff an operational perspective of the crews' requirements and the GMD system, it allows us more flexibility because pro-shifters can replace operators on the consoles in a temporary capacity, and it helps the staff better perform their duties of supporting the operators.

"Being a pro-shifter will require additional training, energy and evaluation on the part of the Soldiers," Marques said. "The pro-shifters will have to work hard at maintaining their skills because they won't have everyday exposure to the system like the operators."

COL Gary Baumann, commander of the 100th MDB, believes the pro-shifter training is a valuable asset to both the brigade and battalion — so valuable that he is currently going through the brigade-sponsored training to become a pro-shifter himself, following the centuries-old military tradition of the commander being able to perform the missions he asks his Soldiers to do.

"This training not only provides the command with an invaluable asset to allow flexibility in crew member positions, it personally gives me a different perspective and much deeper appreciation for the degree of difficulty involved in operating the GMD system," Baumann said.

SATCON Soldiers participate in the Marine Corps Martial Arts Program

By SFC David Combs, Bravo Co., 1st SATCON

FORT MEADE, Md. — Throughout history, warriors have been trained to fight in all areas of combat. They were educated in the art of war, and skilled in the use of weaponry and hand-to-hand combat. Today's warriors are no different from their ancient predecessors.

Six Soldiers from Bravo Company, 1st Satellite Control Battalion, Fort Meade, Md., sought to hone their "warrior" skills by engaging in hand-to-hand combat through the Marine Corps Martial Arts Program (MCMAP). SFC David Combs, SSG Matthew Smith, SSG Eric Erisman, SGT Brett Elms, SPC Joshua Rodriguez, and SPC Andrew Sanders took part in the MCMAP tan belt program with the six Marines of Company B, Marine Cryptologic Support Battalion. The tan belt is the first level of MCMAP training.

MCMAP was first implemented in October 2000 to improve warfighting capabilities of individual Marines and units, enhance Marines' self-confidence and esprit de corps and to further instill the Warrior Ethos. By participating in the MCMAP training, the Soldiers of Bravo Company hoped to improve their warfighting skills as well.

The course was conducted over two weeks. Students were trained in fundamental martial arts techniques such as punches, kicks, chokes and throws. They also trained on knife and improvised weapons techniques, as well as how to react to enemy choke holds and strikes. Marine Sgt. Jason Connelly and Marine CPL Aaron Marcum were the instructors of the MCMAP course.

"During the class, I emphasized technique over strength," Connelly said. "This shows the student the importance of conserving their energy. Ultimately, in real combat, endurance and technique will win the fight."

SPC Andrew Sanders holds an arm bar on one of the Marines participating in the program. *Photo by 1SG Joey Thornburg*

Two days prior to the final evaluation, both Soldiers and Marines had to endure a 90-minute combat stress drill. While carrying a rifle, they were put through a gauntlet of exercises such as; an individual 100-meter fireman carry, crabwalk, bearwalk and walking lunges; as well as squad pushups and sit-ups to name a few of the exercises.

Immediately following each exercise, the Soldiers and Marines were required to perform one or more martial arts techniques while in a fatigued state. Exhausted, each Soldier and Marine pushed through the combat stress drill as one team, motivating and pushing each other until they successfully completed the exercise.

"I have never been so exhausted in my life, but knowing I can still perform the techniques while fatigued made the training worth it," Rodriguez said.

With their spirits high, the warriors were ready for their final performance evaluation. On the final day of MCMAP training, all 12 Soldiers and Marines successfully completed the final performance evaluation and were awarded the MCMAP tan belt and certificates. As a token of gratitude, CPT Timothy Root, commander of Bravo Company, 1st SATCON, presented both Connelly and Marcum with coins and certificates of appreciation for their efforts in training his SATCON Soldiers.

"This was a great training experience and I hope to take part in the next phase of MCMAP training for the gray belt," Smith said.

Although the object of the training was to learn basic martial arts techniques, the SATCON Soldiers of Bravo Company came away with much more: they gained a greater sense of self-confidence in their abilities to survive in combat, and they earned the respect and friendship of their Marine brethren.

CET Soldier re-enlists in Bahrain

By Ed White

BAHRAIN — Re-enlistment in the military is a big commitment. It means additional times of sacrifice. It means being away from one's home and family. In this day and age it also means the very real possibility of putting oneself in mortal danger. This kind of commitment, made every day in the Army, is why Americans have the freedoms and privileges they enjoy every day.

SGT Chris Mavec worked through all these factors before he re-enlisted in Bahrain in February, recommitting to the Army for a three-year span as CPT Rob Pietrafesa administered the oath.

Mavec is a Satellite Network Controller assigned to the Commercial Exploitation Team (CET), part of the 1st Space Battalion. The CET is a 24/7/365 capability that provides immediate and direct support to the joint military community. It provides all the new imagery collections from a variety of commercial satellites for the Multi-National Corps-Iraq and U.S. Central Command both in support of Operation Iraqi Freedom.

Mavec's responsibilities include installing, operating and maintaining a wide variety of satellite communications systems and devices. He is responsible for directly downlinking all satellite imagery, which is provided to a variety of users from high-level planners to Soldiers in the field.

SGT Chris Mavec, right, of 1st Space Battalion's Commercial Exploitation Team, receives the oath of re-enlisment from CPT Rob Pietrafesa. The ceremony took place in Bahrain with little fanfare. *Photo courtesy of the CET*

Exercise tests Iraq lessons

By SFC Dennis Beebe

COLORADO SPRINGS, Colo. – Exercise Terminal Fury, Dec. 3-11, 2004, allowed the U.S. Army Space and Missile Defense Command to test improvements in Space support coordination processes that will improve support provided to the warfighter.

Over the past year, SMDC has deployed four Army Space Support Teams out with the Combined Forces Land Component Command, V Corps, III Marine Expeditionary Force, 4th Infantry Division (Mechanized) and other elements to support Operation Iraqi Freedom. Terminal Fury, at Hickam Air Force Base, Hawaii, and Camp Courtney, Okinawa, Japan, exercised the lessons learned by these ARSSTs.

"Our teams performed well in Iraq, but they learned that certain coordination elements would have enabled them to have more impact with the units they were supporting," said MAJ Troy McKeown, the Army senior Space officer working as liaison with the Joint Forces Air Component Command (JFACC) during the exercise.

Based on guidance from SMDC's commanding general, the 1st Space Brigade developed a deployable Army Space Coordination Detachment to serve as the liaison to the JFACC and an Army Space Coordination Element to support the JF Land Component Command. These two elements provided Space support and planning in

the development of the theater campaign plan to each component commander.

Throughout Terminal Fury 05, SMDC Space experts ensured Space resources were in place and integrated into combat operations. With these Space experts on hand, Space assets were refined to provide maximum capabilities to friendly forces.

"What we are trying to do at the combatant commander level is be able to recommend a Space control effect from the JF Land Component Command all the way up to the Joint Task Force and get it nominated for execution at the JF Air Component Command," said MAJ Richard Zellman, officer in charge of the ARSST in Okinawa. "We want to provide an avenue for cross talk between the Space elements of the components.

"One of the major goals for the exercise was to provide responsive Space control support to the land component commander," Zellman said. "To accomplish this we had brigade Space forces at both the land and air component of the Joint Task Force. This enabled us to submit a nomination from the land component commander, track the nomination through the JTF and air component, and ultimately execute the Space control mission."

"With Space providing a force multiplier, the warfighter is able to find, target and deliver the required effect to the enemy in hours, versus days or weeks using conventional methods," said Brian Finter, part of the Exercise Control Cell for Exercise Terminal Fury. "Space has helped the U.S. fighting force instill a new type of blitzkrieg on the battlefield, in the sky, on the sea and in Space."

"One of the biggest advancements we got out of this exercise was that we nailed down some new processes and actually did some really good training in the area of deconfliction and coordination with Cheyenne Mountain Operation Center," McKeown said. "It was a very good exercise overall."

100th Missile Defense Brigade (GMD) to sew on new patch

By SGT Sara Storey, 100th Missile Defense Brigade

COLORADO SPRINGS, Colo. — The 100th Missile Defense Brigade (Ground-based Midcourse Defense) Soldiers are scheduled to wear a newly designed patch and crest within the next few months.

The original concepts for the crest and patch were designed

New 100th Ground-Based Midcourse Defense (GMD) Crest designed by MAJ David Bennett, 100th GMD

100th MDB. The final effort was a collaboration between Bennett and Rhonda Reiner, an artist with The Institute of Heraldry at Fort Belvoir, Va.

The patch and crest share similar features – an eagle, symbolizing the unit's commitment to national defense; a lightning bolt, representing the power and strength of the unit and its tie to Space and Missile Defense Command; and mountains, replicating those on the state seal of Colorado and signifying the connection with the Colorado Army National Guard.

The motto that appears on the crest is "Contegamus et Cassamus," a Latin phrase meaning "Guard and Destroy." The word "guard" relates to the unit's National Guard heritage and its day-to-day mission of shielding and protecting the nation. "Destroy" embodies the mission – the launch of ground-based interceptors designed to protect against accidental or intentional launches of ballistic missiles.

ate operational needs. REF solutions are then assessed for wider fielding and incorporation into standard acquisition processes.

Support must be flexible.

Rapidly evolving combat situations demand responsive and tailorable solutions. Although quality, well-trained Soldiers able to adapt to the constantly changing demands of the battlefield will always be our most valuable assets, optimum results are generally not gained by depending on our Soldiers' "work-arounds" and "on-the-fly" solutions. The key is to use existing systems in new ways, by applying new ideas and by increasing the dialogue between warfighters and material developers.

Ongoing combat operations, coupled with today's highly fluid environment, require systems and capabilities that can satisfy warfighters' requirements in multiple operational scenarios. This imperative will keep increasing with the requirement of the future force as part of the joint force, according to ***Joint Vision 2010***, "operating unilaterally or in combination with multinational and interagency partners, to defeat any adversary and control any situation across the full range of military operations."

The provision of support within a joint context is an operational imperative. As noted by Vice Admiral Lowell Jacoby, director, Defense Intelligence Agency, "Today, it really does not matter whether targeting data is provided by a Space-based system, a manned or unmanned airborne vehicle or a forward observer working with a U.S. Army or Marine Corps infantry company or small platoons of Afghan national army troops."

An area where we are helping to instill greater flexibility in our support to joint warfighters is the establishment of an organic Space Support Element (SSE) in each of the Army's reorganizing "modular" divisions, the Unit of Employment or UEx. Even now, the first SSE, deployed with the 3rd Infantry Division in Iraq, serves as the focal point for maximizing Space-related capabilities in support of tactical warfighting requirements in concert with the Joint and Interagency and Multinational partners. SMDC/ARSTRAT's involvement in integrating the various Joint Blue Force Situational Awareness (JBFSA) systems to develop a common operating picture will be instrumental in transitioning from standalone, "stovepipe" systems to new concepts of operations that embrace joint force operations and integrated capabilities. This initiative will enhance the flexibility available to warfighters.

Support must be deliverable to Warfighters on the move in an asymmetric environment.

Our future adversaries and concepts of operation to fight them are not like those of the past. More than ever before, joint warfighters will depend on support that lets them pursue the enemy on a 24/7 basis. In the words of President Bush, "When terrorists spend their days struggling to avoid death or capture, they are less capable of arming and training to commit new attacks."

In conventional military operations, enemy forces are generally easier to find than to destroy. Relatively large military formations and their equipment usually operate in terrain conducive to maneuver. They also emit a variety of electro-magnetic signatures subject to interception and have physical attributes that make them visible to detection. Warfighters can then bring together a measured amount of military capability to neutralize or destroy the adversary's combat power. In contrast, insurgents operating as individuals or in small groups in "complex terrain" are often masked in the larger population. They conduct activities by using couriers or move as individuals to avoid ready detection. Identifying and targeting these small groups or individual insurgents — barely distinguishable from the civilian population — presents a distinct challenge.

The new security environment will likely include adversaries who have access to advanced technology, including global communications, Space-based spectral imagery and automation infrastructures. Adversaries may also attempt to get and use weapons of mass destruction (WMD) capabilities. In fact, President Bush has indicated our nation's greatest threat "is the possibility of secret and sudden attack with chemical, biological, radiological or nuclear weapons."

Confronting these evolving challenges will require us to leverage Space-based systems in areas related to persistent surveillance; satellite communications; JBFSA; intelligence, surveillance and reconnaissance (ISR); position, navigation and timing; spectral imagery; missile warning; and Space control.

As recently noted by Under Secretary of the Air Force Peter B. Teets, "Our goal is transparency — we want the ability to see everything and know everything, while simultaneously denying our adversaries both the ability to do the same, and the knowledge that such capabilities are being used against them. We want to be always one step, or more, ahead of our adversaries — to be first to see, first to understand and first to act."

Transformation Realities

What future warfare looks like has been transformed by the nation's and Army's experiences in Afghanistan, Iraq and the ongoing Global War on Terrorism. However, Space-based capabilities will remain essential to future force military operations, and Space operations in support of the future force will remain focused on

Our future adversaries and concepts of operation to fight them are not like those of the past. More than ever before, joint warfighters will depend on support that lets them pursue the enemy on a 24/7 basis.

five essential tasks:

- Increased deployability and reduced theater footprint
- Enabling situational understanding en route as well as off the ramp during entry operations
- Support of precision maneuver, fires, sustainment and information on a non-linear battlefield
- Enabling continuous information and decision superiority
- Protecting the force during all phases of the operation

The process of Army Transformation is being subjected to additional realities, including those related to support of extended combat operations in Afghanistan and Iraq. The challenges for Space professionals are in three areas:

- An era of procurement has moved to one of sustainment and replacement. Repair and replacement of equipment subject to heavy use; e.g., HMMWVs, helicopters and tanks, has prompted action on behalf of the Department of Defense (DoD) and Department of the Army to reprioritize plans for current and out-year funding. This trend will likely continue for some time.
- Proliferation of systems is not supportable. Tremendous efforts are being expended to ensure the DoD acquisition and procurement process takes into account the necessity to integrate capabilities in support of joint rather than service-specific requirements. Similarly, future efforts should reduce the adverse impact of multiple "stove-piped" systems, as was the case for the various blue force tracking systems during the initial phases of OIF. Reportedly, more than 20 disparate systems were used in support of the coalition forces.
- Integration timing issues will continue. The Army's future force, fighting as part of the joint force, will be integrated into an overarching information system, a shared comprehensive picture of the battlefield and have global access to users at all levels. In some cases, because of development timing and funding, system integration will take place after the systems are fielded.

Evolution of the Final Frontier — Operations Abound

Recently, GEN Peter J. Schoomaker, Chief of Staff of the Army, noted the extraordinary capabilities provided by the Stryker brigade in Iraq when it "disengaged from combat in the Mosul area, moved 420 miles, fought a battle in Bacava along the way and then entered battle in Najaf. They did all that in a 48-hour period. That performance showed tremendous operational agility and a brigade that is mobile, survivable and very state-of-the-art in terms of communications and command-and-control." This significant feat was enabled through synchronization of multiple capabilities, many of which were facilitated or enhanced by Space-based products and services. Clearly, "the U.S. military cannot undertake any major operation, anywhere in the world, without relying on systems in Space," as was written in February 2001 by the U.S. Commission on National Security/21st Century.

The next several years will be challenging and exciting ones for Space professionals. Operationally, Space is — and will remain — an essential capability that will continue supporting our joint warfighters. Technically, systems with immense potential are being developed and are on the horizon for fielding. Professionally, tremendous opportunities exist for those who are able to leverage and evolve the "Final Frontier" in support of our nation and joint warfighters.

Secure the High Ground!

The Stanley R. Mickelsen Safeguard Complex in North Dakota.

Test Site ... from page 9

strated that a long-wave infrared sensor could discriminate between, designate and track reentry vehicles. Encouraged, the experimenters investigated the technical feasibility of using airborne optical sensors to detect, track and discriminate between ballistic missile reentry vehicles together with the ability to pass trajectory data to ground-based radars.

The advances made in infrared sensor and computer technology encouraged scientists to experiment with hit-to-kill technology, leading to the first kinetic interception of a missile in Space with the Homing Overlay Experiment. In June 1984, a kill vehicle and a mock warhead collided at speeds greater than 15,000 feet per second more than 100 miles above the Pacific Ocean. The Homing Overlay Experiment was the first true revolution in ballistic missile defense since research began in the 1950s, literally proving that a bullet could hit a bullet.

In the early 1980s, the Joint Chiefs of Staff began a reassessment of the vulnerability of America's ICBM arsenal. They concluded that a missile defense effort was required. In a February 1983 meeting with President Ronald Reagan, they recommended that the United States follow a national security strategy which placed increased emphasis on strategic defense. In the words of the Chairman of the Joint Chiefs of Staff, General John Vesey, "Wouldn't it be better to defend the American people rather than avenge them." In a March 1983 national television address, President Reagan announced his concept for the Strategic Defense Initiative (SDI) and called on "the scientific community in our country … to give us the means of rendering these nuclear weapons impotent and obsolete."

The Strategic Defense Initiative Organization (SDIO) was a multi-service group that created a concept for tiered, or layered, defense against enemy missile systems during any of its three flight phases: boost, midcourse and terminal. Each service was assigned elements designed to track or intercept a missile during specific phases of its flight. However, the Army's anti-ballistic missile experience was its foundation and the Army repeatedly took the lead in project development.

By September 1987, Secretary of Defense Casper Weinberger had approved the Strategic Defense System Phase I baseline architecture and authorized six components of SDI to enter demonstration and validation process, including a Space-Based Interceptor, a Ground-Based Interceptor, a ground-based laser, a ground-based sensor, Space-based sensors and a battle management system. The cumulative effect was to place the Army back in Space with missile development.

The 1980s also saw interest in the anti-satellite program. The Army had conducted anti-satellite experiments between 1962 and 1963 in Project Mudflap. In May 1963 a Nike-Zeus missile launched from Kwajalein successfully intercepted an Agena D earth satellite. In September 1964, President Lyndon B. Johnson announced the United States possessed an anti-satellite capability. The Army and the Air Force each deployed a system. The Army's Nike-Zeus anti-satellite system was terminated in 1966 because it duplicated an Air Force system, which remained operational until 1975.

The new anti-satellite program continued research begun in the 1970s, and would counteract an already deployed Soviet anti-satellite system. Defense Acquisition Board requirements included both kinetic energy and directed energy approaches. As funded, the anti-satellite program was distinct from strategic defense, but drew on the Army Strategic Defense Command's kinetic and directed energy research. Thus, SDI funding directly affected anti-satellite development. This work culminated in a hover

test that demonstrated the kill vehicle's ability to fly a predetermined simulated flight path by firing its divert/attitude control system thrusters.

Through the 1980s and 1990s, the services worked toward developing lasers that could be used against satellites and missiles. In 1989, the facility at White Sands Missile Range, N.M., the High Energy Laser Systems Test Facility, was transferred from the Army Materiel Command to the Army Strategic Defense Command's control to centralize high-energy laser research. The Data Collection Experiment of 1997, using the Mid-Infrared Advanced Chemical Laser and the Low Powered Chemical Laser demonstrated that even a low-powered laser could affect a satellite's performance after brief exposure.

The end of the Cold War and the collapse of the Soviet Union and its Eastern European empire changed the way the Army looked at missile defense. The proliferation of missile technology and weapons of mass destruction signaled a change in strategic defense, shifting the emphasis to protecting against limited attacks from hostile nations. In the 1990s, missile defense focused on integration. Ambassador Henry Cooper, later the SDIO Director, submitted the results of his independent study of the SDIO program that examined the strategic requirements for this new situation. Ambassador Cooper delineated the concept that became the Global Protection Against Limited Strikes, which was a change in missile defense specifically designed to protect against limited strategic and tactical missile attacks.

During the Gulf War of 1991, a Patriot air defense missile destroyed an Iraqi Scud missile attacking a U.S. air base in Saudi Arabia; the age of "Star Wars" actually arrived. These developments encouraged the Army to reevaluate its goals for missile defense and Space, and led to creating a new organization, the U.S. Army Space and Strategic Defense Command, to meet them. The new organization would centralize the Army's research and development of Space and strategic assets for the Soldier in the field.

In 1997, the Space and Strategic Defense Command became the Army's newest major command, the Space and Missile Defense Command. The new command would be responsible for ensuring that Army warfighters have access to Space assets and the products they provide to win decisively with minimum casualties and effective missile defense to protect the nation as well as deployed U.S. and allied forces and lead the way for Army Space and missile defense. It would integrate Space support in full spectrum land operations, create a global multi-element missile defense, cultivate Space partnerships and extend advanced Space and missile defense technology for combat forces. It was, in fact, the culmination of a process that began in the 1980s as the Army reentered Space and continued as it centralized its Space and missile defense efforts in 1992.

SMDC would be tailored to suit the Army's 21st century needs for an organization combining combat and materiel developments, acquisitions and operations. Integrating these functions in a single entity continued an effort begun by centralizing BMD functions to save time, effort and money by reducing the competition for Space and missile defense resources within the Army, enabling it to better explore the global reach of the Army's assets.

After the end of the Cold War, the fires that fed the missile defense debate appeared to have been banked by the disappearance of the Soviet threat. As new threats emerged, the proliferation of both guided missiles and weapons of mass destruction, missile defense became a more urgent matter. When it returned to the national stage, the debate was still bounded by the same parameters it had when Secretary of Defense McNamara thought it both technologically and economically unfeasible. Partisans on both sides shed more heat than light, overshadowing the work of the Army's engineers and contractors who performed amazing technological feats. Nevertheless, missile and nuclear proliferation have compelled the United States to begin constructing a missile defense system.

Our future embraces the past and the present — from rockets to Space to missiles and missile defense — brought together by the visions of people like General Medaris. In July 2004, research took another small step toward national missile defense reality when MG John Holly, Program Manager for GMD, officials from MDA and visiting dignitaries dedicated the first GMD missile field at Fort Greely, Alaska. The monument unveiled at the dedication reads, "Forging America's Shield." The missile defense program remains a work in progress, but our research and testing will continue to improve that reality.

[1] Based on the Oct. 20, 2004, SMDC presentation at the Tennessee Valley Chapter of the National Defense Industrial Association, Medaris Award ceremony.

[2] Mutual assured destruction (MAD) was based on the notion that neither the United States nor the Soviet Union would ever start a nuclear war because the other side will retaliate massively and unacceptably. It was a product of massive retaliation, and despite redefining it as "flexible response" or "nuclear deterrence," it was the central theme of American defense planning for more than 30 years. The strategy assumed each side had enough weaponry to destroy the other and that either side, if attacked for any reason by the other, would retaliate with equal or greater force. The expected result would be an immediate escalation resulting in both combatants' total and assured destruction. MAD further assumed neither side would launch a first strike because the other would launch on warning resulting in the destruction of both. This doctrine was used during the Cold War and was seen as preventing direct full-scale conflicts between the two nations as they engaged in smaller proxy wars around the world.

[3] In 1967-1968, the Department of Defense announced the locations of fifteen Sentinel sites: Boston, Chicago, Grand Forks Air Force Base in North Dakota, Salt Lake City, Detroit, Seattle, Hawaii, New York, Albany, Georgia, San Francisco, Los Angeles, Sedalia, Missouri, Warren Air Force Base in Wyoming and Malmstrom Air Force Base in Montana. Two other site locations, Washington, D.C. and Fairbanks, Alaska, were never publicly announced. This deployment ensured that the combined footprint of the various batteries covered the entire nation.

[4] Sentinel and SAFEGUARD used the same equipment. The former defended cities and industry while the latter defended ICBMs. The first Sentinel component was the Spartan, a three-stage interceptor armed with a high-yield nuclear warhead launched from an underground cell and designed to destroy ICBMs in the exoatmosphere. The second was the two-stage short range Sprint, armed with a low-yield nuclear warhead, designed to maneuver within the atmosphere to intercept warheads that survived the area defense provided by Spartan. This maneuverability maximized the time available for discriminating between warheads and decoys.

[5] Not to be confused with the predecessor organization to the present day Missile Defense Agency.

3ID ... from page 25

ple — and frankly the world — it was not the ultimate goal, which is a free and secure Iraq," Vines said. "We, the Iraqi government and the coalition, know there is still much work to be done, but Iraq's progress to date is both extraordinary and irreversible."

Chiarelli welcomed the Marne division and expressed his confidence in the division's soldiers and commander. "The 3rd ID is well trained, led by gifted officers and noncommissioned officers, and blessed with great soldiers,"

Chiarelli said. "The division is poised to ensure Baghdad moves powerfully toward complete self-sufficiency. The people of Baghdad have a partner in the 3rd Infantry Division as committed to the mission as any they will ever see on their streets.

"Baghdad has a special place in the history of the world, and it stands on the precipice of greatness once again," he added.

Upon taking command of TF Baghdad, Webster acknowledged the responsibility given to him and the Marne soldiers and accepted the mission at hand. "The 3rd Infantry Division has trained hard and is ready," he said. "We will work with our Iraqi partners as they continue to increase their capability to protect the Iraqi people from any foe.

"We will help the people of Iraq maintain their right to freedom and the pursuit of a prosperous future for all Iraqi citizens," Webster said. "Our soldiers know this is right and just."

Combat Ready! ... from page 25

integrated capabilities for personnel recovery including combat search and rescue, downed pilots and missing Soldiers.

- Supported G-6 with secure mobile anti-jam reliable tactical terminal training and commissioning of satellites.
- Coordinated with G-6 for satellite communication training with SMDC/ARSTRAT's extremely high frequency network operational manager.
- Coordinated with XVIII Airborne Corps to acquire miniature transmitter BFT devices for 3ID employment.
- Coordinated with staff weather officer to integrate and corroborate Space analysis and effects.
- Supported 3ID Public Affairs Office with the installation and commissioning of satellites for their commercial public affairs satellite communication video system.

Road Ahead

In September 2004, the Army Chief of Staff's decision to reduce the UEx manning by almost 300 Soldiers resulted in cuts to numerous staff sections, including the SSE. The current projection is for a two-Soldier SSE, one lieutenant colonel and one major, both Space operations officers. SMDC/ARSTRAT will attempt to increase the SSE to six Soldiers either by an increase to the modified table of organization and equipment or by providing the Army Space Support Team augmentation for deploying UExs.

As a critical enabler to this proposed force structure increase, SMDC/ARSTRAT will provide an SSE data collection and analysis team that will travel to Iraq to assess both the 3ID's ability to conduct Space operations with an SSE and the contributions of other Space forces throughout the Iraqi theater of operations to tactical and operational Space support in a combat theater. This data collection and analysis effort is being coordinated directly with U.S. Joint Forces Command's Joint Combat Operational Analysis Branch and the U.S. Army's Center for Army Lessons Learned and will provide the basis for further doctrinal and materiel developments and for justifying SSE force structure.

In the end, SSEs will be included in each unit (both Active and Reserve Components) that convert to a UEx and UEy (the operational level headquarter). According to the current Army Campaign Plan, at least 19 units are scheduled to convert to a UEx between 2004 and 2009, each with an SSE. As organic elements within each UEx, these SSEs will provide the "last mile" of Space capabilities and support to Soldiers in the foxhole.

LTC Rick Dow is an FA40 officer assigned to U.S. Army Space and Missile Defense Command, Future Warfare Center and serves as the SMDC/ARSTRAT "Trail Boss" command lead for Space Support Element fielding. His previous SMDC assignment was the Intelligence, Surveillance and Reconnaissance team leader, FDIC. His experience includes 15 years as a Military Intelligence officer, having served in various tactical intelligence command and staff positions, as well as a combat development tour working Tactical Exploitation of National Capabilities requirements and concepts. He is a graduate of the Space Operations Officer Qualification Course and recently graduated from Webster University with a master's degree in Space Systems Operations and Management.

Looking ahead ... from page 7

A second aspect of this command's NCODP is found in the emphasis on making our Space Warriors effective Land Warriors. Let us remember that it was leadership ability, field savvy and high standards of SSG Gregory Singer of ARSST 5, attached to Headquarters 1st Marine Expeditionary Force (1MEF) which led to his being selected as "field first" for a 100-person Marine Corps Headquarters during Operation Iraqi Freedom. Our Soldiers must be able to take lives, save lives and sustain a maneuver warfare pace to succeed on the battlefield.

Our command training guidance has six operational priorities through fiscal year 2006: 1) supporting the warfighter in the global war on terrorism, 2) achieving Initial Operations Capabilities for the Ground-based Midcourse Defense, 3) defining and activating USSTRATCOM's Joint Functional Component Command-Integrated Missile Defense, 4) continued definition of our role as the Army Service Component Command to USSTRATCOM, 5) continued development of the SSE and the redesign of the ARSSTs and 6) continued support to the Missile Defense Agency.

None of these missions will be easy, but all will be accomplished. Our enlisted Soldiers will be part of each of these missions, and our enlisted Soldiers are a key concern as the Army's Space cadre FORMAL (Force Management Analysis) expands the Army Space cadre to include SMDC/ARSTRAT Soldiers and enlisted Soldiers serving in Space-enabling duties in other commands, while developing better processes to access, train, utilize and retain Space-experienced enlisted personnel.

The force of Army Space professionals will only increase in usefulness and effectiveness as we develop a larger and stronger team of commissioned and enlisted Soldiers to secure the high ground for the nation.

ON POINT!

Evolving Missions ... from page 27

is to publish it biennially and to more fully establish the Army Campaign Plan and joint operating concepts as the plan's foundation.

Force Management Analysis (FORMAL)

The 2001 Space Commission's recommendation to develop a Space cadre was followed by the endorsements of Department of Defense directive and Congressional mandate. To comply with these requirements, the Army G-3 determined that the FORMAL process was the best method to comply with these requirements and designated the SMDC to take the lead in conducting this process. The FORMAL process is a forum that allows for horizontal and vertical integration of all Army stakeholders in defining, identifying, developing and managing the Army's Space cadre.

The FORMAL process has four phases. The objective in Phase I is to establish a definition for the Army Space cadre that can be used in the remaining phases to identify the potential cadre pool. Phase II requires all Army stakeholders to use a vertical analysis to identify the personnel, organizations, roles, missions and functions that fall within the cadre definition. The Army G-1 will conduct a functional review in Phase III to develop comprehensive courses of action (COAs) that support the management of the eight life cycle functions (structure, acquisition, individual training and education, distribution, deployment, sustainment, professional development and separation) of a Space cadre. In Phase IV, a comprehensive analysis of DOTMLPF domains to build the recommended Army Space cadre strategy will occur. The Army Space Cadre FORMAL (ASCF) concludes with a briefing to the Vice Chief of Staff, Army in August 2005 that will present the recommended strategy and COAs for implementation.

The initial meeting of the ASCF was held on July 23, 2004, in Arlington, Va., with representatives from the Office of the Department of Defense Executive Agent, Air Force and Navy in attendance. The other services discussed their efforts to define Space cadre and to develop training and educational programs. The Headquarters, Department of the Army proponent addressed the "way ahead" for the ASCF process and requirements for Phase I. During the Phase I Council of Colonels (Sept. 8, 2004), the council reached consensus concerning the initial definition and determined the disposition of issues/concerns presented by various stakeholders.

Phase II began with an action officer meeting in September. This meeting organized a pool of Space professionals for use in further defining the Space cadre and developing management policies and strategy.

Conclusion

The continuing effort to design SSEs will help Space operations deliver maximum support to Army missions. Providing education and training to Space professionals based on the lessons of operational experience is also essential in operationalizing Space. To institutionalize Space activities, they must become part of the way the Army thinks and fights. The timely development of doctrine, the more frequent analysis of Army Space mission needs and priorities and the development of a Space cadre that promotes the career field more firmly place Space in Army institutions and operations.

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Positive View ... from page 21

worth resourcing. The education and advocacy burden could be streamlined with benefits for the organization and the personnel.

The longer-term goals cannot be achieved if we do not consider a separate Space force as a viable implementation option. Consolidating several competing organizational structures and providing additional resources that cannot be moved or reallocated to other efforts is needed. A near-term timeline that shows the need for Space forces to be in place today should be one of the compelling arguements to fielding this type of force structure sooner rather than later.

In conclusion, there continues to be a disturbing disconnect in organizational management of Space-smart personnel that a separate force could potentially remedy. High-level consolidation of separate, ongoing service analyses needs to be made before the DoD spends huge amounts of resources on the Army, Navy, Marine and Air Force Space cadre solutions. Better partnering is not enough. To overcome the budgetary issues, collective resources should be combined and consolidated into one new organization. Research, experience and common sense all increasingly point to a direct relationship between an organization's success and its commitment to management practices that treat people as assets. However, current trends in military management practices that are particularly evident when it comes to the Space cadre are actually moving away from these principles. Drawing on extensive empirical research, an irrefutable business case can be made that the culture and capabilities of an organization — derived from the way it manages its people — are the real and enduring sources of competitive advantages. And competitive advantages when coupled with common sense rather than pure technology can save lives, win battles and even turn the tide in wartime. Commanders today must begin to take seriously the often heard, yet frequently ignored, adage that people are the most important asset in any organization. Further, leadership should keep as a goal providing incentives to the people with Space experience and expertise when contemplating future Space and Space cadre reorganization. The foundation for a potential separate Space cadre has been emerging for several years. The compelling argument that requires organizational change sooner rather than later can be made today. The claimed desire for an organization that values people and their skills and experience could make a significant difference in the formulation of a separate Space force. This new organization could be the solution for overall improvement in resource management that could be implemented on a timeline that capitalizes on this administration's support.

Charlotte Scharer serves as the Space branch general engineer for the Future Warfare Center. She has had the opportunity to participate in many Space and Space control efforts and has successfully performed as a key government technical contributor on a broad spectrum of force development and integration topics. She is responsible for developing Army Space requirements for the capabilities development division.

Not so fast! ... from page 23

porations (FFRDCs) that build the Space architectures are even further removed from the ultimate would-be users on the battlefields. Said one corporation Space architect to an Army Space officer: "We sometimes forget that there are Soldiers on the ground at the far end of these systems." This gap brings a whole new meaning to the term "the vacuum of Space."

Reinforcing Failure

Integration isn't the only problem. The Air Force has demonstrated a propensity to reinforce failure when it comes to program and budget management. As the original SBIRS high cost of $2.1 billion exploded to $4.4 billion, then was restructured for an estimated cost of $10 billion, it gradually consumed other programs of value to tactical maneuver forces such as the counter surveillance and reconnaissance system (CSRS).

Designed to protect U.S. and coalition forces from surveillance from Space, the program could potentially save the Pentagon hundreds of millions of dollars in "shutter control" and "diplomatic denial" of imagery. How? The U.S. government has the legal option to tell U.S. commercial satellite imagery companies that they are not allowed to image certain locations during a crisis. This clause is part of Department of Commerce-approved operating licenses. Our Space doctrine authorizes the option of "prevention," the ability to use diplomatic or economic means to keep imagery out of reach of our enemies. Prevention is typically applied in terms of foreign countries or satellite companies.

In practice, shutter control and diplomatic denial translate into bulk imagery purchases of hot zones to keep them off the market and away from enemies. Since the $57 million

budget line for CSRS was zeroed out, extortion payments to commercial imagery satellite companies remain our only option for effective imagery denial over a war zone. The present approach merely sustains the funding death spiral without providing any additional protection for the troops in the field.

Skewed funding priorities are not the only reason the Army should hesitate to sign on with an independent Space service. The Army continues to grapple with its own internal issues, and again, they all link back to accountability. In the Army's case, it is an issue of who speaks for the Space forces. The Army would have a difficult time making a meaningful contribution to a unified Space force without first defining what exactly a unified Space force should provide to the other services. Instead of a separate service, the Army would better serve its maneuver and special operations forces by combining forces with the Air Force in certain areas.

One model that could help the Army provide additional support to the battlefield would be to reform the acquisition process of Space systems. Conceivably this could be similar to the U.S. Transportation Command (USTRANSCOM) model, where the Air Force transports the Army equipment that does the ground combat. Retired U.S. Air Force Col. Gene Pfeffer, one of the Air Force's long-time Space experts, describes the purpose of Space programs as "the transfer of bytes." Space is merely a transit point as information flows from point A to point B that is analogous to the job of USTRANSCOM in moving troops, materiel and supplies. How they get there is often transparent to the combatant commander as long as everything arrives on time and in good condition. The key in the case of Space systems, however, is in making sure that the Air Force builds the right equipment to deliver the right bytes to the right place.

This may prove a bit more difficult challenge than building C-130s to fly the 82nd Airborne Division. Not everything built for the Army by the Air Force has gone as well as the cargo haulers and troop transports. For instance, some members of the Army Space cadre worry about the performance of the SBIRS Multi-Mission Mobile Processors (M3Ps). These processors are the follow-on theater missile warning platform that when finally delivered will replace the Joint Tactical Ground Stations, the current in-theater missile warning suites. This, however, is all the more reason to enact some meaningful acquisition reform that guarantees the Army receives delivery of Space systems that add force protection and information dominance to its maneuver forces.

Combined Forces

In addition to better coordination between the Army and Air Force on acquisition, greater collaboration between the Army and Air Force doctrine writers and combat developers would serve both the Army and the Air Force. On those occasions when Air Force and Army doctrine writers and combat developers do merge forces, Air Force Space Command usually calls these meetings. The Army willingly attends these meetings, but sponsors few events that could educate the Air Force acquisition and Space cadre on the needs and inner workings of maneuver units.

The Army would have more tactically useful Space programs; the Air Force would build Space programs with more survivability and joint support against raids from the better-armed air power programs. The present environment is often an uneasy co-existence of Army force developers grudgingly approving Air Force acquisition plans with no real expectation that Army needs will be incorporated, while the Air Force claims "jointness" that only partially incorporates Army needs. As a result, these Air Force acquisition programs emerge into daylight with only lukewarm Army support and rarely receive life-saving joint support in the face of more pressing funding requirements for ammunition and body armor or more politically savvy Cold War relics like the FA-22. The ability to preserve programs of use to the tactical Army is a serious concern. Even CSRS, a program with excellent Army-Air Force cooperation and a model of integration, could not withstand internal Air Force budgetary fratricide.

The advantage of this approach is that each service would retain its respective strengths (such as Air Force operational and delivery capability), while gaining access to valuable Space programs that could be delivered to the last tactical mile. This would provide the solutions desired of a separate Space service with fewer of the risks. Rather than generating a new layer of bureaucracy, the Army would better serve itself and the troops in Iraq and Afghanistan by pressing for accountability of acquisition and doctrine development processes that produce military Space programs that provide data and services to ground troops fighting America's enemies. This would not be a separate Space service, but rather a truly joint integration of doctrine and acquisition. Success in this effort would provide the Air Force with the support and guidance it needs to produce meaningful Space programs and services of use to the Army and capable of competing with the Air Component Command budgetary juggernaut. If we fail to take these measures, we will only stay on our present course of more canceled programs like CSRS and, even worse, useless programs like the NRO's $200 million rechargeable battery.

Miller Belmont is a combat developer for U.S. Army Space and Missile Defense Command and a major in the Army Reserve and an FA40 where he serves as an Intelligence Watch Commander at North American Aerospace Defense Command/Northern Command Operational Intelligence Watch at Cheyenne Mountain, Colo. His Space background includes 44 months active duty at Cheyenne Mountain, as well as extensive Space experience with commercial satellite imagery, Space control, directed energy and combat development for the Army's Space programs. His tactical intelligence experience includes two years with the 4th Infantry Division at Fort Hood, Texas, and three tours in the 2nd Infantry Division in Korea.

Training ... from page 29

ment Accountability Office (GAO) study that examined the Department of Defense's Space human capital strategy and the status of efforts by all of the military departments to develop their Space personnel career fields. The report found the Defense Department lacking in its plan to develop Space professionals. The GAO report stated "Because the Army and the Navy lack a strategy to provide direction and focus for their efforts to develop their Space cadres…, it is unclear whether they will have sufficient numbers of Space-qualified professionals to meet future requirements in joint and service Space planning, programming, acquisition and operations."[3]

Whether the conclusions in this report are valid or not is an open question, but the point of this particular statement is accurate and points to a legitimate concern: If we do not develop and adhere to a strategy that produces a knowledgeable and experienced Space cadre, then we will not have enough Space professionals to meet our future requirements.

Both of these potential shortfalls – lack of exposure to some important Space systems and the lack of a clear long-term professional development strategy – can be overcome with a career model that provides Space training, experience and mentorship for every FA40 throughout their career. Becoming an expert on Space assets and their capabilities, and understanding how to integrate Space with operations, requires focused and dedicated effort over time. While formal training courses, annual seminars and individual professional development are important parts of this process, there is no substitute for hands-on, day-to-day Space experience. Cultivating this type of Space experience in our FA40s will put each one in a position to develop professionally as a Space expert for the Army. We must ensure that the FA40 career path gives every Space operations officer this opportunity, and this will keep the Army's Space cadre on a path to long-term success.

Space operations officers can learn many of the details of their profession through assignments to places where the majority of our nation's Space work is being done. This includes places like the National Reconnaissance Office (NRO), the National Geospatial-Intelligence Agency (NGA), the National Security Agency (NSA), satellite program offices such as the GPS or MILSTAR program offices, our Space launch facilities and any of our ground stations that support satellite constellations.

These Space organizations and facilities are filled with our country's true Space experts who have spent years designing, building, launching, operating and exploiting every satellite that the United States has ever launched. Working in a Space organization or Space support facility can give an FA40 first-hand experience in what a satellite is capable of, how it can be employed effectively and how it is supported from the ground.

Once an individual is assigned to any one of these Space organizations, the information exchange is excellent. Information on almost any aspect of any satellite built, operated or employed by that organization is readily available. There are internal training programs to educate personnel in the organization and help to maintain their skills.

Many of the assigned military and civilian personnel have worked on multiple Space programs during their careers, and can offer insights into a wide range of Space capabilities. An FA40, eager to learn, can quickly become a Space expert. Furthermore, these organizations embrace the idea of providing Space support to the warfighter. They welcome ideas from people with operational experience, and will take the time to make sure that anyone who needs to leverage their particular capability has the knowledge to do so.

An assignment to one of these organizations, combined with the operational knowledge that FA40s already possess, will prepare an officer to truly leverage as much as possible from Space assets and deliver Space support to the warfighter. Assignments to Space organizations will provide our Space cadre with a depth of knowledge that can never be gained from training courses.

Even officers who are not assigned to Space organizations can take advantage of the training they offer. The NRO and NGA offer classes on each of their different types of satellites, on an approximately quarterly basis. These classes are about two days each, and go into detail about every aspect of that particular constellation. The majority of the information can be presented at security classification levels that FA40s already have. The Army Space community should send officers on a regular basis to attend these classes. There are similar classes offered at many ground stations that should also be attended by FA40s. The NRO classes can be facilitated through the Operational Support Office or the Army Coordination Team at the NRO, and other organizations have similar outreach divisions that can assist.

A career model that will ensure that each FA40 is properly trained is critical to the success of

the Army Space community. The career model proposed in this article would annually place about one-third of new FA40s into national organizations, program offices, or Space support facilities and one-third into ARSST leader positions. The remaining third would go to corps or UE staffs, and serve under a senior FA40 who is already an expert in the employment of Space systems. We must pursue the right number of personnel positions in the right places to support this career model and the number of positions should grow as our Space community grows. Placing Army officers in Space organizations is no less critical than placing Space officers in Army units. The long-term success of our Space cadre depends on a steady supply of experience from these Space organizations.

A good second Space assignment for an FA40 would be as a Space operations officer or as the senior member of an SSE. The senior officer in an SSE, after gaining experience in applying Space capabilities at a Space organization or as an ARSST leader, can then train and mentor the new FA40s on the team. Similarly, an ARSST leader in a first Space assignment can learn from an experienced Space operations officer. This career path model ensures that there is a constant source of Space training and Space professional development throughout an FA40's career.

Another advantage to this model is that while it ensures that there is a steady flow of experienced Space professionals moving into key Space positions in the Army, it also infuses operational experience into the national-level organizations and program offices where emerging Space capabilities are being designed and built.

The organizations that are developing our next generation of satellites need input from Army officers with solid operational experience. The Army is depending on its professional Space cadre to speak for the warfighter at the national level. The table on page 29 illustrates this potential FA40 career model.

Another important benefit of placing a trained FA40 into a Space operations officer or SSE leader position is that the officer can immediately educate the unit leadership about what Space support can and can't do. To do this effectively, an FA40 must have a solid understanding of the capabilities and limitations of all Space assets to include national assets, and needs the depth of understanding that comes from experience, not from course attendance or reading Space-related publications. The unit commander and staff can then clearly understand how to employ a Space operations officer or Space Support Element, and what benefit the FA40 brings to the battlefield.

The risk with this career model is that we cannot afford to have FA40s in Army units that are not serving in a Space capacity. Misutilization of Space operations officers in the field will interrupt the flow of Space experience back into the FA40 community. This model does not eliminate the risk of FA40s assigned to Army units being used primarily for non-Space functions, but it ensures that every Army unit has at least one experienced FA40 to articulate the benefits of dedicated Space personnel.

Unfortunately, even after being thoroughly informed as to the capabilities and benefits of Space support, some units will choose to use their assigned FA40(s) in some function other than Space Operations as their primary area of responsibility. An officer in a position like this should be reassigned as soon as possible, with no replacement. The vacancy should not be filled until the unit realizes that they need Space support and requests another FA40. The misutilization of an FA40 with a highly specialized skill set interrupts that officer's professional development at a critical point in his or her career, and puts that officer in a poor position to train others in the future. Furthermore, misutilizing a scarce resource like an FA40 denies other units the ability to effectively leverage Space support.

The long-term success of the Army Space Operations community depends on our ability to develop a well-trained cadre of Space professionals. As the Army's Space experts, we must ensure that every FA40 possesses the skills necessary to leverage all of our Space assets. We have made great strides toward achieving this already, and Space training and professional development continue to evolve, adapt and improve.

One way to continue to improve our Space training is to establish and adhere to a career model that gives every Space operations officer the opportunity to train and develop as a Space professional. This strategy will provide our Space cadre with a depth of knowledge that matches our breadth of knowledge.

END NOTES

1 Teets, Peter B., Speech at the 2004 Air and Space Conference and Technology Exposition, 14 Sept. 04.

2 Army Space Master Plan, p. ES-2.

3 Defense Space Activities: Additional Actions Needed to Implement Human Capital Strategy and Develop Space Personnel, United States Government Accountability Office, August 2004, p. 20.

MAJ Robert Guerriero is serving as the III Corps Space operations officer, currently deployed to Iraq. He was previously assigned to the National Reconnaissance Office's Advanced Systems and Technology Directorate. MAJ Guerriero is a graduate of the Space Operations Officer Qualification Course. Comments and feedback are welcome (robert.guerriero@us.army.mil, robert.guerriero@iraq.centcom.smil.mil).

SORC SUPPORTS TSUNAMI RELIEF EFFORTS

In the aftermath of the devastating tsunami in Asia on Dec. 26, 2004, people from all over the world were filled with overwhelming compassion for those affected. From across the globe came assistance in the form of money, food, shelter and much more. But some members of U.S. Army Space and Missile Defense Command were able to provide a different type of aid — satellite imagery.

The Spectral Operations Resource Center in Colorado Springs, Colo., produced three main types of scenes in their imagery to support the relief effort — highways and road systems, before and after scenes and land saturation.

"We were pulling imagery of the affected areas the day after the tsunami," said Chris Russelavage of the SORC, who was the key technician in providing satellite imagery requested by U.S. Pacific Command and the 8th Army; the units directly involved in the support efforts for tsunami survivors.

"The Sumatrans had one main highway running along the coast that was their principal shipping artery. We sent them satellite imagery of what remained after the tsunami," added Russelavage. This was key to getting relief supplies delivered throughout the countryside quickly and effectively.

"The before and after scenes showed locations of population areas, among other things so that searchers would know where to look for survivors, and the soil saturation views showed levels of saturation of agricultural areas."

Yet relief support is nothing new for the SORC. "We have a long history with disaster support," said Bo Dunaway, chief of the SORC.

In 1998 the SORC provided imagery for relief efforts with flood in Honduras. They also brought fresh imagery to firefighters in the Western United States during the disastrous fire seasons of 2001 and 2002, allowing firefighters to track the movement of the fires and find the locations of hotspots.

In 1999 and 2000 SORC imagery supported relief efforts in the Venezuelan floods, and in 2003, their images was used to help provide relief to the earthquake-devastated region around Bam, Iran.

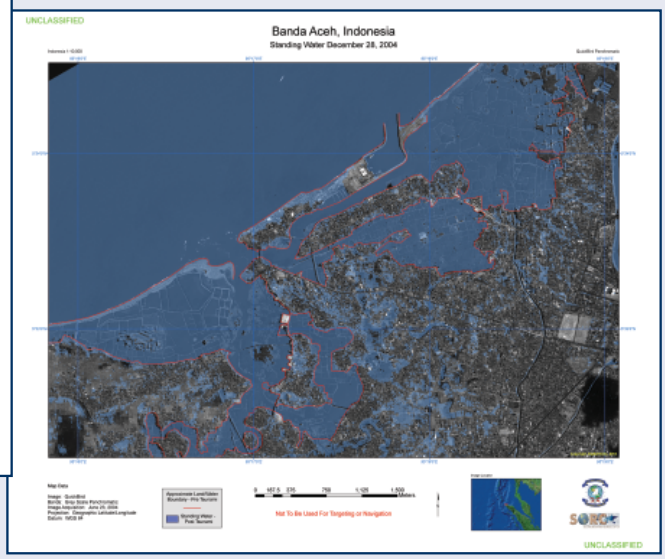
"These efforts are paper products but they touch an untold number of lives," Dunaway said of their efforts.

"There is no telling how many people receive direct relief sooner, faster and more frequently because we can provide these products to the forces and agencies doing the relief efforts."

Dunaway credits FA40s for helping make SORC products available to field commanders in a rapid, timely manner. "Those guys on staff are able to be our voice. They can tell that commander that there is this capability called the SORC back in Colorado Springs, and let them know exactly what we can do and how they can best utilize us."

For the Tsunami relief efforts, the SORC provided products from Jan. 4 through Feb. 9. "We sent scenes on Sumatra, Sri Lanka and Thailand. About 95 percent of the scenes were for Sumatra though," added Russelavage.

The overall knowledge and experience in dealing with prior disaster relief efforts gave the SORC a powerful edge in assisting with the tsunami relief work and most certainly will give them an edge in whatever the future may bring.



Article by Ed White
Images provided by the Spectral Operations Resource Center

Top: A before and after, side-by-side shot of the highway and road system of the Banda Aceh region. The yellow lines show major roads and highways. The green circles show passable roads, red are not passable and yellow triangles are areas that cannot be determined. The white arrows show where roads were completely washed away and are impassable. Above left: A satellite image produced by the Spectral Operations Resource Center shows the area of Banda Aceh on the island of Sumatra in Indonesia before the devastating tsunami. Above right: This SORC satellite image, produced four days after the tsunami, shows standing water across Banda Aceh after the disaster.

riod is about six months. Nominal station keeping maneuvers will be performed every half orbit (three months). JWST, near the L2 point, will be in a benign and essentially unchanging environment. There is no significant gravitational torque and thermal influence from the Earth and Moon are greatly reduced. The main operational influence to consider is the torque created by the Solar wind on the sun shield. The JWST in L2 orbit, if successful, may be an initial discovery for even more key Space endeavors to possibly include a way-point of sorts for future NASA missions.

A personal point of interest about this information relative to the type of orbit that the JWST would occupy, was a great lesson learned by all those in attendance in the tour group. The engineer conducting that portion of the tour asked the entire group if they knew the reason for the stability of the L2 orbit and SPC Robert Fletcher didn't hesitate in giving the answer which was direct and to the point; "Centripetal force." This clearly demonstrates the intuitive minds of our young Soldiers in today's Army, and more specifically, in tomorrow's Army Space cadre.

Once the engineers and tour guides were satisfied that we had learned enough, they concluded the tour and we proceeded to travel to the Boeing facility a short distance away from Northrop Grumman.

The tour in this facility was conducted in much the same manner and began with a thorough in-brief before the extensive walking tour began. This facility tour included information about many current Boeing Satellite System projects to include Geostationary Operational Environmental Satellite; Thuraya, which provides mobile communications and serves a region of 2.3 billion people; SPACEWAY, Hughes' next generation broadband satellite network that will provide high-speed, two-way communications for Internet, data, voice, video and multimedia applications; XM Satellite Radio which delivers up to 100 channels of digital-quality music, news and information; and most importantly for the Soldiers from D Company, 1st SATCON, the Wideband Gapfiller Satellites (WGS) which will replace the current Defense Satellite Communications System (DSCS).

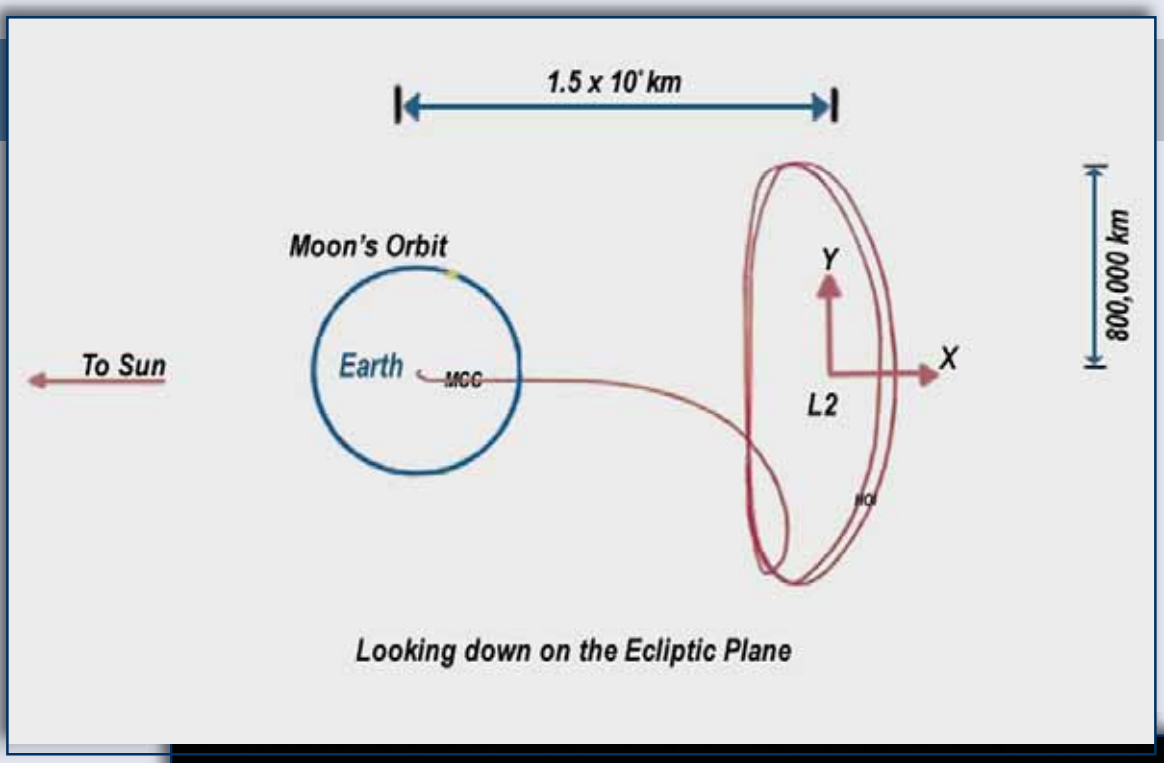
The portion of the tour that allowed us to see the different stages of production and testing of the WGS was the most intriguing to our Soldiers since it is the system they will be controlling after it is launched. To see the payload and testing of a system that hasn't launched yet makes it that much more tangible and thus allows the Soldiers to make more of a connection with the equipment used in the mission than just the intangible uplinks, downlinks, telemetry, etc that the Soldiers monitor on a 24-hour basis. To also see the types of testing that are conducted on that system also allows the Soldiers to learn much more about the efforts put into the system development.

Each of these satellite systems were in different areas of the facility to include the testing areas such as the anechoic chamber and the environmental testing areas which included the vibration, acoustic and radiation areas. Each of the environmental testing areas is designed to simulate each of their respective conditions and thus allow the engineers to identify any issues during the different stages of product development. From these tests they are able to make needed adjustments well before launch and thus prevent any issues once the satellite is in orbit.

The anechoic chamber was of great interest for the "signalers" in the group, as it is the chamber used for antenna data collection to include antenna pattern measurements as well as gain performance. The antenna pattern and gain performance measurements allow the engineers to determine if the antennae are working according to specifications and will provide the earth coverage, beam patterns and Effective Isotropic Radiated Power that will be needed by the warfighters.

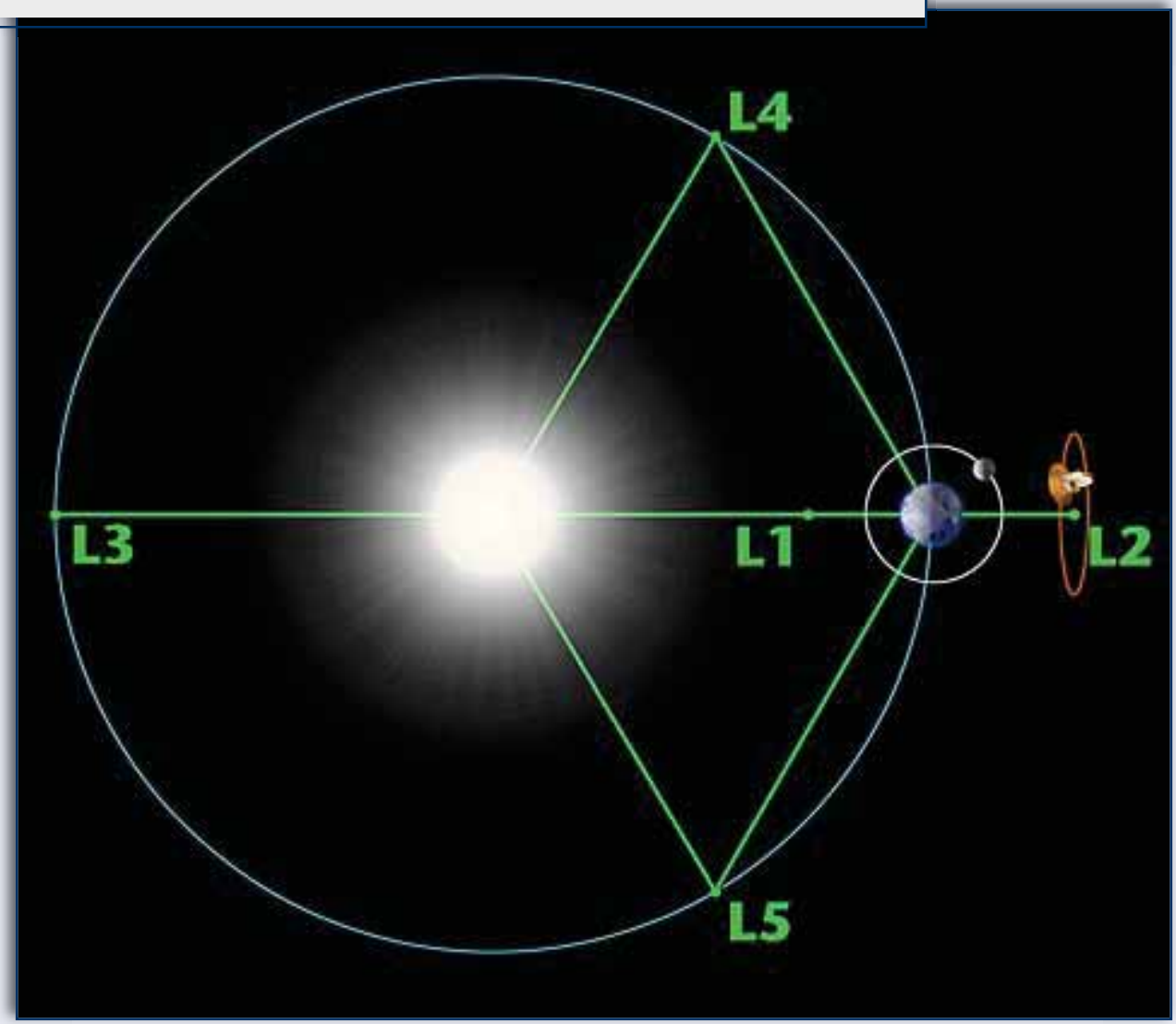
Once we had seen nearly everything in the facility and learned more than we could have possibly hoped to, the tour came to an end. An After Action Report (AAR) comment by Fletcher stated, "It was really interesting to see satellites in the different stages of development." An additional AAR comment was for the company, pending approval, to make quarterly trips to the facilities in order to provide the same education to all other company Space cadre.

CPT Stacy Godshall is the Signal Officer who commands D Company, 1st Satellite Control Battalion, Camp Roberts, Calif.



Right: A diagram of the L2 orbit.

Below: A diagram of the Lagrange orbits.



Satellite controllers receive a different kind of Space training

By CPT Stacy Godshall,
Commander, D Co., 1st SATCON BN

CAMP ROBERTS, Calif. — The need for Space cadre, or more specifically a cadre of Space professionals specifically trained in, and knowledgeable about, Space capabilities to complement the actions of the signal, intelligence, information operations, and engineering staff personnel working within the Space arena, was identified several years ago and has continued to evolve to the point that the Space Operations Officer Qualification Course is an intensive academic program that allows officers to comply with the Space cadre goals. In addition, the emphasis for Space cadre continues as indicated by way of the Army's decision to use the Force Management and Analysis Review (FORMAL) process to establish and maintain a professional Space cadre.

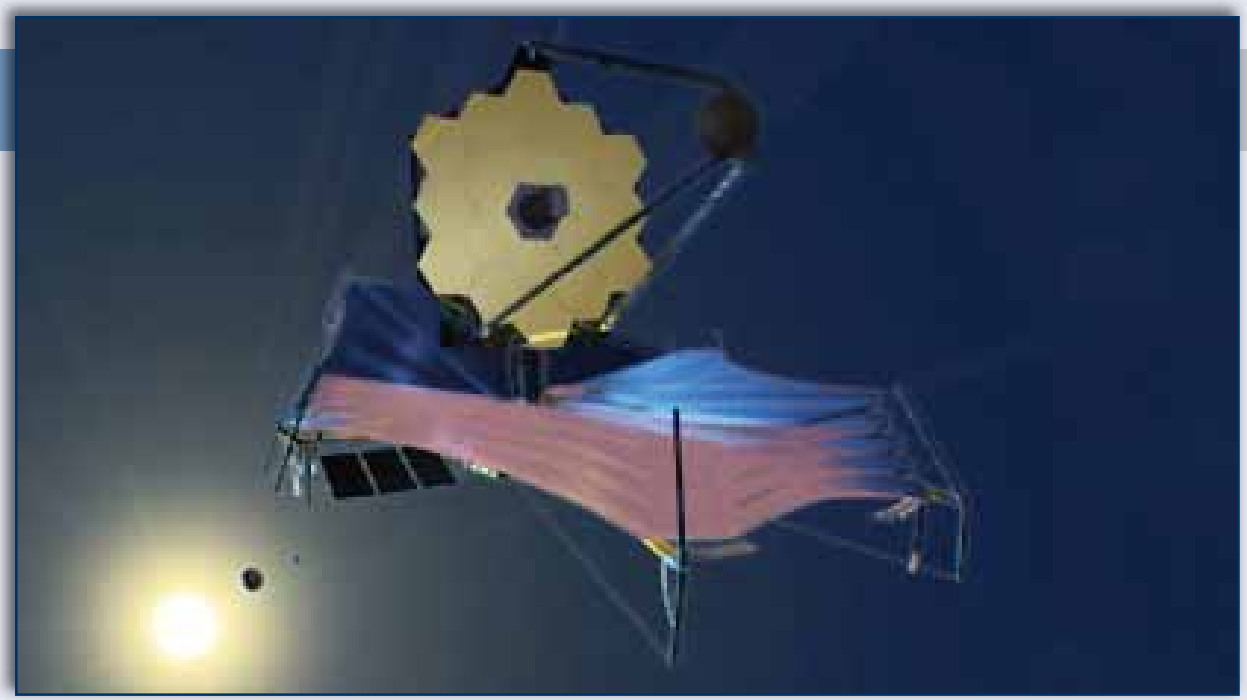
So the question that we need to ask is what does Space cadre training/education entail? The qualification course is the model for this type of training and there are many areas that it covers to educate Functional Area 40 (FA40) officers, but one aspect of the course recently also allowed some enlisted Satellite Controllers to gain some Space education that they had not been exposed to before.

A portion of the qualification course is dedicated to Space industry facility tours, which gives the officers valuable exposure to the leading edge technologies that are currently being designed, manufactured and tested by the civilian sector. Maj. Sam Russ, U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command liaison officer to 14th Air Force, upon completion of one of these tours stated, "One of the primary purposes of the industry tours is to gain a better appreciation for the critical role that industry plays as a force enabler and force multiplier.

This tour clearly highlighted the importance of sustaining our military industrial complex; they are truly a national resource and the systems they produce are literally saving lives on the battlefield every day." There is a history between industry and military use of satellites that reaches back to the days of a successful launch of SCORE (Signal Communicating by Orbital Relay Equipment) on Dec. 18, 1958.

Russ visited D Company, 1st Satellite Control Battalion, Camp Roberts, Calif., a few months ago and extended an invitation to the company to send some Soldiers along on the November tour to both Boeing and Northrop Grumman in Los Angeles, Calif. This was an invitation that the company could not and would never think of declining because of the uniqueness of such an experience.

The company began to make preparations to send just a small group of Soldiers to meet the officers taking the qualification course at the facilities for the tours. We wanted to keep the group we sent low in number since we were not the target audience for the tours from the respective industries. With the assistance of Russ, we were able to make all of the coordination with the facilities and proceeded to



An artist's rendition of the James Webb Space Telescope.

the LA area.

Because we arrived at Northrop Grumman early in the morning and well before the officers, we were given an added opportunity of viewing the Defense Support Program (DSP) satellite, which was in the high-bay testing area. Our tour guide proceeded to give us an opportunity type unclassified lesson about this satellite. We then proceeded back to the conference room, which was where the tour was to begin with several briefings, to include one about Advanced Extremely High Frequency satellites and Force XXI Battle Command Battalion/Blue Force Tracking.

Once the briefings were concluded we proceeded to tour more of the facility to include several of the high-bay areas where they conduct assembly and testing of the satellite subsystems. One of the most informative areas of the tour was the area where the Next Generation Space Telescope was being designed/tested. This Space telescope will be a significant improvement to the current Hubble Space Telescope and is named the James Webb Space Telescope (JWST).

When launched in 2011, this telescope will peer into the past at greater distances than ever before. For the first time, scientists will be able to observe the formation of the first stars and galaxies in the universe billions of years ago. The powerful observatory's design features a 6.5-meter aperture primary mirror, comprised of 18 hexagonal-shaped segments. The large-sized mirror, which could fit seven Hubble Space Telescope mirrors within its surface area, gives it the light-collecting sensitivity to see objects 400 times fainter than those currently observed by ground- and Space-based telescopes. This will yield a wealth of new lessons about Space and the overall Space environment.

To facilitate the overall effectiveness of Space telescopes, engineers and scientists conduct analysis to determine the best location so as to mitigate factors that would interfere with the observations made by the observatory. This was the case when the Solar and Heliospheric Observatory Satellite was placed in what is called the L1 orbit. This location is one of the Lagrange Points that are very unique in its orbital physics properties. The Italian-French mathematician Joseph-Louis Lagrange discovered five special points in the vicinity of two orbiting masses where a third, smaller mass can orbit at a fixed distance from the larger masses.

More precisely, the Lagrange Points mark positions where the gravitational pull of the two large masses precisely equals the centripetal force required to rotate with them. According to the Space Telescope Science Institute, a feasibility study was conducted in 1995-1996, which allowed NASA and the institute to consider a wide variety of orbits for JWST. The most promising was the second Lagrange Point (L2), approximately 1.5 million kilometers from Earth, outside the orbit of the Moon.

The region about L2 is a gravitational saddle point, where spacecraft may remain at a nearly constant distance from the Earth throughout the year by small station-keeping maneuvers. JWST will be placed in a large halo orbit in a plane slightly out of the ecliptic plane. This orbit avoids Earth and moon eclipses of the Sun. The halo orbit pe-

Professional Reading

"Space Notes" excerpts professional articles of interest to Space professionals. The section will attempt to present a broad spectrum of newsworthy items, with references to the full article for those who wish to read further. Suggestions and submissions for this section are solicited, and should be forwarded to the Managing Editor at richard.burks@smdc-cs.army.mil.

Analysis: Missile Defense Semantics

by Pamela Hess, UPI Pentagon correspondent
Washington DC (UPI) Jan 17, 2005

With the failure of the latest test of the U.S. national missile defense system in December, the Pentagon seems to now be engaged in semantic gymnastics, declining to say whether the system is operational or not, and suggesting it never promised it would be.

President George W. Bush kicked off a serious — and expensive — efforts to deploy the national missile defense system in December 2002, shortly after he withdrew the United States from the 1972 Anti-Ballistic Missile Treaty that had been arranged with the Soviet Union.

Bush heralded the system, but downplayed it at the same time, setting expectations low. It would be a "modest" system that would "serve as a starting point for improved and expanded capabilities later."

Expected Patriot Sale Panics Pakistan

by Anwar Iqbal, UPI South Asian Affairs Analyst
Washington DC (UPI) Feb 21, 2005

Pakistan is expected to take up with the U.S. administration the expected sale of Patriot missile defense system to India, diplomatic sources told United Press International Monday.

A U.S. defense team began briefing Indian officials in New Delhi Monday on the Patriot missiles. In Washington's diplomatic circles the visit is seen as a prelude to the sale of the advanced capability anti-ballistic missiles to India.

"It's a serious development and comes into conflict with the existing nuclear deterrence in the Subcontinent," said a South Asian defense expert familiar with the system.

Since the May 1998, when both India and Pakistan tested their nuclear devices, there exists an undeclared balance of power in the Subcontinent based on the fear that a clash between the two nuclear-armed neighbors could lead to the destruction of both.

But the Patriots, which can bring down an incoming missile, can seriously tip the balance in India's favor, making Pakistan vulnerable.

"If the Patriots are delivered to India, it will seriously imbalance Pakistan's strategic capabilities and can trigger an arms race in the Subcontinent," said the South Asian defense expert.

"The Pakistanis will need to do some soul searching to determine what effect it will have on their strategic defense," said the expert.

When asked what Pakistan could do to meet the threat posed by the expected sale of Patriot missiles to India, the expert said: "Pakistan will have to acquire counter-capability. This new development will tip the balance in India's favor unless it is redressed."

"They will take up the issue with the Americans," said the expert when asked what could be Pakistan's immediate response.

Sources in Washington say that the Bush administration gave clearance for a classified technical presentation of the system to India as part of the Next Step in Strategic Partnership agreement initiated by the two countries last year.

The sources said the decision to give a classified briefing about the Patriot system to India was taken during the first phase of NSSP that concluded in October.

The NSSP envisages cooperation in what is known as the "quartet issues" — civilian Space and civilian nuclear fields, hi-tech trade and missile defense.

The conclusion of the first phase of NSSP was marked by the U.S. partially easing export controls on supply of equipment and technology for India's Space and nuclear programs.

Wireless Networks: Open To Stealth Attacks

by Charles Choi
Washington (UPI) Feb 22, 2005

Wireless networks could link up police on the streets, soldiers in the battlefield and rescue workers in disaster zones, but computer scientists warned they remain dangerously vulnerable to stealth attacks.

"An attack might be a terrorist who wants to disconnect emergency crews from each other and make his physical attack more effective, or a criminal who wishes to disconnect members of police in their efforts to chase him," said researcher Markus Jakobsson at Indiana University in Bloomington. Such an attack also "could hijack normal traffic for corporate espionage or identity theft."

Jakobsson and colleagues are developing the digital equivalents of magic envelopes and invisible ink that promise to protect cell phones and laptops against these attacks.

"We hope to have a version in a few months," Jakobsson told United Press International.

Israel redevelops top-of-range spy satellite

JERUSALEM (AFP) Feb 23, 2005

Israel is redeveloping its top-of-the-range Ofek 6 spy satellite after its prototype crashed into the sea nearly six months ago, the top-selling Yediot Aharonot daily reported Wednesday.

Ofek 7, under development by Israel Aircraft Industries (IAI), will use a perfected radar system enabling it to identify objects from a distance of 400 to 600 kilometers (up to 370 miles) by night or day, and regardless of weather conditions. Ofek 6 did not possess those capabilities.

The innovative system, which is known as a synthetic aperture radar (SAR), is similar to the radars installed on fighter planes and drones, the paper said.
"This satellite will provide us with 24-hour surveillance of enemy countries," one of the project heads told Yediot.

Space Race 2: NASA Ups The Space-Ride Ante

Irene Mona Klotz
Cape Canaveral FL (UPI) Feb 22, 2005

Back in the heady days of commercial Space, when start-up rocket-launch services firms sprang like spring flowers in response to what looked like a robust market for placing small communication satellites into orbit, Kistler Aerospace Corp. was riding high.

With private financing, a high-powered and well-connected management team and accomplished engineers, the firm, in Kirkland, Wash., was widely regarded as a front-runner in the race to develop an alternative Space transportation system.

Lured by the prospect of launching satellites for mobile communication networks such as Iridium and Globalstar, Kistler developed a two-stage reusable rocket it called the K-1 and announced plans to build launch complexes in Woomera, Australia, and at the U.S. military's Nevada Test Site, located 60 miles north of Las Vegas.

The company caught NASA's eye as well. Back when the agency was still enamored with the idea of reusable launch vehicles — an interest that consumed billions of dollars in a series of projects ultimately dispatched to the agency's inactive files — Kistler's concept seemed ahead of its time.

Not only would the K-1 be able to haul about 7,000 pounds to an orbit as high as the International Space Station's, but it also could be loaded with cargo and returned to Earth.

Japan's Return To Space Delayed By Bad Weather

Tokyo (AFP) Feb 22, 2005

Japan's Space agency Tuesday postponed the launch of a domestically developed rocket, which is due to mark Tokyo's return to the Space race after a flop in 2003, because of bad weather.

The H-2A rocket, carrying a multi-function satellite that can monitor weather and navigate aircraft, was scheduled to lift off Thursday evening from the Tanegashima Space Center in southern Kagoshima prefecture.

"We will postpone the scheduled launch to February 26 or later due to bad weather," said a spokeswoman for the Japan Aerospace Exploration Agency.
"The new launch date will be announced at a later date," she said.

The Tanegashima region will experience rain and strong winds on Thursday, but fine weather is expected for Saturday through early next week, according to the Meteorological Agency.

Japan has sent up five H-2A rockets successfully, but suffered a setback in November 2003 when it had to destroy the sixth H-2A rocket just 10 minutes after lift-off.

Promotions

FA40 had four officers selected for Colonel during the board that met in August 2004: LTC (P)s Todd Day, Rick Schantz, Dave Taylor and Bruce Smith. That is great news for them and the functional area, especially considering FA40s are overstrength at the colonel level.

It's a testimony to the strength of these officers' performance, for there was no promotion requirement or "floor" for FA40 this year. It also validates what the field has been told repeatedly over the past several years, that the most important factor in promotions is performance of duty, no matter what position or assignment the officer holds. It is extremely difficult to identify any other trend.

There were no similarities in education (master's degree/no masters degree), experience (joint/non joint), selection for Space support element (selectee/non selectee), etc. Neither MAJ Jay Driscoll, the Human Resources Command FA40 Assignment Officer, nor the Proponent Office can provide more data, but it really came down to duty performance.

Space Operations Network (SONET)

The Space Operations Network (https://sonet.smdc.army.mil>) is in the midst of exciting updates while continuing to provide the latest news and relevant briefings, papers and periodical articles.

The next expansion in the SONET will be to the Learn section where training modules for download can be posted in addition to the latest information on Space-related training and education. SONET has recently been opened up beyond the FA40 community, so please encourage other Space professionals to log in. SONET is all about supporting your needs for exchanging information, collaborating on common issues and contributing to professional development. It's a good source of daily Space news as well, and with the growth of the career field and increase of disparate elements pocketed throughout the force, it can be a powerful tool for bringing the information needed to stay informed and support your needs. Log in daily and let us know what you want to see and how SONET can improve. An Army Knowledge Online (AKO) account is required to access SONET.

FA40 Authorization Growth

FA40s are increasingly in demand, and near term organizational changes within the 1st Space Brigade and those associated with Army Transformation are significantly increasing authorizations. The career field as a whole is undergoing a big shift as FA40s integrate more fully in transforming tactical forces, specifically within Space support elements at the UEx and UEys over the next three to five years. The functional area additionally has authorizations in some of the subordinate UAs, such as the Fires and Reconnaissance, Intelligence, Surveillance, and Target Acquisition units.

The exact numbers are in flux, as the branch tries to firmly determine what capability is needed at each echelon, but anywhere from 40-60 percent authorization growth between now and FY08/09 is expected depending on the Transformation timeline. We've been working the numbers to clearly identify what our requirements will be so we can start increasing the number of FA40s to meet the needs in time to get them trained and assigned. Some of this will be worked as part of the Army Space Cadre Force Management Analysis over the upcoming six months, but we will also try to impact upcoming Career Field Designation boards, CFD transfers, and look at other solutions as well as increase our numbers. The next key event to impact this action is the March 29 CFD board for year group 95 officers, and we are working with the Army staff to help us address our shortage for that board.

Annual FA40 Training Conference

The Proponent Office is putting together the initial concept for this year's conference. Based on guidance during last year's event, it is proposed that the conference take place at Long Beach, Calif., again as part of the Association of the United States Army convention, but that is extremely tentative pending staffing/approval through the chain of command. The dates for the AUSA conference are June 3-4, so would be looking at May 31 – June 3 for our event. These are only initial, tentative planning dates; we will keep you all posted and look forward to including you all in the planning.

Recent trips we've made to meet with the FA40s to U.S Strategic Command and National Reconnaissance Office were extremely informative and enjoyable, and we look forward to getting out to meet the Space support elements and to Colorado Springs, Colo., in the near future.

There are lots of exciting changes going on at STRATCOM regarding organization and some new opportunities for FA40s. No significant growth, but great opportunities for assignments in the Joint Functional Component Commands they are establishing. We will always try to have MAJ Jay Driscoll make the trips, so all personnel issues you may have can be fully addressed. Please contact LTC Mike Powers at powersm@smdc.army.mil if you wish to have us come out and we can schedule to best meet your needs.

DA Pamphlet 600-3 Update (Management of Commissioned Officers)

HQDA G-1 is leading the Army effort to update the October 1998 version of DA Pamphlet 600-3, Management of Commissioned Officers. It's been under revision for the past year and has gone through several iterations. This should be the last staffing for this year. It is scheduled for update annually to keep pace with Army Transformation.

There are significant changes to the document since the last staffing in May 2004, specifically the overall philosophy for officer management. Officer development of the future force will balance breadth and depth of experience with all jobs being an important part of an officer's multifunctional career path. Previously accepted conventions for "branch qualification" and singular paths for success are gone. The new focus will be on gaining experience needed to perform in the Joint, Interagency and Multinational (JIM) environment and supporting a Campaign Quality Army with success being measured by the quality of duty performance at every assignment vice the number of type positions held.

As mentioned previously, the concepts for FA40 outlined in Chapter 42 are, and have been, largely consistent with the new philosophy. There are several other changes regarding force stabilization and unit manning policies, training and education, and the evaluation system, many that are already being implemented such as Intermediate Level Education and elimination of senior rater blocks for company grade officers.

Thanks to all who supported the development and staffing of the document in November and December, the deputy commander for operations and commanding general have approved and it has been submitted to DA staff. Please review Chapter 42 of the update when published, it is specific to FA40s, and provides a clearer outline of what an FA40 does and what is required than in previous versions. The final draft of the document is posted on SONET, but is not yet approved. Approval was expected in February 2005 but has not yet been released.

OPMS III Review

Department of the Army is also conducting a review of OPMS III, and recommendations were to be forwarded for final decision in late January. The majority of the effort is focused on the Operations Career Field and ensuring Army officers receive joint experience and training earlier, all of this driven largely by where the Army is going in Transformation and on lessons from Operation Iraqi Freedom and Operation Enduring Freedom. The two most relevant issues to FA40s concern realigning branches and career fields across the Army and conducting Career Field Designation transfers earlier than the current 10-year point, most likely at seven years. Final decisions have not yet been made, but the realignment issue is expected to be studied further before decision and implementation and the early CFD initiative are implemented in the near term.

Space Professional Personnel Update

by LTC Mike Powers

LTC Mike Powers is an FA40 officer serving as Chief, FA40 and Army Space Cadre Office. Powers previously served as Chief, Intelligence Surveillance Reconnaissance Division, U.S. Army Space and Missile Defense Command, Force Development and Integration Center. His professional experience includes 17 years as an Military Intelligence officer, having served in various intelligence staff and command positions from platoon to national level. His Space-related MI assignments include commanding V Corps' TENCAP Company, Mainz-Finthen, Germany, and Chief, National Imagery Operations and Exploitation Branch at the National Ground Intelligence Center, Washington, DC. He is a graduate of the U.S. Army Intelligence & Security Command/Nation Security Agency, National Systems Development Program, and has operational deployments to the Sinai (multinational force and observers), Kuwait/Iraq (Operations Desert Shield/Storm), and East Timor (Operation Stabilize).

First, let us wish all Army Space professionals a happy New Year and continued success in 2005.

2004 was a significant year for the functional area; primarily because of the hard work and dedication exhibited every day. The beginning of the year finds FA40s transforming in step with the Army, while continuing to meet the demands of an Army at war. Some of the significant accomplishments for the functional area over the year include establishment of UEx Space Support Elements (SSE), execution of two enhanced Space Operations Officer Qualification Courses that now includes National Security Space Institute (NSSI) instruction, further development and definition of the Space cadre, the first selection of an FA40 to general officer, and continued success in promotions and selection to schools.

Overall the functional area is healthy; FA40s are being promoted at or above the Army selection rate, and the career development model and strategy the Functional Area has been operating under since its inception in 1998 has been validated in the recent Army-wide updates to DA Pamphlet 600-3 and OPMS III. These, combined with the operational impact 40s have every day in support of the Global War on Terrorism and the significant authorization growth expected over the next three to five years, indicate a bright future for Space operations in the Army, and for the functional area as a whole.

There are some challenges to address as the Functional Area transforms and as the Space cadre is developed further. Some of the key issues include gaining additional officers to meet our authorization growth; balancing the professional development/promotion pyramid to allow for optimal opportunities for promotion; and ensuring maintenance or growth in the presence and impact at the joint and national level while increasing authorizations at the corps/UEy level and below. These issues will be examined in more detail later in this update.

The priorities the Proponent Office will execute over the next six months are largely related to meeting these challenges, but there are several other key tasks that need to be completed as well. In addition to these priorities, and what can only be described to be non-negotiable, is to open up and maintain communications with FA40s and all other Space professionals in the Army and across the Department of Defense. These updates in ASJ are just one small way to keep you all informed and is one of several routine methods available to ensure there is greater understanding of the type and status of issues the proponency office is engaged in, and so input on what you need and what you are thinking can be received and acted upon. The most important job in the Proponent Office is supporting the entire Army Space cadre and its career development needs and concerns. The Proponent Office is committed to working that as the number one priority. Some of the other methods are monthly e-mail updates, quarterly cadre video teleconferences with the deputy commander for operations, SMDC, travel out to FA40 locations, and enhanced use of the Space Operations Network.

The following are updates on what is going on for FA40s and the Space cadre.

Army Space Cadre

FA40s are the Army's Space cadre as defined by the commanding general, Space and Missile Defense Command, and briefed to Under Secretary of the Air Force, Peter B. Teets and Congress over the past months. There has been significant confusion over this in the past. There is a comprehensive HQDA G3 study/analysis going on that most FA40s have heard about, the Army Space Cadre Force Management Analysis (FORMAL) that will determine the future cadre, specifically what role warrant officers, non-commissioned officers/enlisted and civilians will have, but until then, FA40s are the cadre. Additionally, the FORMAL will assess role/inclusion of other officers such as 3Ys (Space activities) and how they could be developed and integrated as part of the cadre, and will be completed in August 2005. Recently, during a forum with SMDC's deputy commander for operations, and chaired by Under Secretary Teets an update was provided on our cadre and the types of professional development, training, and missions we are involved in.

It was well received and all felt that the Army is on track with current force and plans for the future. The briefing is posted on SONET for review and information, and will be updated regularly. The other significant change for the Army Space cadre is designation of the FA40 Personnel Proponent Office as the Army Space Cadre Office and as the focal point for cadre issues and integration with National Security Space Office and Office of the Secretary of Defense efforts. This was a result of a finding during the 2004 Government Accountability Office (GAO) review of Space cadres throughout Department of Defense, and will greatly enhance our ability to work cadre issues and speak with one voice.

Air Force Space and Missile Badge

The Air Force will soon be retiring the Air Force Space and Missile Badge that has been worn over the past several years. The Air Force Space Cadre Badge will replace it, and initial discussions have begun with the Air Force to set up a similar agreement for wear of the new badge. Timeline for this entire happening is yet to be determined, but the transition will most likely occur in the upcoming 6-9 months.

There will be new criteria set for the cadre badge aligned with the AF concept for how they certify their Space cadre, but it will be based on experience in Space related assignments and training at a minimum. It would be premature to provide more details at this point, but the Proponent Office is considering how FA40s can align within their model as one of the courses of action. It is expected that a larger Army population than the current policy will be authorized the badge for wear, where only FA40s and satellite controllers have authorization. Since it is a cadre badge, it is logical to expect that all members of the Army cadre would wear it. There will be much more to follow.

A proposal is under development to change wear of the current badge that is being worked at senior levels within Air Force Space. Closure is expected within the month and could be approved by the time this Army Space Journal is printed. It also opens up authorization for wear to enlisted, warrant officer and additional officer specialties, and is also based on training and experience. The proposal outlines specialized training and/or certification requirements many of the Soldiers in SMDC/ARSTRAT complete, and entails one-year experience in a Space related assignment. We will keep you posted as this action comes to closure.

Accessions

The functional area recently acquired seven new FA40s in the past month, two through a Career Field Designation Appeals Board, and five through a new early CFD process implemented by Human Resources Command. The officers are MAJ Sam Amber, MAJ Ed Anderson, CPT Jon Matey, CPT Dave Perry, CPT Gary Prater, CPT Jawara Riley and CPT Dennis Wiley.

Two officers were gained on appeal, there were five officers who submitted appeals who were not selected. The Proponent Office is working with some of them on branch transfers and other alternatives. The new early CFD process selected officers currently in an Advanced Civil School (ACS) program sponsored by functional areas. All FA40 officers that are at Naval Postgraduate School were included.

There will still be a CFD board in March 2005 to select additional FA40s. This guarantees the branch will receive officers that are gaining specialized Space education and training and offers these folks more clarity on their future a little earlier in their careers. FA40 information packets were sent out recently to all FA40 Functional Area Designated (FAD) captains encouraging them to put FA40 as their first preference for the March 2005 board. FA40s are encouraged to work with any year group 95 officers coming up for CFD this year to look hard at FA40 as their future. If you need assistance, call the Proponent Office.

LTG Donald Lionetti

LTG Edward G. Anderson III

LTG John Costello

that the Army must create a dedicated Space support unit that could provide training and operational support to units deployed in a theater of operations. After the first Gulf War the Army's senior leadership understood it must "normalize" Space to the Soldier.

After the first Gulf War, the Army Space support program was energetically developed. In these formative stages, the leadership and foresight provided by a few general officers shaped the Army's efforts and established a foundation for the program's long-term success. Just as GEN Maxwell Thurman directed the Army's early efforts into Space in the 1980s, the Army Chief of Staff, GEN Gordon R. Sullivan, incorporated Space support systems and capabilities into the Army's 1992-1996 Louisiana Maneuvers experiments.

The experiments gave ARSPACE greater impetus and high level executive support to implement the changes indicated by the lessons of the first Gulf War. The direction and management provided by then BG Edward G. Anderson III (deputy commanding general, Combat Developments, Combined Arms Center, U.S. Army Training and Doctrine Command) and MG Jay Garner (assistant deputy chief of staff for Operations and Plans, Force Development) was also crucial in this effort. Their leadership helped shape the Army's decision to field a Commercial Space Package and activate a contingency Space support capability at ARSPACE. In 1994, thanks to the efforts of these leaders, the Army activated a deployable Space support team in Colorado Springs called the Contingency Operations — Space (COPS). The COPS team was the Army's first organization explicitly designed to provide sustained operational support for units in the field and the ARSST's direct predecessor.

The ARSST was an extension of the COPS concept, a deployable Space support organization. ARSSTs began to deploy on Jan. 1, 1995. Over the course of that year, the teams supported 28 exercises of various types. The frequency and length of deployments caused a high unit operations tempo, with ARSST Soldiers deploying for more than 140 days out of the year. This intense level of support continued. The first time an ARSST deployed to support an actual contingency mission rather than an exercise was in 1996. This deployment was to Tuzla, Bosnia, in support of the 1st Infantry Division (Mechanized). During this period, demand for ARSST support was greatest from the XVIII Airborne Corps and Army Special Operations forces. Each deployment generated new lessons in terms of ARSST capabilities and configuration and between 1995 and 1998, the concept of operations for ARSST employment evolved.

This evolution was guided by several leaders, including LTGs Donald Lionetti, Jay Garner, and Edward G. Anderson III as commanding generals, U.S. Army Space and Strategic Defense Command

ARSST Team members review fresh satellite imagery during a 1999 exercise in Grafenwoehr, Germany. *Photo by Ed White*

(USASSDC). After the USASSDC became the U.S. Army Space and Missile Defense Command (USASMDC) in 1997, LTGs John Costello and Joseph M. Cosumano Jr., sustained this progress by providing the necessary leadership and direction to refine the Army's Space support capabilities and integrate them into the Army Transformation process.

Between January 1995 and 1998, teams deployed worldwide to support units from battalion to theater level and all echelons in between. Of equal importance, the ARSST was a conduit between ARSPACE capabilities and the needs of operational units. Team personnel worked diligently to earn the trust of supported commanders and staffs, demonstrate the value of Space systems and capabilities, and remained prepared to deploy within 48 hours to support the full spectrum of Army missions.

In 1997, ARSPACE continued to explore ways to improve the level of Space support and began experimenting with the Army Space Support Cell (ASSC) concept which it exercised and tested in 1998. An ASSC would provide connectivity for ARSSTs to ARSPACE assets and would serve a coordinating function with joint and component organizations. The cell would integrate Space analysis into the supported decision-making process providing value-added products and services. The ASSC concept would do more than bring computers to produce a number of products; it would allow the supported unit to make the best use of both Space products and expertise in both the planning and execution of its operations. The ASSC's activities and methods of support would vary, depending on the commander's requirements, the theater's physical size and infrastructure capabilities, as well as the command's level of dispersion in theater. The cell would be tailored to fit the needs of the supported unit.

As part of this process, ARSPACE began to develop a formal training program for ARSST personnel. In 1998, the Army took steps to activate the new FA40 functional area (Space operations officer) to deal with the warfighting implications of Space operations from a leadership development and training perspective. The Space operations officer serves as the primary focal point integrating Space capabilities in the military decision-making process of corps and division headquarters. Their presence on these staffs provides commanders with officers who have the expertise to exploit Space-based assets and Space products fully, significantly enhancing warfighting capabilities. Additionally, FA40 officers assigned to other key posts provide expertise for decision-making while ensuring that Army requirements and operating capabilities are integrated throughout the national security Space community.

The pace of change and innovation in Army Space support has been particularly dramatic recently. The establishment of the FA40 Space operations officer functional area, the continued development and implementation of Army Space doctrine and numerous experiences with Army Space tactical and operational integration, seem to suggest that the desired goal of Space normalization has been largely achieved with ARSST teams now consistently participating in operational missions. The year 1998 saw the end of one chapter in Army Space and ARSST history, but another has begun.

2nd Annual FA40 Training Conference

Who: All U.S. Army FA40s Officers assigned worldwide, Related military Space professionals and DA civilians and support contractors.

What: Professional development sessions highlighting: Proponency office updates, a transformation and modularity update, presentations from the field, Space capabilities update, Space support to GWOT, and a panel discussion: Future Space Support Concept

When: May 31 through June 3
(Attendance at 2005 AUSA GLAC Space Symposium June 2 – 3 in the same hotel is encouraged.)

Where: Westin Long Beach
Long Beach, Calif.

Why: This event brings direct contact with the leadership and encourages an ongoing dialog related to key "lightning rod" issues within the field.

How to register: Check FA40 Web site @ www4.army.mil/FA40 and SONET. *An Army Knowledge Online (AKO) account is required to access SONET.*

AUSA Long Beach is just around the corner

On June 2-3, 2005, the Greater Los Angeles Chapter of the Association of the United States Army (GLAC-AUSA), in cooperation with the United States Army Chief Information Office/G-6, the United States Army Space and Missile Defense Command, and the United States Army War College's Strategic Studies Institute, will present a symposium centered around these increasingly critical Space and C4ISR enablers.

Key decision makers from the government, industry and academia will discuss concepts for the transformation of future warfare, adaptive enemies and evolving threats, and Army systems requirements crucial to success as part of a Joint Force. Space operations officers will provide invaluable feedback on their actual use of these enablers during recent combat operations.

Army Space Support Teams: The Early Years, 1986-1998

This brief article is based on a history of the Army Space Support Teams, James A. Walker and James T. Hooper, Space Warriors: The Army Space Support Team (Washington, D.C.: U.S. Army Center of Military History, 2004).

By Dr. Lewis Bernstein

The Army Space Support Team (ARSST) celebrates its 20th anniversary this year. However, the interest in ground forces using Space assets has a longer history, one that begins with the Army's re-entry into Space in the 1980s. The Army's interest in exploiting Space has its roots in the ways it has used technology to enhance combat power, always seeking the highest ground to dominate the battlefield, using new technology to enhance functions rather than merely seeking improved equipment. These functions give Soldiers increased powers of observation of the terrain, weather and the enemy, and communication, while denying them to an adversary.

While the Army has historically sought to use Space to improve battlefield advantage, it did not play a lead role in the development of technology and use of Space between 1958 and 1984. The Army maintained its interest in Space, but stressed communications and was often a lesser partner. By 1984, Army leaders had reasserted the Army's need to use and develop Space assets.

The Army experimented with several concepts and programs to provide Space support to tactical commanders between 1986 and 1998. In these 12 years, its efforts shifted from Space systems demonstrations, to supporting deployments, to Space analytic services. The ARSST led these efforts to exploit Space capabilities for the Soldier in the field. Today, as the military Space environment changes and the Army adapts to new requirements, the ARSST continues to play an indispensable role in translating Space capabilities into warfighting tools and knowledge.

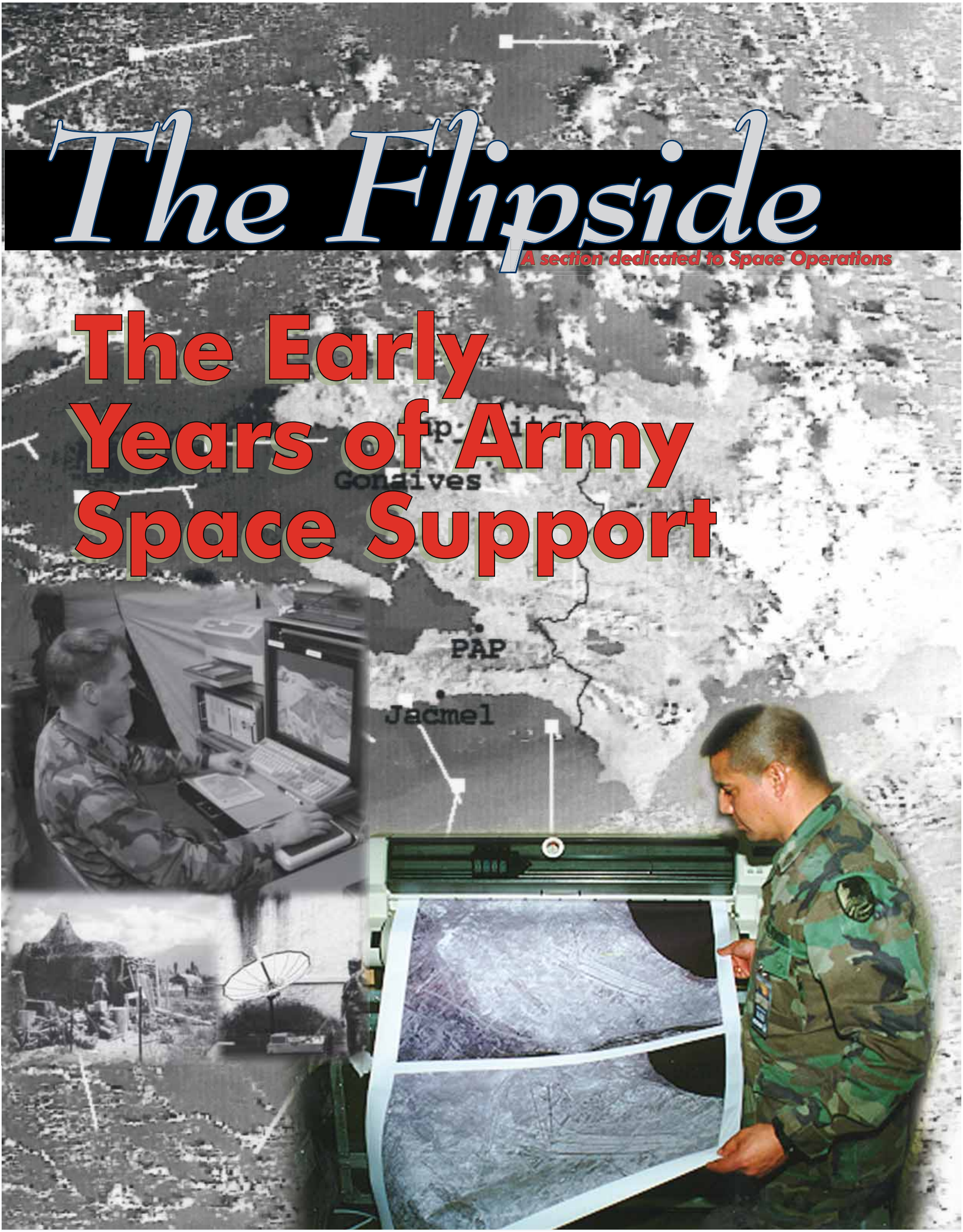
The creation of the Army Space Support Team was the result of years of experience in using Space assets to support tactical units. Establishing the Army Space Institute at Fort Leavenworth, Kan., in 1986 was the first step in the systematic effort to use Space systems and technologies to support tactical operations. As the coordinating body for developing Army Space concepts, doctrine, training and equipment, the institute played a pivotal role in introducing the Army to the benefits offered by Space.

Activating the Army Space Demonstration Program in 1987, later called the Army Space Exploitation Demonstration Program, was invaluable because it gave Soldiers hands-on experience with the potential benefits Space capabilities offered. The demonstration program provided an early education to many tactical commanders on the ways Space technologies could be used to support planning and operations. Although this program was not designed, organized or funded to provide operational support in the field, its personnel deployed to support Army operations in Saudi Arabia (1990-1991), Haiti (1994-1995) and Bosnia (1996-1998).

The formation of the Army Space Command (ARSPACE) in 1988 marked the end of a process that began with the activation of a four-man liaison element at Air Force Space Command at Colorado Springs, Colo., in 1984. As the Army showed greater interest in Space-based technologies, this office grew until a command was established as the central organization to provide operational Space support to the Army.

The first Gulf War of 1990-1991, often referred to as the First Space War, demonstrated the benefits of Space capabilities on an actual battlefield to both Soldiers and commanders. In the deserts of Saudi Arabia, Kuwait and southern Iraq, the Army was exposed to the value of multispectral imagery, Global Positioning System position/navigation, satellite weather, ballistic missile warning and satellite communications. The conflict also showed that few tactical commanders understood the full potential and limitations of Space support capabilities, or knew how to employ Space assets in the most effective manner. The war demonstrated

The Flipside

A section dedicated to Space Operations

The Early Years of Army Space Support