

the Army Space Journal

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What's the difference?



ARSSST AND SSSE

the Army Space Journal

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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Communicating Space to the warfighter

From The Top Leadership Updates

SPACE AND MISSILE DEFENSE

Our New Paradigm:

Supporting Warfighters in a Different Kind of War During an Era of Evolving National Security Challenges

LTG Kevin T. Campbell

Defined as new and broader, a never-before-faced set of threats challenges the Nation and the U.S. Army now and for the foreseeable future. In his premiere column for the Army Space Journal, LTG Kevin T. Campbell advocates for a Joint, Interagency and Multinational solution set.

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Forging Ahead

BG Roger F. Mathews

Many hard fought successes have been realized by the 1st Space and the 100th Missile Defense (GMD) Brigades during BG Mathews tenure at SMDC/ARSTRAT. In his farewell column, Mathews assesses the increased Operational Tempo for Space warriors and the increased threat that GMD warriors are guarding the homeland against.

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By COL Bruce Smith

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Cover Photo: Members of an Army Space Support Team review an imagery product. Photograph courtesy SMDC/ARSTRAT

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What you didn't know ...

About Strategic Communication:

For me, the defining story for today's strategic communication for national security is found inside tents and foxholes in World War II's European setting. Bill Mauldin, a young Soldier who created and drew the Willie and Joe cartoons for Stars and Stripes Newspaper, entered Lieutenant General George Patton's tent to hear one side of the argument. "He chewed me out," Mauldin told me in 1984 as he remembered the experience. "He did not think my cartoons belonged in the newspaper." Mauldin went on to explain that the upset Patton felt portrayals of the nation's Soldiers should show the spit-and-polish of professionalism. "He had his stars and I had General Dwight Eisenhower," Mauldin said referring to the winning side of the argument.

I think the reason Mauldin had Eisenhower's support for foxhole realism in the published cartoons was that Eisenhower knew that these provided a way for people to understand war. General officers plan and execute grand strategies and, for that, they are remembered in the history books. Willie and Joe, though, reached millions of people and were able to touch their hearts by telling the personal story of the men who executed the small pieces of those war strategies. Mauldin's gift for drawing the everyday personal wins and losses, trials and tribulations probably communicated more accurately and effectively about that war than did all the press releases put out by the military. Mauldin took the individual Soldier who actually fought and made him a strategic communicator that the common Joe could understand and believe.

Eisenhower understood that aspect of communications. I am not sure Patton understood in the same way.

The reason Mauldin's story of Patton and Eisenhower resonates today is that these two generals represent, in a rather broad way, the opposing viewpoints on communication that still exist.

On the seemingly Patton side, you have the mentality that if the leader says it, it must be true and therefore people must believe it. In the simplest scenario, consider a platoon leader asked about the caliber of troops under his or her command. My bet is the answer will run along the lines of: "These are the best Soldiers in the Army." While this may be human nature to say, just these words alone do not make those Soldiers the best. Without visible signs that demonstrate and validate the accuracy of the comment, the words may communicate more an unsaid devotion of the leader to his or her troops than reality. But the words also open the door to the unspoken possibility that the leader is concerned more about how it all reflects upon himself or herself than being a supportable claim.

And it is here that the Eisenhower side comes in with an understanding that there's a need for creating grander contexts in communication — more than just making out-of-the-blue, wishful statements. Strategic communication in our free-press and free-speech world is like that. The situation, environment, facts, analysis and opinion all have a way of making things credible in a person's mind



as he or she tries to make sense of conflicting information. The highest and most desired result of strategic communications is a fully informed, involved public drawing its own independent conclusions from all sorts of information. Official communications don't always accomplish the goal because many people, especially today, do not trust official communications alone. During World War II, the public had a different view of their officials and were more willing to accept what the official word was coming out of the various government departments. With newspaper and radio as the primary media, however, the public was starved for images of what "our boys" were going through. Mauldin's cartoons filled that bill. He spoke to the attitudes and plight of the common Soldier with an eloquence and simplicity that no other media could accomplish. His art was larger than Willie and Joe. It was even larger than the Eisenhowers and Pattons and the Bradleys. It was taken in by the American public and made their own. This country adopted Willie and Joe as their own sons, brothers, fathers and uncles. Willie and Joe made the war real and human and, in a way, private for everyone who saw the cartoons.



This was Mauldin's true success — and it was Eisenhower's communication wisdom in recognizing this. In Willie and Joe, Mauldin found Everyman and thrust him onto the stage of greatness. Mauldin's Willie and Joe humanized a huge dehumanizing event. Through his art, Mauldin brought the war home and gave people a reason to believe in it and to own it, support it and believe in it. Willie and Joe kept it real.

Strategic communications is not a narrow path. It is a broad avenue of many lanes, all leading to the same end point. In this day and age of electronic communications, it is harder and harder to control what goes out to the public like it was in World War II when information was censored. I doubt Americans like this form of censorship anyway. They want news and facts and they will take them where they can find them.

Today, the human capital — the Soldiers, Sailors, Airmen and Marines who are tromping the streets of Faluja or riding in convoys through the IED strewn streets of Baghdad — are the best storytellers because people can identify with them so easily. They are the kids down the street or the nephews or nieces who went off to join the Army to learn a skill. They are the kids who played little league and who led cheers at their high schools. They are the career service men and women and they are those who enlisted to have an adventure and get a big bonus for college.

Today's bloggers and others are doing the same as Mauldin. These simple photos and stories have opened a national debate on not just how we treat our prisoners and fight wars, but who we are as a people. The goal of strategic communications is to encourage people to take ownership of an event or idea and to participate in the discussion. So the question is not whether or not it's a good idea that this information gets out, but rather how leaders react. With today's sophisticated citizenry, this is no longer the province of sloganism or bumper-sticker logic. Strategic communications need to be, first, planned with the audience in mind and second, managed when they are discovered. When a communicational path resonates with the public, it needs to be nurtured, fed, watered and given air and sunlight to grow. And for that, communications need to be real.

Strategic communications for the Army's Space efforts need to be able to show the technical, tactical and personal sides of the effort. Space is different from the infantry. However, it plays a constant supporting role to infantry operations. In fact, it supports all aspects of land warfare. The story, then, is that the technology supports the tactical-strategic side of operations and it is engaged in by human beings. Each element has a story to tell. Each element has its unique history and legends and myths. I believe that people who believe in our Space products are the best ones to tell the story. Whether they are providers of products or users, their stories are the stories of the success of Space in the military. Finally, each of these stories needs to be told in such a way that Willie and Joe would understand.

That's street-level talk.

— Michael L. Howard
Editor in Chief

Our New Paradigm:

Supporting Warfighters in a Different Kind of War During an Era of Evolving National Security Challenges



LTG Kevin T. Campbell
Commanding General,
U.S. Army Space and Missile
Defense Command/U.S. Army
Forces Strategic Command

Editor's Note: This article's main focus is on the recent troop surge in Iraq and its effects on how the warfighters fight and how we support them with Space capabilities.

The global security environment facing our Army is fundamentally more challenging than anything we have confronted in our Nation's history. We must now be able to protect against a much broader range of threats, including terrorism, non-state actors with access to advanced weaponry and technology, and adversaries' use of ballistic and cruise missiles. All of these threats could result in significant casualties and social upheaval. The potential use of weapons of mass destruction by terrorist organizations is an area of particular concern.

Current and potential adversaries often attempt to operate at the extremes of the conflict spectrum. At one end of the spectrum, the Democratic People's Republic of Korea (North Korea) is actively pursuing nuclear weapons capabilities. In July 2006, North Korea test-fired one inter-continental and multiple short range ballistic missiles. Their subsequent test of a nuclear warhead in October 2006 made the missile tests even more alarming. More recently, in May and June 2007, North Korea also launched multiple short-range missiles toward the Sea of Japan. Similarly, Iran's history of deception, concealment, and obfuscation regarding their nuclear research efforts and ongoing enrichment of uranium as part of an apparent nuclear weapons development program have been of great concern to the international community. Iran's state support of terrorism, most notably Hezbollah and Hamas, and arms shipments to both Iraq's Shiite extremists and Afghanistan's Taliban are also of concern.

Advances in technology and the changing nature of the threat have enabled state and non-state actors access to capabilities, including Space products and services that

nearly rival those of the United States. The Chinese test of an anti-satellite missile in January 2007 against one of their aging weather satellites in Low Earth Orbit highlights the potential vulnerability of our own satellites. The debris field created by the destruction of this Chinese satellite produced thousands of fragments that will pose a physical hazard for decades to our satellites and those of the international community.

At the other end of the threat spectrum, groups such as remnants of Saddam Hussein's former Ba'athist regime and the Taliban attempt to avoid the overwhelming conventional superiority of U.S. forces by using asymmetric tactics to exploit current vulnerabilities in our capabilities. Advanced technology and Internet access supported by modern weapons and a variety of high explosives are commonplace tools of contemporary threats. The proliferation of technology greatly enhances the capabilities of irregular forces and non-state opponents. This has already occurred in Iraq and Afghanistan as our Nation's warfighters have engaged highly capable enemy forces that quickly adapt new capabilities and tactics into their operations.

Military operations today in Iraq, Afghanistan, and elsewhere reflect the tough challenges inherent in countering extremist and insurgent groups in highly complex environments. These combatants do not limit themselves to purely military means, but instead try to advance their purposes by attacking the religious symbols and leaders of their foes, subjugating and terrorizing the populace, and attempting to undermine external support. They often belong to loose organizations with common objectives but different motivations and no central controlling body. Identifying the leaders is often quite difficult. Clearly, the enemies we now face are

“We are locked in a war against a global extremist network that is fixed on defeating the United States and destroying our way of life. This foe will not go away nor will they give up easily, and the next decade will likely be one of persistent conflict. We are engaged in a long war.”¹

*— General George W. Casey, Jr.
U.S. Army, Chief of Staff
Arrival Message*

different than the one faced during the initial combat operations for Operations Enduring Freedom and Iraqi Freedom.

The purpose of this article is to enhance understanding of the insurgencies in Afghanistan and Iraq and to frame the environment in which the Nation’s warfighters are conducting combat operations. Several areas are identified where we need to focus emphasis for support of tactical commanders. In preparing this article, attention was given to incorporation of recently published doctrinal guidance (particularly the new FM 3-24, Counterinsurgency) (COIN) and several other authoritative reports and analyses. This article is meant as a primer for thought, discussion and action. Read it as a companion piece to my article entitled “Asymmetric Threats: A Vital Relevancy for Information Operations,” published in the previous issue of the Army Space Journal. In setting the tone for this article, the quote by GEN Peter Schoomaker, former Chief of Staff, Army, succinctly describes the challenge before us: “This is a game of wits and will. You’ve got to be learning and adapting constantly to survive.”²

Insurgency: An Ancient Scourge in Modern Times

Insurgency and its tactics are as old as warfare itself. Joint doctrine defines an insurgency as “an organized movement aimed at the overthrow of a constituted government through the use of subversion and armed conflict”³ Political power is the central issue in insurgencies and counterinsurgencies, with each side working to gain acceptance of its authority as legitimate and, depending on the motives of the party involved, win the loyalty, dependability, or control of the population. The “central goal of an insurgency is not to defeat the armed forces, but to subvert or destroy the government’s legitimacy, its ability and moral right to govern.”⁴ Potential insurgents attempt to rally action based on a number of potential causes. Economic inequities can foster revolutionary unrest. So can real or perceived racial or ethnic persecution. Some extremists use perceived

threats to their religion or the belief their actions will facilitate apocalyptic warfare leading to a “period of golden rule” to justify terrorist tactics.⁵

Contemporary insurgents may use different approaches at different times, applying tactics that take best advantage of circumstances. However, fear and violence, either targeted directly at the populace or to portray government ineptitude or inaction, are the stock and trade of insurgent action. They may carry out barbaric acts against members of the general public and may also attempt to demonstrate that the state cannot guarantee security within its territory. In addition, insurgent forces, pursuing apparently quite different agendas, may form loose coalitions when it serves their interests. However, these same groups may fight among themselves, even while engaging Coalition Forces.⁶ The Internet is often used as a means to recruit, finance and disseminate results of their actions.

The Insurgency in Iraq

Today, our military forces in Iraq confront adversaries representing a variety of hostile interests, including former elements of the Saddam Hussein regime (the Republican Guard and the paramilitary Fedayeen), armed sectarian militias [Supreme Council for Islamic Revolution in Iraq (SCIRI), the Mahdi Army or Jaish al Mahdi (JAM), Pesh Merga, al-Qaeda in Iraq (AQI), and others,] disaffected Sunni Arab Iraqis, foreign fighters and organized criminals. In total, enemy insurgents may exceed 100,000 armed fighters. These insurgents have different goals, although nearly all oppose the presence of U.S. forces in Iraq. Insurgent forces do not depend on foreign sources for the majority of their support in the areas of funding, explosives and leadership. To a greater extent, these areas of support are provided from inside Iraq.⁷

Insurgent activity is centered in the Sunni-dominated parts of Iraq, primarily the areas northwest of Baghdad and between the cities



As Coalition Forces respond to a car bombing in South Baghdad, a second car bomb is detonated, targeting those responding to the initial incident. The attack, aimed at the Iraqi police force, resulted in 18 casualties, two of which were police officers, during Operation IRAQI FREEDOM. *Photograph taken by SPC Ronald Shaw Jr.*

of Tikrit, Ramadi, Samarra and Fallujah.⁸ These adversaries possess a range of military capabilities and in some ways are more capable of independent operations than the regularly constituted Iraqi Security Forces. Their use of face-to-face communications supplemented by cell phones, reliance on austere logistical support, and collocation with the civilian population challenge our ability to locate and fix them for apprehension or engagement. Their tactics include, but are not limited to, suicide bombings, improvised explosive device attacks, sniper shootings, mortar and rocket attacks, kidnapping private Iraqi citizens as a fund-raising tactic and murder. Hundreds of university professors, doctors, journalists and government officials have been assassinated or abducted.⁹ Insurgent attacks also include sabotage of economic targets such as power stations, oil pipelines and other infrastructure.

The majority of insurgent attacks against Coalition Forces involve improvised explosive devices targeting convoys and patrols. Most improvised explosive devices are made from leftover former Iraqi regime munitions and foreign explosive materials and although often hastily put together can have devastating results. There have also been instances of what appeared to be generators, donkey-drawn carts, and ambulances used in attacks on Coalition Forces.¹⁰ The most lethal type of improvised explosive device is the Explosively Formed Penetrator, which has a liner in the shape of a shallow dish that, upon detonation, is transformed into a projected body of metal. Although these Explosively Formed Penetrators currently make up only a small percent of the improvised explosive devices found, they have been particularly hazardous since they are able to penetrate armored vehicles.¹¹ Insurgent tactics have also included several attacks against helicopters, and increasingly

insurgents have staged carefully planned, complex ambushes and retaliatory attacks on Coalition Forces.¹² The downing of an OH-58D helicopter and subsequent attacks on the quick reaction forces in late-May 2007 is an example of a thinking and adaptive enemy that is changing its tactics.¹³

Al-Qaeda in Iraq (AQI), previously lead by Abu Musab al-Zarqawi and reportedly currently headed by Abu Ayyub al-Masri, is the largest and most active of the Iraqi-based terrorist groups. AQI's goals include instigating a wider sectarian war between Iraq's Sunni and Shiite religious groups, and driving the United States out of Iraq. AQI also poses a threat outside Iraq, as it is the only terrorist group in the country with known aspirations for external attacks, including possibly against targets in Europe and the U.S.¹⁴

AQI is one of the most visible perpetrators of anti-Shiite attacks in Iraq. A hallmark of its strategy is to instill fear in the Sunni population, sow sectarian tension, and incite the Shiite population of Baghdad to take up arms and continue fighting in order to discredit the United States and the fledgling government of Iraq.¹⁵ The majority of AQI fighters are Iraqis. Foreign fighters, numbering an estimated 1,300, play a supporting role or carry out suicide operations. AQI has increased the number and variety of spectacular attacks in Baghdad; including terrorist attacks against the Sunni population that demonstrates the organization is willing to target all civilians, not just Shiites, in order to achieve its goals.¹⁶ These attacks have included car and truck bombs to inflict civilian casualties for inciting retaliatory attacks by Shiite groups and to generate strategic effects on public opinion. Cargo trucks filled with chlorine and rigged with explosives have been detonated in at least six instances.¹⁷ The bombing of the al-Askari Mosque, one of the holiest sites in Shi'a Islam, in the Iraqi city of Samarra in February 2006 is

Military operations today in Iraq, Afghanistan, and elsewhere reflect the tough challenges inherent in countering extremist and insurgent groups in highly complex environments. These combatants do not limit themselves to purely military means, but instead try to advance their purposes by attacking the religious symbols and leaders of their foes, subjugating and terrorizing the populace, and attempting to undermine external support.

believed to have been caused by bombs planted by AQI. Although no injuries occurred in the blast, the mosque was severely damaged and the bombing sparked a wave of sectarian violence. AQI insurgents are also suspected of destroying the mosque's two minarets in June 2007.

In some areas of Iraq, sectarian militias have established themselves as extra-governmental arbiters of the populace's security, in some cases, after first undermining that security. Some of these militias hold sway with considerable political power. Sectarian militias also kidnap, torture and execute members of the other sect. These extra-judicial killings contribute to further retaliatory attacks, armed neighborhood vigilante groups and widespread criminal activity. A number of attacks have been made against "soft" targets, principally civilian gatherings, which cause a great number of casualties. Sectarian violence in Iraq has forced hundreds of thousands of people to flee from their homes in mixed Sunni-Shiite areas for the safety of neighborhoods in which their own sect dominates.

The largest of the militias in Iraq, the Jaish al Mahdi, is led by Moqtada al-Sadr and may number as many as 60,000 fighters.¹⁸ This Shiite militia group exerts significant influence in Baghdad and the southern provinces of Iraq and on the Iraqi central government itself. The Jaish al Mahdi, was dealt a severe blow in May 2004 after suffering heavy losses in weeks of fighting with U.S. forces. More recently, Moqtada al-Sadr reportedly told his forces to "try at all costs" to avoid conflict with Americans. His fighting cadres were ordered to go to ground, hide their weapons, take down their check points, stop the ethnic cleansing and terror tactics against the Sunni population, and ignore (i.e., not cooperate) with U.S. and Iraqi Security Forces.¹⁹ The longer-term veracity of this strategy is open to conjecture.

The other large Shiite militia, the Badr Brigade, is affiliated with the SCIRI, which is led by Abdul Aziz al-Hakim. The Badr Brigade has long-standing ties with the Iranian Revolutionary Guard Corps. While wearing uniforms of security services, Badr fighters have tar-

geted Sunni Arab civilians. Badr fighters have also clashed with the Jaish al Mahdi, particularly in southern Iraq.²⁰

The Insurgency in Afghanistan

The insurgency in Afghanistan is comprised of a number of armed groups, including Taliban guerrillas, followers of former prime minister and fundamentalist warlord Gulbuddin Hekmatyar, al-Qaeda terrorists recruited from across the Islamic world, and local fighters. Other groups include tribal militias contesting central government authority and criminal networks engaged in the booming illicit narcotics trade. The insurgency began a few months after U.S.-led forces drove the Taliban out of the Afghan capital, Kabul, in November 2001. It became more effective two years ago, when insurgents switched to new tactics, including breaking up into small groups of 10 fighters or less, attacking "soft" civilian targets and limiting head-on confrontations with Coalition and Afghan troops. Estimates on the total number of insurgent forces vary from 5,000 to 15,000, including Pashtun tribal militias. The Taliban has claimed responsibility for over two-thirds of recorded bombing attacks, primarily those in the southern and southeastern provinces.²¹

Insurgent groups in Afghanistan have carried out a variety of attacks on civilians or civilian institutions, apparently with the intent of instilling fear among the broader population and as a warning not to work in similar capacities. Civilian government workers, nongovernmental organizations employees and civilian officials have all been attacked. Additionally, humanitarian aid workers, doctors, students, clerics, schoolteachers and civilians at crowded bazaars have been specifically targeted. In addition to bombings and other attacks that resulted in damaged shops, buildings and infrastructure, insurgents have targeted medical clinics and local schools, which are often the only symbol of government in remote areas.²²

(Our New Paradigm, page 32)

FORGING AHEAD



BG Roger F. Mathews
Deputy Commanding General
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Strategic Command

The Army proponent for Space, LTG Kevin T. Campbell, recently spoke to U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command (SMDC/ARSTRAT) personnel, both in Huntsville, Ala., and Colorado Springs, Colo., about his vision and focus for the command. To no one's surprise, he said that his focus and the focus of SMDC/ARSTRAT had to be on the warfighter, something we've been doing since SMDC's inception. I suppose you could say that the creation of Functional Area 40 in 1998, was the direct result of the warfighter community realizing that Space-based capabilities and Space Operations Officers could be a force multiplier enabling their success in the field. A constant theme of LTG Campbell and all the commanders before him, has been the need to look at and evaluate what we provide, in either materiel, products or people, to remain relevant, ready and to make the warfighter as lethal as possible.

As we look to our future, I want to take this opportunity as I leave the command to review the successes we've had during the last 17 months. You will see in each success more opportunities to influence the Space operations mission set. I challenge each of you to continue looking, analyzing, debating and striving to keep Space working for the warfighter.

1st Space Brigade

Requests for Space operations skills and mission areas continue to grow. In late May, the 1st Space Battalion held a farewell ceremony for a company of Soldiers deploying in support of U.S. Central Command operations. Although Soldiers from the battalion have been deployed continuously since 9/11, this was the battalion's largest deployment — approximately 40 Soldiers from 1st Space Battalion and the battalion Tactical Operations Center — approximately 8 Soldiers. Almost 40 percent of the battalion's Soldiers are now deployed. This deployment is validating the concept of operations for Space assets working for and through the Joint Functional Component Command for Space and the Combined Air Operations Center in theater. In addition, challenging new missions have emerged for the brigade, which assist in protection of the Nation and critical satellite communications links supporting Department of Defense and U.S. Government missions. The brigade is well on its way to being prepared to assume on-orbit control of the payloads on the Wideband Global Satellite System. Equipment is in place at two of the Wideband Satellite Operations Centers and training is underway to add a new skill set for control of this complex asset which will provide tremendous capability to the warfighter.

100th Missile Defense Brigade

The 100th Missile Defense Brigade (Ground-based Midcourse Defense) and the 49th Missile Defense Battalion (GMD) have achieved a Limited Defensive posture and are ready to defend the Nation against all incoming hostile/misguided missiles. This was so ably demonstrated last July during the North Korean missile launches. As it turned out, the missiles weren't headed to the continental United States, but had they been a threat, the brigade and battalion fire direction elements would have been able to launch the ground-based interceptor with a kill vehicle to neutralize their missiles. The process through the chain of command; from the White House, U.S. Northern Command, U.S. Strategic Command's Joint Functional Component Command for Integrated Missile Defense to the brigade and to the battalion functioned properly. What a success for a process that involves so many entities!

Expanding Missile Defense Architecture

The expanding number of sensors in the missile defense architecture enabled this success of the 100th and 49th. Importantly, during the past couple of years, the Ballistic Missile Defense System community has been working to increase the number of sensors, integrate them, and instill redundancies between them to support both tactical and strategic missile defense in a network-centric manner.

One such sensor is the Sea-based X-Band Radar. This radar sailed to the waters off Alaska, passed several tests and is joining the array of sensors. Of significance, the Sea-based X-Band Radar can be moved to any location to optimize its effectiveness, depending on the threat. Another X-Band Radar, the AN/TPY-2, a Forward Based X-Band Radar Transportable, is now in

Almost 40 percent of the battalion's Soldiers are now deployed. This deployment is validating the concept of operations for Space assets working for and through the Joint Functional Component Command for Space and the Combined Air Operations Center in theater. ... The brigade is well on its way to being prepared to assume on-orbit control of the payloads on the Wideband Global Satellite System.

Japan in support of the global ballistic missile defense system. Activities are ongoing to emplace additional radars to provide increased strategic warning capabilities to the Nation and allies.

Sensors in the Ballistic Missile Defense System architecture have been performing their single-focus missions for many years. When the existing systems were built years ago, they were designed to support just one mission. Today, as a result of a lot of consultation and cooperation, the sensors are more responsive to both Space and missile defense needs and can respond in a network-centric fashion to numerous missions (i.e. Intelligence).

Satellite Communications

SMDC/ARSTRAT Chief Information Office (CIO)/G6 executes the duties as the Satellite Communications (SATCOM) System Expert and Designated Approval Authority for the Global Broadcast Service and the Wideband Global SATCOM (WGS) systems. Additionally, as a strong advocate for warfighter capability through its role as the Consolidated Wideband SATCOM System Expert, SMDC/ARSTRAT has succeeded in balancing the Information Assurance requirements with the operational imperatives of combatant command requirements. The Department of Defense SATCOM community recognizes SMDC/ARSTRAT as the wideband SATCOM expert and has noted the positive impact that WGS will have for the warfighter when placed in operations by March 2008.

Because of their outstanding performance of their SATCOM System Experts responsibilities U.S. Strategic Command recently added Mobile Users Objective System SATCOM System Experts to CIO/G6 mission responsibilities. Mission support has been in the areas of requirements advocacy and assessments, new systems planning and integration, combatant command assistance, and operations planning and sustainment. As an example, in order to deliver the communications capacity to the warfighter quickly, only 37 days are scheduled to charac-

terize payload operations and performance for the first WGS satellite. To this end, the SATCOM System Experts office (G6) has worked diligently to develop an aggressive characterization testing schedule that will allow for full payload characterization within the allotted 37-day test window. The office has worked closely with the satellite contractor to develop payload configurations that will support not only payload characterization, but also initial Air Force Operational Test and Evaluation Center testing of the satellite and terminal performance certification testing for the new Ka-band capable terminals. All of this will occur during the short test window to maximize the warfighters' use of the WGS payload immediately upon its activation. The goal is the seamless integration of Wideband SATCOM operations for the warfighter as the constellation transitions from the Defense Satellite Communications System to WGS.

Since 2004 when the Global Broadcast Service Designated Approval Authority mission was assigned to SMDC/ARSTRAT, the CIO/G6 has relentlessly sought to balance operational and Information Assurance requirements. This is significant within Global Broadcast Service operations because of its numerous unresolved Information Assurance issues. SMDC/ARSTRAT has provided an operationally focused direction to the program to obtain compliance with Information Assurance regulations, policy and law. SMDC/ARSTRAT, in its Designated Approval Authority role, has led the Global Broadcast Service community by addressing these concerns in the Wideband Working Group and Global Broadcast Service Operations Working Group. The result is a jointly coordinated "get well" plan of action and milestones. While there is still a long way to go, significant progress has been made toward reducing risk. One thing is for sure, operations planning and sustainment of Satellite Communications is an Army Core competency.

One of the great synergies within SMDC/ARSTRAT is the
(See *Forging Ahead*, page 38)

The View From (Army) Space ... *Ford (ARRST)* *versus* *Chevy (SSE)*

By COL Bruce Smith

When I was a kid growing up, people were often defined by the cars they drove. There were basically two camps — Ford or Chevy. My father was a Chevy man; a series of Impalas graced our driveway over the years. My best friend's dad, on the other hand, liked Fords and had a number of Galaxie 500s before buying a vast yellow LTD Country Squire station wagon, complete with wood sides and a black vinyl roof. People loyally bought the same brand year after year and never dreamed of stepping into a rival showroom. Ford men were suspicious of any vehicle with a “bow tie” on it, while Chevy men looked on the “blue oval” with disdain. People were creatures of habit; driving what experience dictated. Today the Ford and Chevy rivalry has diminished somewhat, but a similar feud, or rivalry, is ongoing in the FA40 community.

Space Operations Officers often square off into two camps: the Army Space Support Team camp and the Space Support Element camp. Like the Ford-Chevy rivalry of old these two camps often look upon each other with suspicion or disdain.

“Who needs an Army Space Support Team? The Space Support Element can do anything an Army Space Support Team can do and it has the advantage of being organic on the division staff.”

Conversely, “What does a Space Support Element do? It is not properly manned or equipped and is not linked into the 1st Space Brigade like an Army Space Support Team. The team brings Space expertise and capabilities to the warfighter that a Space Support Element never could!”

While I have exaggerated my comments, I have encountered these two distinct camps while working to develop future Space concepts and capabilities. Often the comments and the underlying perspectives are derived from the officer's past assignments. It has been my general experience that of-

ficers assigned to Army Space Support Teams value the team and recognize its contributions to the ongoing warfight, while the officers who have been assigned to the Space Support Element tend to favor the element. Only now are we beginning to have officers who are veterans of both Army Space Support Team and Space Support Element assignments. Often these officers see the value of both elements and recognize the potential of using both organizations in a collaborative method.

From the combat developer's perspective both Army Space Support Teams and Space Support Elements are necessary in today's Army as well as in the future formations we field. There is no argument or doubt that Space-based capabilities are becoming increasingly important to land component forces each year. As the full effects of fielding modular forces with new weapons is felt, Space support will assume increased importance, though it might not be readily apparent to the average Soldier. Yet that same Soldier will need Space-based capabilities including precision navigation and timing, satellite communications, Space-based imaging and missile warning, as well as, weather and environmental assessments. These Space-based capabilities must be planned and integrated into full spectrum operations and training. Space effects must be synchronized with the scheme of maneuver, as well as, in the concept of support in a well thought out and seamless fashion. Both the Army Space Support Teams and Space Support Elements are crucial to making this Space planning, integration and operational effectiveness possible.

Unlike the Ford-Chevy rivalry, in which each automobile company was a competitor, the Army Space Support Team and Space Support Elements are partners. Ideally they work together in full collaboration to provide tactical Space support to the warfighter. Although they have similar equipment and are manned by personnel who possess similar training



and expertise, the Army Space Support Team and the Space Support Element have different primary missions. These missions are related and complimentary, but they are different.

Space Support Elements are presently assigned to 10 Division headquarters and one Army headquarters. In addition the Army is in the process of fielding a Space Support Element to the XVIII Airborne Corps. Eventually each active and reserve Division, Corps and Army headquarters will have an organic Space Support Element. The Space Support Element is a staff element, which functions not unlike many other staff elements. As part of the organic staff, Space Support Elements plan, integrate, and coordinate global and theater Space capabilities to support their units' plans and operations. Additionally Space Support Elements serve as the commander's primary advisor on the capabilities, limitations, and availability of friendly, enemy and neutral Space assets.

The Space Support Element is an integral part of the staff and is directly involved in the staff planning process from the beginning. The element is responsible for identifying opportunities to employ Space Force Enhancement, or Space Control, and then coordinating for the required support. The Space Support Element participates in the staff planning process and the conduct of mission analysis to determine which Space-based capabilities are applicable to the particular operation and then coordinating and making recommendations for the allocation and utilization of Space support. The mission analysis performed by the Element forms the basis of the staff's Space running estimate as well as Annex N for all orders and plans.

On the other hand the Army Space Support Team is primarily responsible for the execution of tactical Space support, and production of related products. The Army Space Support Team complements the Space Support Element and often takes it direction from the element. Army Space Support Teams obtain or produce Space products, such as 3-D visualizations, satellite overflight reports, scintillation reports and imagery maps. Army Space Support Teams are also responsible for the continuous monitoring of the Space environment, including the operational status of Space vehicles, Space weather and

other Space events. Lastly, Army Space Support Teams have the ability to serve as Tier 1 missile warning nodes if required. In short, Army Space Support Teams are not a Ford or Chevy but rather the engine. The team is the task executor and capability provider.

Today we don't think much in terms of the Ford-Chevy rivalry. Both companies failed to adapt and evolve to the changing market; consequently their importance and impact have diminished. The Army cannot afford to make a similar mistake! Throughout the remainder of this decade, and into the next, the Army will continue to evolve, though our mission and responsibility to the nation will remain unchanged. The ongoing war, emerging threats, modular organizations, new equipment, and fiscal constraints will change the Army of today. Our operational capabilities will change as we change structure, manning and equipment. In this dynamic environment it is foolish to assume that Army Space Support Teams and Space Support Elements will remain static. Army Space Support Team and Space Support Element organizations, equipment and manning will evolve over this next decade to meet changing mission needs. We don't know exactly what each will look like, or be capable of, in 2015 but we do know that land component forces will still need tactical Space support. Army Space forces will continue to analyze, plan, integrate and employ Space-based capabilities in a holistic and seamless fashion in support of the warfighter. The capabilities that the Army Space Support Team and Space Support Elements bring to the fight today will be necessary in the future.

In summary, Space Operations Officers need to broaden their thinking concerning the teams and the elements. Army Space Support Teams and Space Support Elements are not competitors that bring redundant capabilities to the warfight. Rather they are complementary elements that work in a collaborative fashion in order to provide tactical Space support. Lastly, Space Operations Officers need to recognize that Army Space Support Teams and Space Support Elements are going to continue to evolve to meet changing mission requirements, but the unique skills and expertise that they bring to the warfight will still be in demand. 🤖

The FUTURE OF ARMY SPACE FORCES

A Vision to Optimize Tactical and Operational Space Support

By LTC Bob Guerriero,
LTC Tom James and LTC Jim Rozzi

This vision paper is intended to encourage debate and discussion regarding the future evolution of Army Space Forces. The statements and recommendations contained in this paper are solely the opinions of the authors, and do not represent official positions of the Future Warfare Center, U.S. Army Space & Missile Defense Command/U.S. Army Forces Strategic Command, or the United States Army.

Space support to Land Component formations continues to evolve as the requirements for Space support change and grow. This evolution is apparent in the methods and procedures used to deliver Space support, as well as in the organizational structure that is developing and expanding to provide this support. The Army's current organizational structure for Space is largely a result of the confluence of the Global War on Terror and the effects of Army Transformation. Specifically, Army Space Support Teams and Space Support Elements have been modified in terms of both organization and function even as we work to complete the fielding of these Teams and Elements across the Modular Army. Today's structure, including both personnel and equipment, is not optimized to deliver Space support for current operations and will not be adequate in the future without additional evolution. This paper will address Land Component Space support needs, the organizations designed to deliver this support, the roles and functions of those organizations, and recommendations for optimizing the quality and effectiveness of Space support.

SPACE SUPPORT NEEDS FOR LAND COMPONENT FORCES

The United States is becoming increasingly reliant on Space-based capabilities for military operations. Space assets have revolutionized communications, navigation, intelligence collection, ballistic missile warning, environmental monitoring and precision targeting. The effective application of Space-based capabilities is mis-

sion essential for the Land Component Command, even as their requirements for Space support change across the spectrum of operations and from region to region.

Space Force Enhancement Needs

Space Force Enhancement functions are similar to combat support operations in that they improve the effectiveness of forces by providing operational assistance to combat forces. FM 3-14 (Space Support to Army Operations, May 2005) lists five Space Force Enhancement functions: communications; position, navigation and timing; environmental monitoring; intelligence, surveillance and reconnaissance; and theater missile warning.

Satellite Communications (SATCOM) Army and Marine Corps units rely heavily on Department of Defense, civil and commercial communications satellites. Units must monitor the health and status of on-orbit assets, and occasionally request the reallocation or movement of Space vehicles to meet critical communications needs. Land Component Command staffs must understand the impacts of any interruptions of SATCOM service to the command operations and develop courses of action to mitigate these impacts. Space-based blue force tracking has also become a critical enabler for military operations, and Land Component Command staffs must develop architectures to support operations and resolve Space-based blue force tracking problems when they occur. Additionally, Land Component Command staffs must be capable of integrating emerging Defensive Space Control capabilities in order to ensure SATCOM access.

Position, Navigation, and Timing Navigation through



Space Soldiers deploy in small units and are attached to larger elements. They provide a huge return for the size of the element because, on the modern battlefield, knowledge is power and timely and accurate knowledge is supreme power. *Photograph courtesy of SMDC/ARSTRAT*

the use of satellites allows for extremely accurate maneuver and targeting. Many systems also depend on Global Positioning System (GPS) timing for the synchronization of communications. The number of land force systems that have an integrated GPS receiver is large and growing, to the point that numerous missions are dependent on it. Widespread use of GPS in military operations in the last few years has uncovered unforeseen problems, and Army and Marine unit staffs are now routinely required to resolve complex, technical anomalies with GPS in support of operations. Furthermore, staff members must monitor the accuracy of GPS and the effect this accuracy may have on current and planned operations.

Environmental Monitoring Terrestrial and Space weather can have substantial impacts on the Space-based capabilities used by Land Component units. The Land Component Command staff must understand these impacts and their effects on current and planned operations.

Intelligence, Surveillance, and Reconnaissance Space-based intelligence, surveillance and reconnaissance assets have always been a key component of strategic indications and warnings, but are becoming increasingly important in their support to tactical operations. Land Component Command staffs must have a thorough understanding of the technical capabilities of a wide variety of national and commercial on-orbit assets, and must remain aware of emerging capabilities in order to be prepared to effectively integrate them when available.

Theater Missile Warning Space-based assets are a critical component of our Theater Missile Warning architecture. Technical expertise of satellite systems and associated architectures is required to effectively integrate these assets for accurate and timely Theater Missile Warning.

Battle Space Characterization Battle Space Characterization, although not doctrinally a separate Space Force Enhancement function, is the use of satellite products to better understand the events in the commander's Operational Environment. Much of the work in this area focuses on integrating existing and developing capabilities in non-traditional methods. Overhead non-imaging infrared systems are a primary contributor to Battle Space Characterization.

Space Control Needs

Space control operations ensure freedom of action in Space for the United States and its allies and, when directed, deny an adversary freedom of action in Space. Defensive Space Control ensures friendly access to satellite capabilities while Offensive Space Control denies the enemy use of these assets to gain advantage over U.S. and coalition forces. Neither Defensive nor Offensive Space Control is possible without sufficient Space Situational Awareness that provides a detailed understanding of the technical parameters and status of pertinent satellites, and how all forces (enemy, neutral and friendly) are integrating capabilities from these systems.

The Land Component Command staff must have a thorough knowledge of any national or commercial Space capabilities available to the enemy, and the techniques and procedures used to employ those capabilities. The staff must also provide targeting recommendations (lethal and non-lethal) aimed at mitigating advantages that an adversary may gain from leveraging satellite technologies.

Prior to the integration of Army Space Professionals into Army units, no single staff element of these organizations examined Space integration in a comprehensive manner. Army



Currently capabilities like the Space Support Elements and Army Space Support Teams support a variety of commands at all levels along the chain. These resources greatly expand capabilities when they are utilized correctly. *Photograph courtesy of SMDC/ARSTRAT*

Space Professionals bring this comprehensive approach to Space integration, and provide a body of experts focused on understanding the Land Component formation mission as well as methods to innovatively integrate satellite technologies into operations. These technologies include legacy systems designed primarily for strategic purposes during the Cold War, as well as emerging research and development satellite technologies as they become operational.

ARMY SPACE SUPPORT TEAMS AND SPACE SUPPORT ELEMENTS

Army Space Support Teams and Space Support Elements have been developed primarily to provide Space support to operational and tactical Army forces. Although similar in some respects, Army Space Support Teams and Space Support Elements have important differences that enable them to perform their respective functions.

Doctrinal Background Information

According to FM 3-14, *“The mission of the ARSST is to deploy worldwide to provide force enhanced Space support during operations and exercises. The ARSST brings with it a comprehensive variety of capabilities and products The strength of the support team concept is in its forward presence, which gives a front-line awareness of Army warfighter needs and the ability to provide fast, tailored solutions [to the supported unit].”*

Army Theater Space Support in Joint Operations — Today, July 26, 2006, provides a succinct but detailed description of the Space Support Element mission:

The Space Support Element provides organic space operations planning and support to the commander,

staff, and subordinate organizations and understands the force’s inherent reliance on Space in all areas. The senior Space Operations Officer advises the commander and staff on capabilities, limitations and availability of Space assets (blue/grey/red). The Space Support Element is first and foremost a planning agent providing recommendations, coordinating Space-based products and services, and preparing Space input to plans and orders. The Element assists the G2 with space IPB, the G6 with SATCOM resource planning and allocation, the G3 with the integration/fusion of Space-based blue force tracking and the entire staff with non-tactical imagery and products such as GPS predictions/assessments and force protection through missile warning. The Element is active in the targeting process, to include the Space portion of Information Operation/non-lethal effects of planning. The Element at the Joint Forces Land Component Command will be capable, when augmented, to provide manning at the Space Coordinating Authority at the Joint Forces Air Component Command or if the Joint Forces Land Component Command is designated as the Space Coordinating Authority, perform this function as well.

Manning

The Army Space Support Team comprises a team leader, FA40 MAJ; a deputy team leader, branch immaterial CPT; an enlisted 35F Intelligence Analyst; an enlisted 25S Satellite Communications Systems Operator-Maintainer; an enlisted 25B Information Technology Specialist; and an enlisted 21U Topographic Analyst. Of 27 projected Army Space Support Teams, 18 have been fielded.

The Division Space Support Element comprises

Space control operations ensure freedom of action in Space for the United States and its allies and, when directed, deny an adversary freedom of action in Space. Defensive Space Control ensures friendly access to satellite capabilities while Offensive Space Control denies the enemy use of these assets to gain advantage over U.S. and coalition forces.

a section chief, FA40 LTC; a Space Operations Officer, FA40 MAJ; and two SSG 25D Satellite Communications Systems Operator-Maintainers. Space Support Elements have been fielded to eight Active Divisions and partially fielded to two National Guard Divisions. The Corps element will be comprised of a section chief, FA40 LTC; two Space Operations Officers, FA40 MAJ; and two SSG 25D Satellite Communications Systems Operator-Maintainers. The Army Headquarter element comprises a chief, FA40 COL; four Space Operations Officers, two FA40 LTC and two FA40 MAJ; and one SSG 25D Satellite Communications Systems Operator-Maintainer. Currently, 3rd Army is the only Army Headquarter with a Space Support Element; four Army Space Support Elements remain to be fielded.

Expertise

Division, Corps, and Army Headquarter Space Support Elements possess two, three and four times the number of FA40s respectively as an Army Space Support Team, and the chiefs are LTCs (Division and Corps) and COL (Army). A Space Support Element possesses both a greater level of Space expertise and a greater level of experience and military education than does an Army Space Support Team. A Space Support Element chief at the LTC or COL rank may have had several tactical and strategic level Space assignments prior to reporting to his element assignment, and may have served as an Army Space Support Team leader as well. Because of its organic nature, rank structure and the level of military education and experience, the Space Support Element is organized to be comparatively more able to participate in planning and to manage integration of Space forces, especially at Corps and Army levels, than is the Army Space Support Team. The Army Space Support Teams are better manned, trained, and equipped to rapidly create a large quantity of specialty Space products without relying on the Operational Control headquarters' constrained bandwidth.

Space Support Enhancement Toolset

The Space and Missile Defense Battle Lab produced Space Support Enhancement Toolset prototype was developed to enable deployed Army Space Support Teams and Space Support Elements to execute their required Space tasks while remaining self-sufficient. The Space Support Element Toolset includes a commercial SATCOM capability, currently the Segovia-based Space Application Technology User Reachback Node (SATURN) that provides both secure and non-secure two-way dedicated bandwidth. The Space Support Element Toolset also includes four Space Operations System Computers that provide Space-specific software and hardware for Space Support Elements, Army Space Support Teams, and stand-alone Space Operations Officers. In addition, the Space Support Element Toolset contains an INMARSAT (International Marine/Maritime Satellite) terminal, Iridium satellite phone, and an imagery and map plotter.

Space Analysis Tools on the Space Operations System consist of several Space-specific software packages, including the Space Common Operating Picture and Exploitation System, Space Battle Management Core System and Satellite Tool Kit. Together, these software provide Space estimates and analysis, satellite SATRAN (Satellite Reconnaissance Advanced Notice) reports with visual representation, some missile launch analysis capability, GPS navigational accuracy reports and modeling, satellite-to-ground look angle calculations, analysis of Space weather effects on terrestrial and satellite radio communications, orbital estimations, satellite overflight data, quick access to Space Tasking Orders, and three-dimensional (3D) visualization of satellite constellations and their orbits. The Space Battle Management Core System software will eventually be phased out and replaced by Single Integrated Space Picture (SISP v1.0). Space Support

(See The Future, page 40)

Army Space and Missile Defense Command's "Position on Space"

By MAJ Patrick O'Brien

The JP 3-14, Joint Doctrine for Space Operations, is under periodic revision. Given the pace of operations and the very rapid evolution, development, and fielding of new Space systems over the past five years, this updated publication is likely to be profoundly changed from its current form. This new publication will greatly impact all Army Space forces until the next update scheduled for 2014. In the summer 2007, there will be a contingent designated by Department of the Army to represent our interests during the rewrite of the publication. This article describes an ongoing effort to define the "Official SMDC Position on Space." When completed, this document will evolve into the Army's Position on Space and will serve as a guide to ensure that the new Joint Doctrine will support all of the services needs over the next several years.

Since JP 3-14 was last published in August 2002, there have been numerous updates in Space products and equipment as well as new missions and requirements demanded of the Army Space Cadre. With that have come new Tactics Techniques and Procedures, Command and Control relationships, and other procedures developed by Army Space personnel that have yet to be fully captured and codified so that we may update Joint and Service doctrine. We at the Future Warfare Center's Directorate of Combat Development need your help in encapsulating these innovative measures that you have seen or developed to ensure that the rapidly evolving Space doctrine keeps pace with what you are doing in the field. This article is intended to provide inspiration for you to give us exactly that type of input.

We have already conducted a limited internal review of key personnel at U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command in Colorado Springs to gauge the scope of this effort and have encountered some interesting conundrums with regard to Joint and Coalition operations. These obstacles include, but are not limited to: force deployment and structure, command and control, prioritization and apportionment of Space assets, component roles and responsibilities, as well as the extent and function of reachback. Enumerated below are three draft positions under consideration for inclusion in the guidance to the Army's rewrite team to JP 3-14. Expansion, explanation and possible objections are addressed for the first three issues. Other possible positions are listed at the end of this article. What will really assist the Directorate of Combat Development in developing the position on Space is for you to send in your thoughts on each of these three positions.

POSITION 1

The Space Coordinating Authority (SCA) should be a joint billet with a joint staff for every Combatant Command

Recently, the Space Operations Officer that served in Operation Iraqi Freedom as the Deputy Director of Space Forces for Central Command gave his thoughts on this subject. The discussion was focused on how things are being done within that theater of operation, what was working extremely well, and how to capture those working relationships so as to codify doctrine to match those success stories. One of the major results from the

A problem that arises from such a broad definition of Space control is that an infantry platoon destroying an enemy satellite's ground station falls under the realm of Space Control Negation. Similarly, a Military Police unit assigned to perform security for a Joint Tactical Ground Station unit is performing Space control protection yet neither of these units fall under the purview of SMDC/ARSTRAT.

discussion is the draft Army position that the Space Coordinating Authority be a joint billet, appointed by the Joint Task Force Commander.

This concept has roots in the current version of JP 3-14. The current publication defines a "Space Authority" with coordinating authority in all Space related matters. The following is from page ix: "To facilitate unity of the theater/joint operations area Space effort, the supported combatant commander or a joint force commander may designate a Space authority. The Space authority will coordinate Space operations, integrate Space capabilities and have primary responsibility for in-theater joint Space operations planning." "Joint Space operations planning" implies a joint billet with joint manning. Although the name Space Authority has recently morphed to Space Coordination Authority, the current JP 3-14 does not define a Space Coordination Authority's supporting staff. Recent operational success in Operations Enduring Freedom and Iraqi Freedom can provide a template to answer that question.

Within Central Command, there are two organizations that are working very well together to ensure that Space assets and effects are equitably allocated for the entire theater. Those two organizations are the Air Component Coordination Element for the Combined Forces Air Component Command and the Army Space Support Team assigned to Multinational Coalition Iraq. When considering the Space effects produced, those two organizations function together seamlessly. In an effort to ensure that this success story serves as a model for future combat operations, this draft Army position should be incorporated into the rewrite of the JP 3-14.

Under this organizational scheme and following the logic presented in the current JP 3-14, the Joint Task Force Commander

would appoint the Space Coordinating Authority which would be coded as a Joint billet. The Space Coordination Authority would then be the head of the Joint Space Coordination Center on the J 3 staff. Initial staffing of the Joint Space Coordination Center should be composed of Air Force personnel similar to that of the Air Component Coordination Element and Army personnel similar to the complement of an Army Space Support Team. The Air Force officer assigned to the billet Director of Space Forces would be ideal to lead the Air Force personnel on that staff section and act as the senior Space officer for the Air Force. Similarly, the officer that would have held the position as Army Space Support Team leader could be designated as the Director of Army Space Forces. Of course, the Joint Space Coordination Center staff could have additional personnel assigned from any of the services dependent on METT TC.

This position will likely have strong opposition from the Air Force. The following are excerpts from definitions in Air Force Doctrine Document 2.2, Space Operations, dated November 2006.

- The commander of Air Force forces is the senior U.S. Air Force officer designated as commander of the US Air Force component assigned to a joint force commander. The commander of Air Force forces is the senior Air Force warfighter who exercises command and control over all assigned and attached air and Space forces.
- The Space Coordinating Authority is an authority within a joint force aiding in the coordination of joint Space operations and integration of Space capabilities and effects. Space Coordinating Authority is an authority, not a person.

Since the commander of Air Force forces commands all Air
(See *Position on Space*, page 48)

Space Assets: Key Combat Enabler for Multinational Force West

By MAJ Michael Russell

UFO, GPS, DSP. What do these three acronyms have in common? If you answered Space, as in “the final frontier,” then you’re absolutely correct. Each acronym (UFO — Ultrahigh Frequency Follow-On, GPS — Global Positioning System and DSP — Defense Support Program) represents a different constellation of Department of Defense satellites; satellites that provide critical combat support to warfighters around the globe. Those Space professionals reading this will see this opening statement as a real “duh” kind of thing, but to a group of U.S. Marines who knew nothing about space support, they became central to acquiring support they never dreamed possible.

In Iraq, Space teams are supporting the division, multinational corps, and combined air and ground component headquarters levels, all of whom are supporting the Global War on Terror.

One Army Space Support Team recently returned from Iraq and although they were only at half strength, they made a huge difference for some U.S. Marines and they brought Space support to a whole new level in the war on terror.

At an outpost in Iraq, a Joint Space Support Team, supporting the I Marine Expeditionary Force (Forward), turned those Space assets mentioned above into combat enablers on a daily basis during their tour of duty. They were breaking new ground. The team, which is the first and only Joint Space Support Team in the United States Central Command Area of Responsibility, consisted of Soldiers, Marines and an Airman.

This unique team was led by a Space-smart Marine Corps artillery officer. “This is a complex leadership position,” said MAJ Michael Russell, team leader of the Army Space Support Team that was wrapped into the

Joint effort. “He had to be able to communicate in three different languages (Marine-speak, Army-speak and Air Force-speak) and then he had to help the joint team members produce meaningful and effectively tailored products to support a variety of operations with differing needs.”

Many people probably think that a Space product will be as helpful to an aviator as it would be to a grunt, but this is not the case. Marine Regimental Combat Teams have different missions and therefore different informational parameters than an Army Brigade Combat Team, or a Marine Air Wing, or a Marine Expeditionary Unit.

A Marine Chief Warrant Officer 2, also an artillery officer, assisted the Air Force and Army members in the integration of automation and Space effects to Marine ground operations.

The Army Space Support Team was from U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command at Peterson Air Force Base, Colo. It was a 3-man team and besides Russell, an experienced Space Operations Officer (FA40), it consisted of an Intelligence Sergeant and a Topographic Specialist. The Air Force contribution to the Joint team was a Space Weapons Officer.

The Joint Space Support Team is responsible for integrating space assets and effects into operations across the Al Anbar Province in western Iraq. They directly support I Marine Expeditionary Force (Forward) and all subordinate units in the province. Within military occupation specialties of combat, combat support and combat service support, Space is combat support, akin to intelligence or communications.

The Army and Air Force members of the team bring a wealth of Space equipment to the fight in Iraq: Iridium



Soldiers check on a satellite antenna that is used to provide space support to the warfighter.

Satellite cell phones, a SATURN antenna dish for secure and non-secure global network access, an Air Force system to receive satellite broadcasts, and computer hardware and software to put these and other tools to good use.

“We have a good equipment set to fall in on in theater,” said SGT George Mead, Army Space Support Team member. “As with everything else, we had to modernize it as we went. We would refurbish, repair and update it as required in order to maintain the level of support the units required.”

If there existed a piece of equipment that the team felt would help them prosecute the fight, they would go after it and see if they could add it to their arsenal. Their bottom line was whether or not it would support the warfighters in the field.

However, it’s not the equipment that the Marines were missing so much as the Army and Air Force knowledge of how to acquire the benefits Space can provide. This knowledge, expressed in the idioms of the respective services was not always easy to decipher and use effectively.

“This is where the team’s commander really earned his money” said Russell. “He was an enabler, giving us the support and information we needed to be able to produce precise, targeted products and to provide vital information to the entire spectrum of units operating in our corner of Iraq. He worked through the Marine Corps structure and helped us to be as effective as we could possibly be.”

Historically, Space support to the warfighter has encompassed satellite communications, GPS navigation for ground troops and weather forecasting. Today’s Space applications go beyond these traditional products. Space now plays a significant role in many missions, such as detecting and disseminating warning of theater ballistic missile launches, providing precise navigation solutions for a variety of munitions like the Guided Multiple Launch Rocket System and Army Tactical Missile System, and actively engaging in

the search for downed aviators and missing persons during a Personnel Recovery Operation. The I Marine Expeditionary Force (Forward) Joint Space Team has supported all of these missions, and more.

“Our team, along with literally hundreds of Space personnel across the globe — from Baghdad, to Doha, to Colorado and California — stood ready to support the fight here in Iraq,” said Mead.

As each new Space Support Team rotates into theater, the Soldiers, Marines and Airmen not only appreciate what each brings to the fight, they build on it and the role Space plays in that fight simply grows. Russell’s team along with the Air Force member and the Marines who supported them are home now. A new team has fallen in on the equipment and is continuing the mission, enlarging the support they provide as ideas and concepts they try prove effective. It is the way of the military, no matter what service you are in.

The Joint Space Support Team is a success story. So much so, in fact, the next Marine Command in Al Anbar Province, II Marine Expeditionary Force (Forward) has continued to utilize the Joint Space Support Team that replaced Russell’s. According to JSSC team leader LTC Robert Terselic, “the U.S. fights as a Joint team ... it only makes sense that our Space team is Joint.”

MAJ Michael J. Russell entered the U.S. Army in 1989 as an Infantry Private in the 1st Ranger Battalion. He was commissioned through Officer Candidate School in 1995 into the Infantry. He served in the Panama Invasion and Operation Iraqi Freedom I. Russell’s space assignments include: Space Operations Officer, U.S. Army Kwajalein Atoll, U.S. Army Space & Missile Defense Command and, most recently as the Army Space Support Team (ARSST) 4 Team Leader in 2nd Space Company for the First Marine Expeditionary Force in Operation Iraqi Freedom. He is currently the commander of 2nd Space Company, 1st Space Battalion, 1st Space Brigade.

“Pin” Stripes



SPC Joshua Foye, (facing camera) was recently adopted into the Non-commissioned Officer ranks by promotion to the rank of Sergeant in a simple ceremony in Iraq. Foye has clearly demonstrated his potential and is now recognized for his efforts. He is a member of the 1st Space Brigade. *Photograph taken by MSG Dennis E. Beebe*

In the Army promotions are watershed moments. One minute a Soldier is subordinate and the next he or she is a leader. Or, at least that is how it may look to the uninitiated. While these promotions occur with some ceremony, there is a certain austerity about them as well. The individual receives the new rank and goes right on about the business of defending the nation.

One of the biggest jumps for the individual Soldier is from Specialist to Sergeant. As the promotion order says, special trust and confidence is placed in the person being promoted. This has taken a long period of training and observation by the leadership before someone is entrusted with leading others. It is both an honor and a responsibility that is bestowed with the stripes.

Space Soldier reenlists in Iraq



MAJ John Hennessey (l.) officiated the reenlistment of SSG Yolanda Rife (r.) in Iraq. Rife's husband Bill, a contractor stationed in Iraq held the flag during the ceremony. *Photograph taken by MSG Dennis E. Beebe*

BAGHDAD, Iraq — Reenlistments are a common occurrence in the Army, but one recent reenlistment stood out among the rest. SSG Yolanda T. Rife is the first U.S. Army Reserve Space Soldier to reenlist in theater. Rife has been here for three and a half months out of her one-year-tour, and her husband Bill, a government contractor, is also located here at the Victory Base Complex, and was able to attend the ceremony. Rife's son is a college freshman, attending Sacramento City College in Sacramento, California and lives with Rife's parents while his own are deployed.

A member of Army Space Support Team 18, Rife took the reenlistment oath from her commander, MAJ John Hennessey on a balcony of the Al Faw Palace at Camp Victory. Rife is assigned to provide Space support to Multi National Corps — Iraq headquartered here in one of Saddam's former palaces.

When asked why she reenlisted, Rife said "I love my

God, my country and the U.S. military." Rife has volunteered to come back into the Army Reserves, volunteered to come to Iraq, and now she has volunteered to stay another six years in the Army.

A veteran of the first Gulf War, Rife previously was in Iraq in 1990-91 in support of the 1st Armored Division, in a Signal Support role. Her plans after this deployment are to MSG Dennis E. Beebe has 24 years combined Active Duty and Reserve experience as a photographer, psychological operations specialist and photojournalist. He has been deployed to Haiti, Korea, Bosnia, Afghanistan and Iraq and has been stationed in various locations in the Continental United States and Hawaii. Beebe is currently serving with the Multinational Corps-Iraq, Joint Operations Center Public Affairs Office.

Mission ACCOMPLISHED!

CET returns from the fight

By Ed White



CPT John Yungbluth receives a welcome home hug upon his return from his tour supporting Operation Iraqi Freedom. The Commercial Exploitation Team is one of several units from U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command currently supporting operations in the Middle East. *Photograph taken by DJ Montoya*

PETERSON AIR FORCE BASE, Colo. – Welcome home and farewell ceremonies are a staple part of life at U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command. Soldiers deploy and redeploy regularly. It's part of their jobs. Recently the Commercial Exploitation Team from 2nd Space Company, 1st Space Battalion redeployed from the Middle East after a tour

of duty supporting Operation Iraqi Freedom.

"I could not have asked for a better team," said MAJ James T. Bushong, team leader. Each and every one of these Soldiers worked their tails off to support the fight."

"There are Soldiers, Sailors, Airmen and Marines who are alive today and a whole bunch of terrorists who are not because of the support

this team provided,” said LTC Lee Gizzi, battalion commander, 1st Space Battalion.

“They increased their productivity by a factor of three from the previous team,” said MAJ Rob Gray, their company commander. “They have set the bar very high for their follow-on team.”

COL Timothy Coffin, brigade commander, 1st Space Brigade addressed the assembled Soldiers and civilians during the welcome home ceremony. “Each one of these Soldiers brought something special to the mix,” Coffin said. “They were engaged and brought their special skills and experience to bear in support of the warfighter. I couldn’t be prouder of a team and their accomplishments.”

Bushong returned to Gizzi a coin he was given when he took the team overseas. The coin acted as a rallying point for the team, a reminder of the importance of the mission and as a tangible reminder of the support they had from home. With each deployment from the battalion a coin is given to the team or element leader and every one has been brought back successfully. There are

25 of these coins hanging in the battalion’s conference room, all of which date from 2003 to the present.

“You were given two missions a year ago,” Gizzi said. First was to support the warfighter with your CET system. Mission accomplished! Second was to return home with your troops and equipment intact. Mission accomplished!”

For those who do not deploy, very little changes. Their lives go on pretty much the same. For those who deploy, their lives can be entirely different for the experience. Every day in a war zone brings its own stress, its own surprises, both good and bad. No one who spends any time in a war zone comes away unscathed, unhurt. It’s just not possible. But the war goes on and more Soldiers go and then come back changed by the experience.

Ed White has 21 years experience in military public affairs and is currently an editorial assistant working for the Future Warfare Center Directorate of Combat Development to help produce **the Army Space Journal**.

2007 SMDC/ARSTRAT NONCOMMISSIONED OFFICER AND SOLDIER OF THE YEAR



SGT PATRICK J. MANN



SGT MARTIN A. JENSEN

SGT Patrick J. Mann was selected as the 2007 U.S. Army Space and Missile Defense Command Noncommissioned Officer of the Year, and SGT Martin Jensen was selected as the 2007 SMDC/ARSTRAT Soldier of the Year after a weeklong competition in June. Be sure to read the next issue of the Army Space Journal for an in depth look at the competition.

Tip of the Sphere



Above, Army Astronaut, COL Jeffrey Williams spoke to students at Skyview Middle School in Colorado Springs, Colo., April 27; left, Williams answers a question from Skyview Middle School World Languages Teacher, Rosie Adair; below, Skyview Middle School students hold a banner welcoming COL Williams to their school. Williams, the Flight Engineer and Science Officer for Expedition 13, narrated a video presentation of his six month mission onboard the International Space Station. Williams and crewmate Russian Cosmonaut Pavel Vinogradov were onboard the ISS from March 30 –Sept. 28 of last year. German Astronaut Thomas Reiter joined them in July returning the ISS to a three person crew. *Photographs taken by Sharon L. Hartman*



“Visitor” from Space

By Sharon L. Hartman

COLORADO SPRINGS, Colo. — Are we alone in the universe? That question remains to be answered, but students at Skyview Middle School here received a special “visitor” from space last week, as Army Astronaut, COL Jeffrey N. Williams dropped in to give two presentations to the students April 27.

Williams was part of last year’s successful and historic mission, Expedition 13, which had a six month stay on the International Space Station from March 30 - Sept. 28. He is the first active-duty Soldier to stay onboard the ISS and was part of a three-person crew, which included Russian Cosmonaut Pavel Vinogradov and German Astronaut Thomas Reiter.

During the presentations at Skyview, Williams narrated a video overview of his trip, to include experiments and space walks, and then displayed an array of photos taken from space. Some of the pictures were of events that took place on Earth during his mission, to include volcanic eruptions and hurricanes. Others were of natural and man-made forms on Earth that left the students, ranging from sixth to eighth grade, in wonder at the stunning, dreamlike images.

After the presentations, Williams fielded questions from the students and staff, with the answer to one particular question receiving the loudest response. The question: “How do you take showers in space?” The answer: “You don’t!” After a resounding “EEEEWWWWW,” Williams explained that because of the zero gravity environment, it’s impossible for them to use water to shower, as it will not drop the way it does on Earth, but he assured the students that astronauts keep clean in space using wet wipes and rinseless shampoo designed for hospital patients who cannot bathe.

Williams also related to the students how his career came

about. “I never thought it would be possible to be an astronaut,” said Williams, a 49-year-old graduate of West Point and former experimental test pilot. Williams was actually turned down several times before being accepted into the astronaut program. His words of wisdom to the students: “Study hard, reach for goals higher than you can imagine achieving and persevere.”

Before he left, Williams gave special recognition to one of Skyview’s science teachers. Lura Moore, the head of Skyview Middle School’s Challenger program, received a mission patch from Williams for her dedication to teaching students about space. As part of the program, students learn about space and space objects, and perform mission simulations for a grade. Students have “Rendezvoused with a Comet” and gone on a “Mission to Mars,” to name a couple. When asked how many students had participated in the Challenger program, a sea of arms rose over the audience, giving testament to the lives that Moore has touched.

“This is so exciting to get a mission patch,” said Moore. “That’s what we’re working on now in our class. Designing our mission patches to put on our shirts.”

Later in the afternoon, Williams also conducted a presentation at Building 3 on Peterson Air Force Base, for the Soldiers, civilians and their families, and signed autographs. The following day, Williams spoke at the “Back to Genesis” conference at Rocky Mountain Calvary Chapel to close out his trip to Colorado.

Sharon L. Hartman is a Department of Defense Contractor with COLSA Corporation and has served U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command Public Affairs Office at Peterson Air Force Base, Colo., for more than seven years. She is the senior editor and technical director of **the Army Space Journal** and the managing editor of SMDC/ARSTRAT’s worldwide stringer program.

Command In Brief

“Swift”ly Achieving Goals

By DJ Montoya

PETERSON AIR FORCE BASE, Colo. — Setting goals, both short and long term, is part of any noncommissioned officer's career. SSG Jennifer Swift is no exception. She recently achieved one of four short term goals — induction into the U.S. Army Space and Missile Defense Command/ U.S. Army Forces Strategic Command Chapter of the Sergeant Audie Murphy Club.

SGT Leon Audie Murphy was one of the finest non-commissioned officers in the U.S. Army during WWII. His leadership on the battle field of Europe demonstrated the ideals of an American non-commissioned officer. SGT Murphy displayed immense courage and bravery at great personal risk.



CSM Kevin McGovern from the 1st Space Brigade places the Sergeant Audie Murphy medallion on SSG Jennifer Swift, from the 53rd Signal Battalion, during her induction into the U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command chapter of the Sergeant Audie Murphy Club. *Photograph taken by DJ Montoya*

Induction and membership in the SMDC/ARSTRAT Sergeant Audie Murphy Club is a reward for noncommissioned officers whose leadership achievements and performance merit special recognition and who have contributed significantly to the development of a professional NCO corps and a combat ready Army. Members demonstrate superb leadership characterized by personal concern for the needs, training, and development of their Soldier, as well as concern for their Army families.

Swift, a 25-year-old native of Redding, Calif., is currently the 53rd Signal Battalion operations noncommissioned officer and received her honor during a brief ceremony on the morning of Feb. 21. She is the twentieth inductee into the SMDC/ARSTRAT chapter since its creation back in 2001.

According to Swift, hard work and patience have paid off for her.

“I’ve been trying to do this for a couple of years,” she said.

“I found myself going on missions every time they either did the first or the second board.”

However, in the past six months — especially around the December time frame — Swift found the time and determination to focus on her goal. SMDC/ARSTRAT CSM David L. Lady commented on her accomplishments prior to the induction by saying, “This is a leader of Soldiers on Schriever Air Force Base and in Baghdad, who succeeded at every task, but most importantly the task of caring for and training her Soldiers.

“She has proven that in deployments. She has proven that in day-to-day operations. She is trusted by her Soldiers as well as her leaders. And she is being recognized by this Army Program in order to distinguish her from among all of her peers right now in the Signal Corps and in the Army.”

In recognition of her demonstrated professionalism and excellence, Swift received the Sergeant Audie Murphy Club medallion and certificate.

As part of the ceremony Swift was also awarded the Army Commendation Medal by BG (then COL) Roger F. Mathews, deputy commander for operations, SMDC/ARSTRAT, for her selection and induction into the club.

Swift recommends to others in her battalion, and command wide, to think about competing for the honor.

“I’ve talked to some individuals a couple of weeks



Installers put the finishing touches on the restoral terminal next to the Echo Company Wideband Satellite Operations Center on Fort Buckner, Okinawa, Japan. *Photograph taken by CPT Todd M. Vick*

ago. And it is really something that they should definitely look into because they have the qualities that embody a candidate for the Sergeant Audie Murphy Club.”

Swift has been part of the SMDC/ARSTRAT family since early 2002 working as a network controller and squad leader with 53rd Signal Battalion at Schriever. In January of 2005 she deployed in support of Operation Iraqi Freedom as a team member for the Space Support Element assigned to the 3rd Infantry Division. She returned to SMDC/ARSTRAT in August of 2005 and has been here since.

Her next short term goal is getting married at the end of March and hopefully making sergeant first class next year.

Borrowed Satellite Keeps Mission Going

By SGT Vicente Gonzalez

FORT BUCKNER, OKINAWA, Japan — Recently, Echo Company had to borrow an AN/GSC-52 satellite terminal. This restoral terminal or “R/T” is being used to support the ongoing mission during regularly scheduled RADOME

maintenance at Fort Buckner’s Wideband Satellite Operations Center and Satellite Communications facilities.

The R/T has traveled extensively since it was put into service in support of the AN/GSC-52 modernization program in 2000. Most recently, the terminal was on Kwajalein Atoll before it made the ocean voyage to Okinawa, Japan.

The R/T arrived on a rainy February day; the crew of installers wasted no time and got right to work on the setup of the terminal. After assembling the 20 foot dish, about a day and a half process, everyone’s attention turned to connecting the dozens of cables and other pieces equipment needed to operate and monitor the satellite terminal. After only a few days, the R/T was online and fully mission capable.

Echo Company Soldiers in conjunction with civilian contractors diligently man the terminal 24 hours a day, and are able to receive up-to-the-minute status and performance data via a remote computer terminal placed on the operations floor.

Though the R/T is only slated to be on Okinawa for a short time, the Soldiers of Echo Company 53rd Signal Battalion are making every effort to gain experience from equipment associated with the satellite terminal.

Tip of the Sphere

Command In Brief

Space Soldier takes “Green” to “Gold”

By DJ Montoya

PETERSON AIR FORCE BASE, Colo. — When most Soldiers go into battle, they are on the front lines of a war zone, but one particular Soldier within U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command recently went to battle in a more unusual location ... the basketball court. SGT Evevetta L. Crawford helped the Army defend its title during the recent 2007 Women's Armed Forces Basketball Championship, and in the process became somewhat of a celebrity within her command.

The six-foot, 35-year-old, human resource specialist, a member of Echo Company, 53rd Signal Battalion in Fort Buckner, Okinawa, Japan joined the SMDC/ARSTRAT family back in February 2005, and has been in the Army for 10 years. Back in mid-March, as a member of the All-Army Basketball team, her skills contributed to winning the Championship held at Fort Indiantown Gap, Pa.

Crawford, “the Army's top gun” as one sport's writer called her, scored an average 20.2 points over six games in which the Army went undefeated against the Air Force, Navy and Marines.

According to CPT Jason Shin, acting commander of Echo Company, “Support for her has been tremendous from the company.

“We are all proud of her. We only regret not being able to attend the games to cheer her on in person.”

Shin said that Crawford's fellow Soldiers were able to keep up with her progress through news bulletins and her e-mails and phone calls back to the company.

Looking back on her performance during the championship, Crawford commented, “I feel I was at the top of my form. I know what it takes to win a gold medal and the championship, so that is what I strive for before basketball season starts and in life.”

What was her greatest moment during this tournament? Crawford reminisced on various instances from finishing a lay-up or shot, to giving a teammate an assist. And being selected for the

eighth time in a row as the best small forward of the tournament didn't hurt either. But one moment in particular did stick out for Crawford.

“The most memorable moment will always be having the gold medals put around the team's necks at the end of the tournament.”

Crawford started playing on the All-Army Women's Basketball Team in 2000 and has helped garner eight medals — four consecutive gold medals, two silver medals and now two more gold.

If you ask her “How did this love of basketball and the Army come about?” on the basketball side she'll claim it all started back in the fourth grade with Junior Pros at Booker T. Washington Elementary. From there the ball was put into motion.

In 1990 she graduated from Christian County High School in Hopkinsville, Ky. Crawford then



SGT Evevetta Crawford of Fort Buckner in Okinawa, Japan, averages 20.2 points and 6.8 rebounds in six games to lead the All-Army Basketball team to its 26th crown in 30 years of the Armed Forces Women's Basketball Championships, March 12-17 in Fort Indiantown Gap, Pa. *Photograph taken by PFC Matthew E. Jones*

went on to Shelby State Community College (now called Southwestern Community College in Memphis, Tenn.)

“I had to ask Coach Herbert Wright (NBA player Lorenzen Wright’s father) to try out for a basketball scholarship.”

The rest is history. She was named to the first team All-American, and was the second leading scorer in the nation and fourth in rebounding among junior colleges back in 1991 to 1993.

“I helped the Lady Saluqis to win our conference back in 1993.”

After graduation Crawford went on to Arkansas State University in Jonesboro, Ark., to finish her last two years of college playing on a full basketball scholarship in the Sun Belt Conference.

As for the Army side she was born at Fort Campbell Army Hospital in Kentucky and has three brothers. Her father, Herbert Lee Crawford Sr. did two tours in Vietnam while serving in the Army and received the Bronze Star Medal.

“I decided to join the Army after I had played professional basketball overseas. I had always wondered what it was like to be in the Army and to serve our country. I thought it would be a good career move for me.”

Not only is Crawford a valuable member on the court, she is also a very important member of Echo Company according to Shin.

“She takes her job very seriously and is an incredible asset.

“In turn, her transition from basketball player to Soldier and back is flawless and her dedication to her work shows that she is truly a consummate professional.”

The future for Crawford looks bright with her sights set on making the rank of staff sergeant, graduating from the Basic Non-Commissioned Officers Course, and finishing her bachelor’s degree in Business Administration.

“My long term goals are to be selected for Officers Candidate School and retire as an O-6 or higher,” said Crawford with much resolve. After all, her sports role model is none other than Michael Jordan.

“I like his determination to win.”

Alpha Detachment Warrior FTX

By SGT Christa Dunne

STUTTGART, Germany — The Soldiers and Sailors of Alpha Detachment, 1st Space Company have a mission to

provide early missile warning support to Soldiers on the front lines, but what if they themselves were called to the front lines? Every Soldier needs to be ready for that possibility and Alpha Detachment is doing their part to make sure their Warriors are ready to face that challenge. From March 1 - 10, the detachment conducted a Warrior Field Training Exercise. The unit conducted N Hour Tasks, followed by four days of training on the Warrior Tasks and nine Battle Drills. The Warrior exercise consisted of three phases.

Phase I began with an early morning recall of all personnel reporting in by 5:30 a.m., carrying their A and B bags for inventory purposes and updating OCIE (Organizational Clothing and Individual Equipment). As Soldiers reported in, Soldier Readiness Packets were reviewed and updated for missing or corrected information. The remainder of Phase I was spent conducting PMCS (Preventive Maintenance Checks & Services), PCCs (Pre-Combat Checks) and PCIs (Pre-Combat Inspections), finalizing load plans, and ensuring all equipment and vehicles were prepared for the convoy to the FTX site.

Phase II began a four day long FTX consisting of classes and warrior tasks. To begin the day, SSG Matthew Brown, PFC Toby Unzicker, and SGT Donovan McKenzie trained Soldiers on how to treat injuries consisting of open wounds, fractures, and transporting casualties while under enemy fire. Following the first aid portion, SSG Richard Kruse and SGT Alfredo Lozano taught classes on hand grenades, land mines and improvised explosive device identification and reaction. After the classes, Kruse set up six different lanes to review and practice proper hand grenade techniques for different situations.

That afternoon, Alpha Detachment moved locations to conduct Nuclear, Biological and Chemical training, and mask confidence testing. While in full MOPP (mission-oriented protective posture) Gear, classes were given by SSG Joseph Collins, Lozano, and SGT Christa Dunne on M8/M9 detection paper, M256 kits, and Nuclear, Biological and Chemical chamber safety procedures. Once classes concluded, Alpha Detachment proceeded to the chamber. While inside the Chamber, Soldiers and Sailors participated in minor calisthenics to raise the heart rate and to determine if their mask was properly fitted. Mask confidence testing continued with each Soldier and Sailor breaking the seal of their mask and resealing it. The final step was to take their mask off, state their name and rank and exit the chamber calmly.

The second through fourth day of the Warrior exercise (Phase II) was planned and guided by the detachment Training and Evaluation section, consisting of SFC Gerald Forgione, SSG Brian Sibila, and Collins. These three days used scenario

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training to effectively teach a variety of tasks needed to accomplish an advanced marksmanship mission, utilizing the crawl, walk and run phases of training. The trainers divided the Detachment into two squads, with the concept of experienced NCOs and Soldiers, sharing their personal experience and knowledge with newer, inexperienced NCOs and Soldiers. Each mission relied on the squad members building a cohesive team to practice land navigation, mounted and dismounted movement tactics, radio communication, first aid, hand and arm signals, and react to ambush and improvised explosive devices while under enemy attack. A mounted portion, traveling in a single HMMWV (High Mobility Multipurpose Wheeled Vehicle) or convoy, encountering an ambush, road block or improvised explosive device situation began each scenario. During each attack or encounter with an obstacle, squads were evaluated on leadership, proper situational procedures, perimeter set-up, first aid, communications and proper reporting procedures.

Following the mounted portion of the scenario, each squad had to navigate on foot to three or four different check points through various terrains. While moving between points, squads continued to be evaluated on their performance, as well as land navigation, squad movement and noise discipline. As each squad approached the final objective, a MOUT (military operations on urban terrain) site constructed as a small village, they came under fire from the enemy positioned inside multiple buildings. At this point, each squad began utilizing movement procedures needed in an urban area, relying on their MOUT training. Squads separated into two teams, one team surrounded the building and used suppressive fire allowing the second team to enter and clear the building. Ultimately, each mission led to a force-on-force scenario between Alpha Detachment and the enemy, comprised of Soldiers of Headquarters and Headquarters Company, U.S. Army Stuttgart Garrison. Following mission completion, after action reports and preparation for the next day's training were conducted.

The third and final phase consisted of recovery operations. Soldiers and leaders conducted recovery operations on all their equipment and after action reports for the overall training event ensuring success of future training events.

Upon completion, the value of conducting a

Warrior exercise of this nature was evident. Each NCO and Soldier was given the opportunity to assess their leadership skills and Warrior Task competence, to gauge proficiency and what they need to continue to improve on. This warrior task training and FTX enabled all members of Alpha Detachment to examine group dynamics, leadership challenges, and different styles of leadership they may encounter while performing normal Soldiering skills. Alpha Detachment, 1st Space Company improved as a team, built on their strengths as individuals and as a cohesive unit.

Charlie Company 1st Sgt. leads Soldiers on 100th Volksmarch

By SSG Dawn Westrum

LANDSTUHL, Germany — 1SG Martin Chaffee will be retiring this fall after twenty-one years of active-duty service to his country. During his years in the Army he has filled many key positions within the 53d Signal Battalion, including tours in Germany, Maryland and Okinawa. However, the Soldiers of Charlie Company, 53d Signal Battalion, will remember Chaffee for a different reason. Over the two years that Chaffee has been stationed here in Landstuhl, Germany, he has spent most weekends out on the forested trails of the German countryside as part of the German sport of Volksmarching.

For many of his weekend walks, Chaffee has invited the whole company along by posting flyers in advance for a "1SG Volksmarch." Anyone interested meets up in the company area on Saturday morning and carools to the start of the walk. There everyone completes either the short three-mile or longer six-mile trail. Families and children are always welcome, and it is not a strange sight to see a couple of strollers being pushed along, as well as a dog or two keeping in stride. Hunger pains can be assuaged easily along the way with bratwurst, cheese-bread, sweet tea and beer. Back at the start hall, there is even more to eat, including homemade cake, pies and authentic German meals. The experience is one of friendship and camaraderie, as well as a great chance to enjoy the fresh air and get some exercise.

Chaffee has completed over 400 Volksmarches himself, and many of them have been part of his



Charlie Company, 53rd Signal Battalion Soldiers complete kilometer 36 of 42 during a marathon Volksmarch celebrating the companies 100th group Volksmarch. *Photograph taken by Robert Erdman*

“1SG Volksmarch” program. Knowing that his retirement date was rapidly approaching, Chaffee decided to make the 100th 1SG Volksmarch his last company march. To go out with a bang, he also decided to make it a marathon distance of 26.2 miles. Now, this isn’t totally without precedence, as several of the company Volksmarches have been marathons. In fact, Charlie Company Soldiers are proud when their name gets added to the Marathon Club, and so far 24 Soldiers and family members have completed a total of 76 marathons.

Knowing this would be the last organized marathon, thirteen Soldiers and one family member willingly woke up early that Saturday morning to meet up and carpool to the start of the march. Four of those Soldiers would be completing their first marathon and adding the final names onto the Charlie Company Marathon Club list.

After filling up on pie and pastries in the start hall, the group set off on the marathon. The trail was slightly muddy, running along a single-track in the forest and winding through the German countryside. It seemed the weather would also cooperate, with the temperature about 55 degrees and no rain in sight. One member of the group was riding his bicycle, and kept in touch with everyone as the group spread out along the trail, digging out Gummy Bears, Oreos, and other snacks from his pack at the checkpoints.

Cameras, MP3 players, and some trailside antics helped pass the time along the way. At least, they did until the group reached the biggest hill (or maybe small mountain), that Chaffee said he had ever climbed on a marathon. With four hours of walking already under their belts, it seemed insurmountable. They all has hopes that the trail would go around it, not up ... but up it went, and with one foot in front of another, the group slowly made their way to the summit. Everyone gathered together at the top for more snacks, and a few bravely climbed the lookout tower (did they really want to get higher?). Others bouldered on the rocks, and some removed shoes and socks to rest aching feet.

With yet a couple of hours left to walk, the aches and pains were setting in for everyone, and the Gummy Bears were in high demand, but the trail started heading downhill, and the dreams of bratwurst and beer kept feet moving. Chaffee said that he was focused on the marathon prize, which included a certificate and a patch. Everyone else found motivations of his or her own, and rolled back into the start hall at a time of eight hours flat. Not too fast perhaps, but all fourteen people finished; and along the way, shared stories, made friends, and wondered what life would be like without another marathon to look forward to. And yes, the beer at the start hall was worth every step.

Responding to the Threat in Iraq: The 2007 Surge of U.S. Forces in Baghdad

*Counterinsurgency is military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat insurgency*²³

Until January 2007, U.S. forces in Baghdad generally operated from Forward Operating Bases. Some Iraqi army units were stationed in the neighborhoods, advised by a small number of U.S. military personnel. This force stationing strategy changed as a result of President George W. Bush's announcement on Jan. 10, 2007 to increase the number of U.S. forces in Baghdad with a mission "to help Iraqis clear and secure neighborhoods, to help them protect the local population, and to help ensure that the Iraqi forces left behind are capable of providing the security that Baghdad needs."²⁴ Subsequently, the President agreed to send additional Soldiers to help with an anticipated increase in detainees. The nearly 30,000 additional Soldiers, comprised of five combat brigades and combat support and military police units, reinforce the approximate 132,000 American military forces currently serving in Iraq.²⁵ This new approach acknowledged the vital role that establishment of security in Baghdad had to attainment of long-term goals in Iraq.

President Bush also approved sending a brigade to Afghanistan to accelerate the training of local forces.²⁶ This brigade will reinforce the approximate 45,000 international Soldiers currently in Afghanistan. Approximately 32,000 of these Soldiers are under the United Nations-mandated and International Security Assistance Force led by the North Atlantic Treaty Organization (NATO), and are stationed in Kabul and in different provinces throughout the country. The largest concentration of Coalition Forces is in the southern portion of Afghanistan.²⁷ The United States and some of its allies have an

additional 10,000 to 13,000 Soldiers in Afghanistan not under NATO command, primarily at Bagram Air Base north of Kabul and in eastern provinces along the Pakistani border. Their primary mission is directed against al-Qaeda and other forces suspected of involvement in international terrorism.²⁸

Baghdad Security Plan

Operation Enforcing the Law (Fardh al-Qanoon in Arabic), the Baghdad Security Plan, began on Feb. 13, 2007. The foundation of this operation is a force of five Brigade Combat Teams ordered to Baghdad by President Bush's direction in January 2007. GEN David H. Petraeus, Commanding General, Multinational Force – Iraq, described the new strategy: "Improving security for Iraq's population is, of course, the overriding objective of our strategy. Accomplishing this mission requires carrying out complex military operations and convincing the Iraqi people that we will not just 'clear' their neighborhood of the enemy, we will also stay and help 'hold' the neighborhoods so that the 'build' phase that many of their communities need can go forward."²⁹

The Baghdad Security Plan basically involves three components: clear (separate insurgents from the population that supports him); control (occupy the zones the insurgents previously operated from); and retain (coordinate actions over a wide area and for a long enough time that insurgents are denied access to the population centers that could support them).³⁰ MG Joseph Fil, commander of Multinational Division — Baghdad, indicated, "The first objective within each of the security districts in the Iraqi capital is to clear out extremist elements neighborhood by neighborhood in an effort to protect the population. In addition, after an area is cleared, we're moving to what we call the control operation. Together with our Iraqi counterparts,

we'll maintain a full-time presence on the streets, and we'll do this by building and maintaining Joint Security Stations throughout the city."³¹

Baghdad Security Plan — Clear

During the "clear" phase of the Baghdad Security Plan, operations are focused on clearing out significant insurgent strongholds, eliminating organized resistance and turning over cleared areas to Iraqi forces. Operations are also conducted to supplement the efforts of the Iraqi Security Forces requesting assistance. "Clearly, killing or capturing insurgents will be necessary [during the clear phase], especially when an insurgency is based in religious or ideological extremism. However, killing every insurgent is normally impossible. Attempting to do so can also be counterproductive in some cases; it risks generating popular resentment, creating martyrs that motivate new recruits, and producing cycles of revenge."³² Therefore, operations focus on separating the insurgents from the means of their support and identifying the groups with goals flexible enough to allow productive negotiations and determining how to eliminate the extremists without alienating the populace.

Raids are conducted to gain actionable intelligence and disrupt terrorist, insurgent, and militia networks and operations. Car bombs, truck bombs and other Improvised Explosive Devices do not usually originate in the neighborhoods where they are detonated. Insurgents seek secure locations to meet, plan operations and assemble the explosive devices. Other insurgents then transport the explosives to locations where they will be used, and still others emplace them so that they will harm Coalition Forces or civilians. Clearing the neighborhoods of these activities enhances security for the local populace.

Stationing U.S. forces in Baghdad's



U.S. Soldiers train Iraqi Security Forces as they prepare to eventually take full responsibility of the day-to-day security mission. Photograph courtesy of

neighborhoods and downtown areas is central to the Baghdad Security Plan. After President Bush announced the troop increase for Baghdad in mid-January, many of the U.S. forces stationed in Baghdad were moved to establish and man Joint Security Stations in the city's neighborhoods. This strategy was in accordance with a key principle noted in FM 3-24: "Ultimate success in COIN operations is gained by protecting the populace, not the COIN force. Aggressive saturation patrolling, ambushes, and listening post operations must be conducted, risk shared with the populace, and contact maintained."³³ GEN Petraeus also noted: "We can't commute to the fight in COIN operations; rather, we have to live with the population we are securing."³⁴

The Joint Security Stations are jointly manned with U.S., Iraqi Army, Iraqi police, and National Police personnel to enhance local security, facilitate training, and the increase in flow of information. Units spread out further into Baghdad from the larger hubs of the Joint Security Stations by establishing Combat Outposts. Initial stationing plans called for at least one Joint Security Station in each of the nine administrative districts in Baghdad. As of early-May 2007, more than 60 Joint Security Stations, staffed by American and Iraqi forces, and U.S. Combat Outposts were in Baghdad.³⁵ The total number could eventually be more than 100.

The Joint Security Stations and Combat

Outposts are guarded by tall concrete barriers, concertina wire, large bags reinforced with metal and filled with dirt, and machine-gun positions on rooftops and in windows. Anti-armor weapons and reinforced fortifications are added to stop suicide bombers driving vehicles. Soldiers conduct patrols on foot and in vehicles to secure the local population and establish an official presence while other personnel maintain security of the Joint Security Stations and Combat Outposts.³⁶ In the second week of February alone, U.S. forces conducted over 20,000 patrols, up from 7,400 in the first week of the month.³⁷ The net result of the continued, increasing presence of U.S. forces appears to be having an important psychological, as well as practical, effect on the enemy and the people in threatened neighborhoods. The local populace gains confidence in their ability to provide Coalition Forces useful information without the fear of reprisal. As a result, Iraqis increasingly provide information that enables identification and detention of insurgents and the location of Improvised Explosive Devices targeting Coalition Forces. They also provide useful intelligence to develop an image of how the insurgent groups function. One assessment indicated: "The Iraqi people are encouraged — life is almost immediately springing back in many parts of the city. The murder rate has plummeted. Improvised Explosive Device attacks on U.S. forces dur-

ing their formerly vulnerable daily transits from huge U.S. bases on the periphery of Baghdad are down — since these forces are now permanently based in their operational area."³⁸

Baghdad Security Plan — Control

Successfully clearing an area from insurgent influence is being followed by actions to expand the secure area to an adjacent zone and then expand the secure area again when that zone is completely secure. The goal of this phase is to expel the insurgents from Baghdad, so hard-core insurgents are forced to regroup on rural terrain. When they do, Coalition Forces will then work to prevent the insurgents from re-infiltrating. It is easier for Coalition Forces to fight insurgents on rural terrain, where they cannot conceal themselves as readily among the population.

Coalition Forces also work to provide continuous security for the inhabitants and prevent the return of insurgents. Checkpoints are established to control access to secure areas, particularly where there are heavy concentrations of personnel, e.g. markets. For example, a concrete wall around Adhimiya, a mainly Sunni district of Baghdad, is being built to control movement of Sunni car bombers and to stop Shiite death squads from getting in.³⁹ Patrols are conducted to disrupt and capture insurgents who have remained in or reentered the secure areas.

Military action can address the symptoms of a loss, or perceived loss, of legitimacy for the central government. In some cases, it can eliminate substantial numbers of insurgents; however, success in the form of a lasting peace requires restoring legitimacy.⁴⁰ As observed in one assessment of successful COIN operations: “Recognition and assurance of these rights by the government has been essential to turning a population away from insurgents and their promises.”⁴¹ As a result, Coalition efforts also focus on gaining the confidence and support of the local populace for the Iraqi government. The Iraqi people must believe that Iraqi Security Forces are improving rather than undermining their security. Transferring the country’s security requirements to competent and professional security forces that look out for the welfare of all Iraqis is the long-term goal of our Nation’s strategy. In support of that goal, U.S. military forces facilitate the ongoing training of Iraqi soldiers and security personnel. In fact, a recent assessment indicated: “The Iraqi training base is cranking out 24,000 soldiers a year from five Regional and two national training bases. More than 12 police academies are producing 26,000 new police a year. The end goal will be an ISF of more than 370,000 police and army [personnel] organized in 120 battalions.”⁴²

Enhancing local security and reducing insurgent terror tactics against the local populace also supports local officials’ confidence in taking steps to protect themselves. For example, in late-May 2007, reports surfaced that Sunni residents of a west Baghdad neighborhood used assault rifles and a roadside bomb to battle AQI insurgents. The mayor of the Amiriyah neighborhood indicated residents rose up to expel AQI, which had alienated other Sunnis with its indiscriminate violence and attacks on members of its own sect.⁴³ Progress has also been

reported in Anbar Province, a Sunni enclave to the west of Baghdad. Late last year, local sheiks, most of whom had lost family members to killings by AQI, formed a group they called “the Awakening.” The sheiks ordered their followers to assist the American military forces against the jihadists and began urging their followers to join the police. Enlistments have soared as a result. All 23 of the major tribes in and around Ramadi have joined the movement. In exchange, U.S. forces have provided the tribes considerable amounts of weapons and vehicles. A nearly 50 percent drop in violence was reported after tribal leaders turned against the Sunni extremists.⁴⁴

Baghdad Security Plan — Retain

*The primary objective of any COIN operation is to foster development of effective governance by a legitimate government.*⁴⁵

Over time, COIN operations aim to enable a country to provide the security and rule of law that allow establishment of social services and growth of economic activity. An area will move into the retain phase when Iraqi Security Forces are fully responsible for the day-to-day security mission. Offensive operations will focus on eliminating the insurgent cadre, while defensive operations focus on protecting the populace and infrastructure from direct attacks.⁴⁶ At this point, U.S. military personnel, partnered with Iraqis, will remain behind to maintain security, reconstitute police forces, and integrate police and Iraqi Army efforts to maintain the population’s security.⁴⁷ Coalition Forces will begin to move out of the neighborhood and into locations where they can respond to requests for assistance as needed.

As security improves, military resources contribute to supporting government reforms and reconstruction projects. Restoring confidence in the government increasingly will be based upon its ability to provide basic

services. For example, an issue that motivated fighters in some Baghdad neighborhoods in 2004 was lack of adequate sewer, water, electricity and trash services. Tremendous work remains to provide full civic services to the populace.

The Space Professional’s Role

Early in 2007, GEN Petraeus, soon after assuming command of Multinational Force-Iraq, said: “The way ahead will not be easy. There will be difficult times in the months to come. But hard is not hopeless, and we must remain steadfast in our effort to help improve security for the Iraqi people. I am confident that each of you will fight with skill and courage, and that you will remain loyal to your comrades-in-arms and to the values our nations hold so dear.”⁴⁸ This statement provides insightful guidance for Space professionals engaged in supporting our Nation’s warfighters in combat operations.

Providing relevant support to warfighters means furnishing the capabilities to allow them to pursue the enemy around the clock. Space-based capabilities are an essential component of this support. Identifying the most relevant operational requirements for warfighters is an ongoing process; however, four areas define the majority of current needs.

Warfighters need Actionable Intelligence

Intelligence is the critical enabler for successful COIN operations. Intelligence operations that help detect insurgents for detention or engagement is the single most important step to protect a population from threats to its security.⁴⁹ Very simply, “actionable intelligence means providing commanders and Soldiers a high level of situational understanding, delivered with speed, accuracy and timeliness, in order to conduct successful opera-

Given the challenges faced by human intelligence assets to find and penetrate insurgent networks, warfighters must effectively employ all available intelligence collection capabilities. There are multiple capabilities available for incorporation into the actionable intelligence toolbox, including a combination of unmanned aircraft systems, manned aircraft and Space-based platforms.

tions.”⁵⁰ In support of this requirement, tactical information must be gathered, processed, and then disseminated as actionable intelligence in accordance with tactically relevant time lines to enable Soldiers, and commanders at all levels, to take appropriate action.

Given the challenges faced by human intelligence assets to find and penetrate insurgent networks, warfighters must effectively employ all available intelligence collection capabilities. There are multiple capabilities available for incorporation into the actionable intelligence toolbox, including a combination of unmanned aircraft systems, manned aircraft and Space-based platforms.

Situational awareness is particularly vital given the challenges of conducting operations in built-up areas, as is currently the case in Iraq. Insurgents operating in small groups or as individuals are often hidden in the larger population and tend to use this “complex terrain” to their advantage. Identifying and targeting these small groups or individual insurgents — barely distinguishable from the civilian population — present a distinct challenge. Overhead systems are often the only effective way to limit this impact. Persistent aerial surveillance can often identify people, vehicles and buildings. Geospatial intelligence capabilities can use imagery and infrared systems to find hidden base camps and insurgent positions. The imagery produced by the Space Support Elements and Army Space

Support Teams are examples of the types of products that are being provided.

Manned and unmanned aircraft can also patrol roads to locate insurgent ambushes and Improvised Explosive Devices. When insurgents operate in rural or remote areas, such as attempts to infiltrate from Syria and Pakistan, aerial reconnaissance and surveillance also prove useful. Air-mounted signals intelligence collection platforms can detect insurgent communications and locate their points of origin.

Support of these capabilities will require expansive increases in bandwidth availability, which is already in great demand. In the near-term, bandwidth demand will continue to grow much faster than the available supply, particularly with sensors competing with communications to provide commanders operational information. This situation is not expected to improve in the near-term, and military satellite communications bandwidth will be limited, even with heavy dependence on commercial sources.

Support must be Responsive and Flexible

Rapidly evolving combat situations demand responsive and tailorable solutions. As noted in FM 3-24, “If a tactic works this week, it might not work next week. If it works in this province, it might not work in the next.”⁵¹ LTG Robert Elder,

Jr., Commander, 8th Air Force, and Joint Functional Component Commander for Global Strike and Integration, U.S. Strategic Command, also noted: “Although we tend to focus on the desired effects of operations, we clearly need to consider the undesired effects of our actions as well. Virtually every action contributes to some effect, and, of course, not all effects are desirable.⁵² Creation of more insurgents and alienation from the populace that we are trying to support are examples and, occasionally, the results. In the words of Winston Churchill, “However beautiful the strategy, you should occasionally look at the results.”⁵³

Competent insurgents are adaptive. Insurgents quickly adjust to successful COIN practices and rapidly disseminate lessons learned. In fact, the more effective a COIN tactic, the faster it may become out-of-date because insurgents have a greater need to counter it. As noted in FM 3-24: “In COIN, the side that learns faster and adapts more rapidly — the better learning organization — usually wins.”⁵⁴ Accordingly, Space professionals must highlight to material developers the challenges encountered by warfighters to ensure future systems and modifications to existing systems are developed and quickly fielded. They must also seek to use existing systems in new ways and responsively address evolving challenges. For example, regarding Electromagnetic Interference trou-

bleshooting, Space Support Elements and Army Space Support Teams can serve as the local subject matter experts on Electromagnetic Interference incidents. The Elements and Teams will probably not solve the problem, but they can play a role in explaining the problem to the local leadership and in working to send current information through the appropriate reporting channel to the responsible activity. Similarly, Space professionals can lend considerable expertise in the areas of precision navigation and timing, information operations, and Joint Blue Force Situational Awareness. The Fall 2004 and Spring 2005 issues of the Army Space Journal contain multiple articles referencing recent developments in Joint Blue Force Situational Awareness. I encourage your review of both issues.

Support must be assured

Today, Space-based capabilities enhance the effectiveness of our combat forces, particularly in the areas of communications, navigation, locating and targeting the enemy, and weather prediction. As a result, Space capabilities affecting warfighters' capabilities must be protected. Our adversaries must also be denied the capability to interfere with our warfighters' access to these capabilities. As noted recently by the Director, National Security Space Office: "The United States views purposeful interference with its Space systems as an infringement on its rights and will take actions necessary to preserve its rights, capabilities, and freedom of action in Space including denying, if necessary, adversaries the use of Space capabilities hostile to U.S. national interests."⁵⁵

Although the U.S. currently possesses overwhelming Space capabilities, our dominance in Space is not guaranteed. The rapid growth in commercial and international Space capabilities increases adversaries' ability to monitor U.S. forces and poten-

tially negate U.S. advantages in Space. Threats may arise from many sources, including: jamming against ground segments or stations; radio frequency jamming that interferes with Space system links; lasers that temporarily degrade or destroy satellite subsystems; and Space-based imagery.⁵⁶ As an example, satellite imagery of 1-meter resolution is currently available for purchase from commercial sources.

Space Control operations ensure freedom of action in Space for the United States and its allies and, when directed, Space control denies adversaries' freedom of action in Space. Significant efforts are ongoing across the Department of Defense to enhance our Space Control capabilities. The U.S. Air Force is also taking steps to enhance Space situation awareness and understand what is occurring in orbit. As noted by GEN Kevin Chilton, Commander, Air Force Space Command, "If you don't know what's going on — if you don't know what's up there, if you don't know its capabilities, if you don't know if it maneuvered or not, if you can't try to divine intent, if you don't know if it's close to one of your systems, if you don't know if they're even doing something — if you have a malfunction, then you can't even begin to discuss the other aspects of this question."⁵⁷

Support must be provided within a Joint, Interagency and Multinational (JIM) Environment

As noted in the National Security Strategy: "We are fighting a new enemy with global reach. To succeed in our own efforts, we need the support and concerted action of friends and allies. We must join with others to deny the terrorists what they need to survive: safe haven, financial support, and the support and protection that certain nation-states historically have given them."⁵⁸ While U.S. relationships will likely continue to center around those

nations that share fundamental political, economic and security interests, the U.S. may also enter into coalitions with other nations on short notice. As a result, operations in a Joint Interagency and Multinational Environment are a necessary and vital component of successful warfighting. The Multinational Force-Iraq currently includes more than two dozen Coalition partners while the International Security Assistance Force comprises partners from more than three dozen nations.

Space-based capabilities can provide or facilitate the exchange of information required to support and sustain multinational and coalition operations. These complementary and reinforcing effects not only minimize relative vulnerabilities but also enable the delivery of combat power greater than the sum of the individual parts. Army Space forces have contributed significantly to these efforts. For example, in the early phases of Operation Iraqi Freedom, Army Space Support Team support included the provision of imagery to the Office of the Coalition Provisional Authority. In the fall of 2005, an Army Space Support Team also produced many images of all of the election sites prior to the Iraqi elections. More recently, maps and imagery have been provided to the Iraqi Security Forces. Assistance has also facilitated Iraqi Security Force training on Global Positioning System devices.

Conclusion

The contemporary operating environment has changed. What was once a linear construct with relatively defined boundaries between front and rear, has evolved into a complex environment with few visible front lines and stationary forces. Adaptive enemies continue to develop increasingly sophisticated and complex weapons to attack our forces at perceived weak spots. Non-kinetic effects have also been introduced into their operations. However, we must not lose perspective. The

nature of warfare and the capabilities of our adversaries can quickly evolve. Future conflicts, as with those of the past, may involve conventional large force operations. Warfighters must be prepared to move, shoot and communicate in this dynamic environment. Space professionals must be prepared

to support them.

In a 1986 article titled "Uncomfortable Wars: Toward a New Paradigm," GEN John R. Galvin, former Supreme Allied Commander, Europe, observed: "An officer's effectiveness and chance for success, now and in the future, depend not only on his

character, knowledge, and skills, but also, and more than ever before, on his ability to understand the changing environment of conflict." GEN Galvin's words were relevant then; they are even more applicable today.⁵⁹ Secure the High Ground! 🇺🇸

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lash-up between the operational and research and development sides of the command. It is an essential relationship that supports the Space and missile defense mission areas well. The Future Warfare Center bridges those two sides with its development of the documents that support Army requirements development and represent operational needs against identified gaps. For example:

Counter Satellite Communications Integrated Concept Plan

In May, the Future Warfare Center Director of Combat Development Space Branch succeeded in gaining the approval of the Joint Capabilities Board for a Space control Initial Capabilities Document. This document defines an approach to filling specific Space control shortfalls (gaps) and, when approved, will “green light” the acquisition community to move forward on the next generation of Space control equipment. The approval by the board moves this document to within two months of the expected Joint Requirements Oversight Council four-star final stamp of approval. The challenge and key to success was to work closely with U.S. Strategic Command and the Services to ensure the document met their needs. The first fruit of that effort occurred when all stakeholders united to push the document through the Joint Capabilities Board with no objections or issues. The final fruit will mature in a few years as the Army and our sister services field new equipment that ensures the United States freedom of action in Space while denying that freedom, when directed, to our adversaries.

Operational Responsive Space Office

The Future Warfare Center



Satellite communications are the lifeline to the “boots on the ground” forces in Operations Iraqi Freedom and Enduring Freedom. The system must be set up to support the ground forces when and as they need communications. *Photograph courtesy of*

led the SMDC/ARSTRAT role in standing up Department of Defense Operational Responsive Office which will be at its “initial operational capability,” manned and functioning when you read this article with the goal of being fully operational by October 2007.

The good news is that the Department of Defense Space community has successfully integrated Space-based capabilities into the core of U.S. national security operations; the bad news is that our military (and civil) community is increasingly reliant on those capabilities

and their demands have increased. Because of this, many are interested in enhancing the responsiveness of Space systems through what the Department of Defense calls Operationally Responsive Space. Department of Defense defines Operationally Responsive Space “as assured Space power focused on timely satisfaction of Joint Force Commanders’ needs,” and sees it as just one of many Space activities designed to support the Joint Force Commander.

Congress in the Defense Authorization Act for Fiscal Year

The Future Warfare Center led the SMDC/ ARSTRAT role in standing up Department of Defense Operational Responsive Office which will be at its “initial operational capability,” manned and functioning when you read this article with the goal of being fully operational by October 2007.

2007 directed Department of Defense to establish a Joint Operationally Responsive Space Office with the mission to (1) contribute to the development of low-cost, rapid reaction payloads, buses, space lift and launch control capabilities in order to fulfill joint military operational requirements for on-demand Space support and reconstitution; and (2) coordinate and execute operationally responsive Space efforts across the Department of Defense with respect to planning, acquisition and operations.

To develop the plan for the office, the Department of Defense Executive Agent for Space, Dr. Ronald Sega, also the Undersecretary of the Air Force and the Commander, U.S. Strategic Command GEN James E. Cartwright co-chaired a working group with broad community participation from civil, defense and intelligence communities to develop the plan for the office. According to the Plan, the overall objective of the office is “to expedite development and fielding of select responsive Space systems by leveraging National Security Space-wide technology development activities and operational capabilities; provide integration and technical support to other Service and other Government Agency activities that leverage select National Security Space-developed technologies and/or operational Space capabilities; and conduct independent operational and technical assessments of Space system capabilities and vulnerabilities as necessary for

Operationally Responsive Space solutions that will meet the full range of U.S. diplomatic, information, military and economic needs.”

Army Space Support Teams, Space Support Elements and Space Operations Officers

In the mid-90’s, then — U.S. Army Space Command created Army Space Support Teams and aligned them with the Corps to provide those units (and their subordinate units) with a deployable team of trained Space-savvy Soldiers (officers and noncommissioned officers). These Space experts came with their own specialized equipment and could provide “on-call, Space-based products, services and expertise, worldwide, in support of civil and military operations,” in the five Space force enhancement functions: intelligence, reconnaissance and surveillance; position/navigation; Space and terrestrial weather/terrain/environmental monitoring, communications; and missile warning.

Their mission has not changed much since those early days, but it began evolving with the fielding and embedding of the Space Support Elements to the Army corps and divisions starting in 2005. Exactly what the roles and functions of the Space Support Elements are and how they differ from those of the Army Space Support Teams has been the subject of intense debate within the Army Space community and should continue.

The differences between the Space Support Elements and Army Space Support Teams and their inherent strengths and weaknesses are outlined by Lieutenant Colonels Bob Guerriero, Tom James and Jim Rozzi, (all combat veterans and FA40s), in a white paper entitled “Future Evolution of Army Space Forces: A Vision to Optimize Tactical and Operational Space Support.” They authored the paper in early April 2007 for SMDC/ARSTRAT’s Future Warfare Center Directorate of Combat Development. In it, they go beyond just the Space Support Element/Army Space Support Team debate to also spell out what they think the Space community must do to stay relevant and effective. (Their paper is printed in its entirety in this issue.) They provide a good review of the FA40 Space professional “State of the Union.” You and I may not agree with all their points, but it’s a good read and warrants reflective thought.

Indeed, much has been accomplished; many challenges lie ahead. As I depart for my next assignment, I know that you will be intricately involved in the further improvement and development of Army Space-based capabilities and supporting doctrine. Thank you for your support and friendship over the past year and a half. Connie and I will miss you and look forward to our next encounter. Cheers!

Secure The High Ground! 

Elements, Army Space Support Teams and Space Operations Officers use this Space software to varying but similar degrees based on the factors of METT-TC (Mission, Enemy, Terrain and weather, Time, Troops available and Civilian) to accomplish their specific tasks.

Initially, the Space Support Element Toolset was intended to be the equipment set for Army Space Support Teams. The acceleration of Army Transformation, which included the assignments of Space Support Elements to the division level much earlier than anticipated, led to the decision to also equip the Elements with the toolsets. While this decision seemed prudent at the time, experience has shown that Elements do not require a full toolset to accomplish their planning and integration functions. Recently, it was decided that Army Space Support Teams will continue to be equipped with toolsets, while Space Support Elements will be equipped with Space Operation System computers only.

ROLES AND FUNCTIONS OF ARMY SPACE FORCES

The two basic elements designed to meet tactical Space support requirements, the Space Support Elements and the Army Space Support Teams, are similar in some respects but each has a critical yet differing role in the delivery of operational and tactical Space support. The differences between the two lie in the functions that they are best-suited to perform and their relationships with other Joint and Service organizations. There are strengths and weaknesses inherent in both Army Space Support Teams and Space Support Elements, but when properly employed, both support and complement each other.

In general, Army Space Support Teams support Corps, Marine Expeditionary Forces, Combined Force

Land Component Commands, and Combined Joint Task Forces. Space Support Elements are organic to Division, Corps, and Army Headquarters, and are usually organized within the G3 Section as G3 — Space. Space Support Elements may request Army Space Support Teams to complement them based on mission requirements. This need is identified during mission planning and requires the Space Support Element to generate a Request for Forces.

Space Support Elements plan, integrate, and coordinate global and theater Space capabilities to support their unit's plans and operations. Space Support Elements are the commander's primary advisor on capabilities, limitations, and availability of friendly, enemy, and neutral Space assets, and they regularly provide Space support to coordinating and special staff. The organic relationship with the staff allows the Space Support Element to establish working relationships and to understand the strengths and weaknesses of their particular staff in any Space-related areas. This gives the Space Support Element the ability to focus its efforts in the areas where it can make the greatest contribution in maximizing Space support. The Element, as an integral part of the staff, is also directly involved in the staff planning process from the very beginning. During mission analysis the Space Support Element identifies all Space support requirements and initiates the necessary planning, including any requests for Army Space Support Team support that might be needed. The Space Support Element, with its heavy complement of field grade FA40s, is ideally suited to serve as the Space planning element on the staff, and to anticipate, integrate, synchronize and assess Space requirements.

Having a Space Support Element as an organic part of unit staffs also leads to a disadvantage,

however. Unit staffs naturally reallocate personnel from lower priority tasks to higher priority tasks, and individuals within the element have become prime candidates for other duties and responsibilities, some of which take FA40s out of their roles as Space Operations Officers completely. This has turned out to be even more prevalent during operations in the Central Command area of responsibility, where unforeseen requirements for field grade officers have increased significantly. When considered on an individual basis, the practice of assigning FA40s to other duties is not necessarily a negative or a reflection on the value of the Space Support Element, as many other staff sections and subordinate units also reallocate personnel to other pressing requirements. The risk in the area of Space support is that with so few Space experts on a staff, the reallocation of even one or two FA40s causes many of the Space functions to not be performed. The impact of this is that units often learn to accept and get by with less-than-optimal Space support instead of maximizing Space support, and the Space Support Element can be quickly perceived as a non-essential staff element. Many Space Support Elements have sought to mitigate this by becoming heavily involved in other staff functions, such as Special Technical Operations (STO). This is a good use of an FA40's technical skills, and a benefit to the staff in an area that requires technical expertise. Some of the STO functions may be related to Space support, depending on the particular operation. Space Support Elements must be careful that they are not so consumed by STO functions that Space functions are neglected, and therefore must effectively manage the Space mission areas as well as the STO requirements to ensure that the command is well supported in both functions.

Army Space Support Teams, organized within the 1st (Active and Army Reserve) and 117th (Colorado Army National Guard) Space Battalions, deploy in support of units requiring tactical Space support. They bring a variety of capabilities to provide Space support to operations. Army Space Support Teams are often attached to units with an organic Space Operations Officer, and conceptually may be attached to a unit with a Space Support Element, although the latter has not yet occurred. The composition of Army Space Support Teams makes them ideally suited to execute Space support tasks and produce Space support products on a daily basis. An Army Space Support Team is designed to complement a Space Support Element, and both together have all of the tools and expertise necessary to deliver tactical Space support, from initial planning through execution. An Army Space Support Team may partially fulfill Space planning and integration functions in a headquarters without organic Space expertise.

The inherent disadvantage of an Army Space Support Team is the same disadvantage for any attached element, which is that it arrives as a largely unknown component and must rapidly integrate into the staff. Much of this disadvantage is mitigated if the Team integrates into a Space Cell with an organic Space Operations Officer or Space Support Element. Army Space Support Teams have their own support requirements that must be planned for by the gaining unit in terms of physical space, power, communications and life support. Most of these issues are overcome in advance by integrating a deploying Army Space Support Team into the pre-deployment training of the gaining unit, such as Mission Rehearsal Exercises.

One of the great advantages of an Army Space Support Team is that it is part of a Space unit, with specific Space expertise and Space-oriented mission essential tasks. This allows the team to be reconfigured if necessary to provide specialized Space support, such as an Intelligence, Surveillance and Reconnaissance-heavy team to help integrate new



Space technology has brought a whole new set of capabilities and strategies to the modern battlefield. As time goes on and Space capabilities develop, mature and evolve, the battlefield will change even more and the military must be ready to define and implement these changes. *Photograph courtesy of SMDC/ARSTRAT*

Space sensors or an officer-heavy team to support Space planning. This also gives Army Space Support Soldiers better unit training opportunities and serves as the natural place to field and test new Space support capabilities. In principle, the unit training opportunities in a Space Battalion should produce Space Operations Officers and Soldiers who are unparalleled experts in their field.

Due to the different composition of the two components, Space Support Elements are best suited for the planning and integration of Space support, while Army Space Support Teams are best suited for delivery of Space capabilities, production and execution. For every operation, the decisions have to be made as to how many Army Space Support Teams will deploy and at which echelon they will be attached. For example, some operations may require a team at the Division level, while others could require one at the Corps level in general support of subor-

dinate echelons.

Space Force Enhancement — Roles and Functions

In the Space Force Enhancement Mission Area, the Space Support Element responsibilities lie mainly in identifying the areas where Space Force Enhancements could be applied, and then coordinating for that support. As part of the staff planning process, the Space Support Element conducts mission analysis to determine which of the Space Force Enhancement functions are applicable to an upcoming operation. For example, if the Space Support Element determines that additional Space-based Blue Force Tracking devices are required, they then coordinate for the allocation and use of those devices. An operation relying heavily on precision engagement in restricted or urban terrain will necessitate additional monitoring of GPS accuracy. The Space Support Element has the expertise to de-

Space Support Elements and Army Space Support Teams have similar skills and expertise, but when employed properly these units are not redundant but in fact are complementary and mutually supporting. The perception of any unnecessary overlap in the roles and functions of Army Space Support Teams and Space Support Elements is due primarily to one underlying issue — the lack of unique Space capabilities.

velop innovative methods of using Space-based intelligence, surveillance and reconnaissance sensors or novel means to combine multiple sources of Space-based data, and works with the G2 staff and collection manager to request the collection and exploitation. Finally, the Space Support Element considers any Space or terrestrial weather impacts to operations from a Space perspective, the impacts of any potential enemy use of Space-based assets, and any friendly Space vulnerabilities, and keeps the commander and the rest of the staff informed.

The output of the Space Support Element's mission analysis becomes the Space Running Staff Estimate and Annex N (Space Operations) for all Fragmentary Orders, Operational Orders, Operational Plans, or Concept Plans. The Space Support Element also provides input appropriate to other staff sections for inclusion in their own annexes, especially the G2 or G6 sections. If any production is required for Space Force Enhance-

ment mission areas, the element determines whether that production can be done internally or must be passed to an Army Space Support Team. If no Team is attached at that echelon, the request should go to an Army Space Support Team in general support.

While the functions of the Space Support Element are almost entirely staff functions, the Army Space Support Team responsibilities for Space Force Enhancement are primarily those of execution and production. The Army Space Support Team should take its guidance from the unit's Space Support Element, based on the Element's mission analysis and participation in the staff planning process. If additional monitoring and reporting of GPS accuracy is required, the Army Space Support Team would perform this function. The Team has the ability to produce Space products such as imagery maps, 3-D visualizations, satellite overflight reports or SATCOM scintillation reports. They are involved in the dissemi-

nation of these products, as well as, the posting and dissemination of specialized Space-based Battle Space Characterization products. The Army Space Support Team is also responsible for the continuous monitoring of the Space environment, including the operational status of Space vehicles, Space weather and any other Space events. In some cases, Army Space Support Teams serve as Tier 1 missile warning nodes. Since not every Space Support Element has an attached Army Space Support Team, some of an Army Space Support Team's production work may be in support of a subordinate unit's Space Support Element.

Space Control — Roles and Functions

The Space Support Element is the primary element responsible for Space control planning. During mission analysis, the element determines if offensive or defensive Space control could contribute to the success of the operation, and

must then initiate any requests for forces, intelligence assessments or approval processes that might be required. Space Control planning is closely coordinated with the G2, G3, and G6, and synchronized with other operations. The Army Space Support Team has the ability to assist with the integration and synchronization of Space control assets.

Redundant Roles and Functions

Space Support Elements and Army Space Support Teams have similar skills and expertise, but when employed properly these units are not redundant but in fact are complementary and mutually supporting. The perception of any unnecessary overlap in the roles and functions of Army Space Support Teams and Space Support Elements is due primarily to one underlying issue — the lack of unique Space capabilities. The Space Support Element, as the primary Space planning element, should be planning for the employment of unique Space capabilities. Since there are very few such capabilities, the Element is left to plan for the improved employment of capabilities that other staff sections have primary responsibility for. The Army Space Support Team, the primary element for the execution of Space tasks, should be executing unique tasks that no other staff element has the capability or expertise to execute. Since there are very few of these tasks, Army Space Support Teams often find themselves helping other staff sections manage their workloads of Space-related tasks.

FINDINGS AND RECOMMENDATIONS

Space support to Army operations must continue to evolve in order to support changing Army organizations, missions and requirements. Our existing capabilities, structures, and procedures, developed prior to the Global War on Terror and Army Transformation, are inadequate to meet today's and tomorrow's Land Component operational requirements. In order to meet these increased demands, Army Space Forces must evolve in four distinct ways: develop and field

unique Space capabilities, improve Space technical expertise, reallocate Space Operations Officer assignments, and develop and equip Army Space Support Teams and Space Support Elements with improved equipment and Space tools. Lastly, we should consider expanding Army Space Support Team capabilities and missions in order to provide Space support to units without organic Space expertise.

1. Unique Space Capabilities. For our Space support model — a Space Support Element planning element and an Army Space Support Team execution element — to be viable, there must be a set of capabilities to plan for and execute. This is currently limited to a set of Space-based capabilities that other staff sections already have responsibility for, with few exceptions. As Space functions become more normalized across the staffs, and as Web-based services become more prevalent and accessible, staff sections are becoming increasingly comfortable performing these functions without the help of FA40s. This has been one of the successes and the expected outcome of Space education, so we must now migrate our own functions into other areas where emerging areas of Space support can be applied. We must develop new and unique Space capabilities that will use innovative means to deliver tactical and operational Space support while remaining outside of the functions of other staff sections. These Space capabilities should be fielded to Army Space Support Teams, where they can be adequately tested and where the Teams can maintain proficiency in the operation of the equipment. These capabilities will give Space Support Elements something to plan for, and Army Space Support Teams something to deliver and operate. These capabilities should be outside of the traditional areas of intelligence, surveillance and reconnaissance, communications, and topography, and should be designed to support existing requirements. We should consider some or all of the following for immediate development and fielding:

Global Positioning System Interference Detector — A handheld detector that can acquire all GPS signals in an area, and

identify, characterize, and locate any additional signals within the GPS frequency bands. The detector should indicate anomalous signal frequency and strength. This capability supports existing requirements for accurate positioning, navigation and timing information.

Laser Dazzler — A ground-based, low-power laser dazzler designed to saturate the optics of any overhead imagers without causing damage. These could be positioned in fixed locations to prevent imaging of sensitive sites such as forward operating bases, or employed in a mounted version to mask unit movement. This capability provides ground-based, reversible, offensive Space control, and supports existing force protection requirements.

Global Positioning System Augmentation — A GPS pseudolite transmitter that provides an additional ground-based signal for GPS receivers. This would be particularly useful in urban environments or deep valleys where GPS signals may be obscured. It allows Army Space Forces to offer a solution when GPS navigational accuracy reports indicate an unacceptable error probability. This capability supports existing requirements for accurate positioning, navigation and timing information.

Radar Imagery Detector — A detector that detects radar imaging occurring at the location of the detector by identifying the unique waveform emitted by radar imagers. Combined with SATRAN information, it would allow Army Space Forces to identify the radar satellite imaging U.S. Forces. This capability provides ground-based Space Situational Awareness and supports its existing requirements.

Optical Augmentation Scanner — A detector that uses optical augmentation techniques to identify Space-based EO imagers oriented at the detector. Combined with SATRAN information, it allows Army Space Forces to determine which foreign or commercial imager is oriented toward U.S. Forces. This detector could not determine whether or not an image was actually taken. This capability provides ground-based Space Situational Awareness and supports its exist-

ing requirements.

Global Positioning System Jammer — A device that interferes with civil GPS signals in an area to prevent use of commercial Global Positioning System receivers. It would deny an adversary use of GPS while preserving U.S. military use. A potential issue would arise for military receivers that rely on the C/A signal to acquire the military signal. This capability supports ground-based Space control by denying an adversary use of Space-based capabilities.

Mobile VSAT Studio — An equipment suite consisting of a laptop computer with Digital Versatile Disk (DVD) writer, digital video camera, and VSAT (Very Small Aperture Terminal) transmitter. By using previously leased channels on commercial broadcast satellites, Army Space Forces could facilitate widespread dissemination of psychological operation products over one of the fastest growing media forms worldwide. This would represent a vast improvement over current practices of contracting with local broadcast studios. This capability supports psychological operations and information operations.

When our Army Space Forces are equipped with such capabilities then our roles fundamentally change from enhancing capabilities already resident in other staff sections to delivering our own valuable capabilities. When GPS interference is reported in an area, a commander can turn to an attached Army Space Support Team to quickly move to the affected area to confirm the interference and determine the frequency and source. Space Support Elements will have the ability to plan for the appropriate placement of laser dazzlers, to be emplaced, monitored and maintained by Army Space Support Teams. When predicting poor GPS accuracy in an area for a particular operation, a Space Support Element will be able

to offer a means to improve that accuracy, with an Army Space Support Team emplacing and operating an augmentation device. Army Space Support Teams will have the means to provide local Space Situational Awareness by employing both radar and electro-optical detectors, and correlating any detection with satellite overflight reports. Army Space Support Teams or Space Support Elements can also employ their mobile VSAT studios to record either a psychological operation message or a commander's message and immediately broadcast it directly to a large regional audience by uplink to a commercial broadcast satellite.

Along with these Space capabilities, there is value in developing specialized Army Space Support Teams to support them. One Army Space Support Team should be configured around GPS capabilities, including interference detection, GPS augmentation and jamming. Another Army Space Support Team should specialize in local Space Situational Awareness, employing various ground-based detectors. Yet another Army Space Support Team can concentrate on the emplacement and operation of ground-based Space control capabilities such as laser dazzlers. Space Support Elements will be responsible for requesting the appropriate Army Space Support Team and their capabilities, based on mission requirements.

Capabilities like this would be unique to Army Space Forces, would be planned for and executed by Space Support Elements and Army Space Support Teams respectively, and would provide immediate value to supported units. U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command (SMDC/ARSTRAT) must take the lead in developing these capabilities for Army Space Forces with a goal of delivering at least two new capabilities within

two years.

New and innovative Space capabilities planned and executed by Army Space Forces, can provide direct Space support to tactical operations.

2. Improve Space Technical Expertise.

Providing innovative and effective Space support requires a thorough understanding of the technical capabilities of Space systems. Feedback indicates that many of our Army Space Professionals do not possess the level of technical understanding of satellite systems and architectures that they could or should have in order to deliver effective tactical and operational Space support. Having a general awareness of the functions of Space systems is not sufficient in today's complex and dynamic operating environment. There is clearly a need to increase the level of technical instruction in the Space Operations Officer Qualification Course and other training venues for Army Space professionals. There is also a need to develop new courses that focus on the technical aspects of satellite capabilities and the tactical integration of these capabilities into military plans and operations for Army Space professionals preparing to deploy in support of Land Component formations. However, this level of expertise cannot be obtained through these courses alone — it is a long-term process that encompasses formal education, collective training and experience.

An advanced degree in a technical area, especially science or engineering, is probably the best preparation for a Space technical expert. The majority of FA40s should have advanced degrees in a technical field. We should aggressively recruit officers finishing a teaching assignment at West Point who already have an

advanced technical degree. As the Army increases graduate school opportunities for company-grade officers, we must capitalize on this program as a means to provide formal education for newly designated FA40s. In addition, a significant portion of FA40 positions should be tied to the Army Education Requirements Board requirements. This will provide two years of advanced civil schooling for those FA40s, followed by a three-year utilization tour where that advanced degree can be leveraged. There is a centralized pool of funding that is available to support advanced civil schooling for Army Education Requirements Board-coded positions. Finally, utilization of FA40s must be closely tied to education so that FA40s are assigned to positions where expertise in their particular field is required. This will provide maximum benefit of that education both to the individual and to the Army.

We also require an ongoing technical training program at the unit level. This can be done on a small-scale with Space Support Elements at the Division through Army level, but is best accomplished within a Space unit. The 1st and 117th Space Battalions are the only places in the Army that are organized to keep Army Space Forces technically and tactically proficient in Space operations. These personnel will continue to be challenged to maintain their currency in a field that changes as rapidly as Space operations. Despite the challenges, our Space units should make the technical Space training of Space officers and Soldiers their top training priority. Army Space Support Teams that deploy to provide tactical Space support must be subject matter experts on all Space systems, and must be armed with the most up-to-date information on current and emerging Space-based capabilities. All of their other skills are secondary.

FA40s must be the Army's Space experts in a technical as well as an operational sense and the Army must track the expertise as well as the expert.



Technology presents its own challenges but sometimes nature adds to the mix. Here, Space Support Element member LTC James Rozzi checks on an antenna that was surrounded by water after a heavy rainfall. *Photograph courtesy of SMDC/ARSTRAT*

3. Modify FA40 Manpower Allocations. Army Space Support Teams and Space Support Elements cannot be viewed in a vacuum, and must be considered in the context of Land Component Space Operations as a whole. We should not assume that placing increasing numbers of FA40s at the tactical level will translate directly into improved tactical Space support, but should instead consider that effective Space support may be best delivered by balancing the numbers of FA40s at the tactical, operational and strategic/national levels to ensure Army core competencies are addressed from a Space perspective.

FA40s are not positioned properly throughout the Army and the Joint community to provide adequate Space sup-

port. The preponderance of FA40s has been placed into tactical positions at Corps level and below, while strategic positions have been largely neglected. The effect of this has been a large number of personnel attempting to leverage strategic systems for tactical purposes, and relatively few personnel working to influence, design and adapt systems to meet tactical needs. A solid strategic foundation provides essential support and growth for effective tactical Space support. In the roughly ten-year period since FA40s have been established, we have made very little progress in influencing Space from the strategic perspective.

One example that deserves particular attention is the allocation of FA40s to the Fires Brigades. This allocation is pre-

In the past five years, the Army Space Community has had considerable success in developing the means to deliver, and in delivering, tactical and operational Space support during a very challenging time. ... Without making some necessary changes in the near-term and the long-term, we are at risk of not being postured to provide adequate Space support to a changing Army in a dynamic operating environment.

mature, and will provide very little return for our investment of such a limited resource as FA40s. There are currently not enough Space support requirements in a Fires Brigade to justify the permanent assignment of an FA40. This should be considered in light of the value that could be added if that same FA40 were positioned in some other Army organization or in a strategic organization. Although there will be a time when it's appropriate to place FA40s at the Brigade or Brigade Combat Team level, this is probably several years in the future, after the FA40 population is large enough to support both strategic and tactical personnel requirements. Other Army organizations that would benefit from an assigned FA40 include Geographic Combatant Commands, Special Operations Command, and Battlefield Coordination Detachments.

FA40s at the strategic level will be responsible for ensuring that future Space systems are designed to support tactical operations as well as strategic requirements, and will help to develop new Space capabilities to meet tactical warfighter needs. FA40s should be assigned to

the National Security Agency and the National Geospatial Intelligence Agency to influence the collection and dissemination of Space-based intelligence, surveillance and reconnaissance. They should be assigned to the Air Force Space and Missile Systems Center to be directly involved in the design and development of emerging Space systems, and to Air Force Space Command to participate directly with the Air Force in their requirements development for Space systems. FA40s should be assigned to Buckley and Schriever Air Force Bases in Colorado, to be a part of satellite operations, and to Massachusetts Institute of Technology Lincoln Labs to participate in the development of cutting-edge Space Situational Awareness technologies and techniques. They should be assigned to various Integrated Program Offices for emerging Space systems and the emerging Operationally Responsive Space Office to influence Space system development with an operational perspective, and the FA40 presence at the National Reconnaissance Office should be increased significantly to achieve better Army

participation in the development of our critical national systems. As they gain experience in their particular areas, FA40s in strategic positions will become a pool of expert knowledge on the capabilities and limitations of all Space systems.

We potentially provide more Space support to divisions by impacting decisions at the strategic level than by having a Space Support Element, Army Space Support Team, or individual Space Operations Officer present on the ground.

4. Assess and Change Army Space Support Team/Space Support Element Equipment Set. Elements with different roles and functions do not require the same equipment. Space Support Elements, with primary responsibility as a planning and integrating elements, have limited use for SATURN suites, plotters and INMARSAT terminals. Although many Space Support Elements have used this equipment, providing products

and services was never intended to be their primary purpose. A Space Support Element can effectively accomplish their mission with a set of Space Operations System computers and associated Space software.

The existing Space Support Element Toolset was very valuable when initially developed about five years ago, but is quickly becoming obsolete. The rapid proliferation of Web-based information and services, the assignment of engineering topographic teams down to the Brigade Combat Team level, and the fielding of Internet Protocol-based Global Broadcast System terminals down to the Brigade Combat Team level have increasingly made the Space Support Element Toolset less and less relevant, except as an augmentation to other staff sections' capabilities. The equipment that makes up the Space Support Element Toolset should be reviewed to determine its current effectiveness and updated as necessary. As a first step, we should consider including a Global Broadcast System terminal as a component of each Space Support Element Toolset. The Global Broadcast System could provide Space Support Elements and Army Space Support Teams an alternate means to receive large files, with a bandwidth more than 10 times larger than normally achieved with the SATURN suite. The primary limitation of the Global Broadcast System vice SATURN is that the Global Broadcast System data flow is one-way.

An Army Space Support Team, with primary responsibility as capability provider and task executor requires a full set of all available equipment to access and leverage Space-based capabilities. An Army Space Support Team also requires maximum flexibility and the ability to remain self-sufficient in austere environments, which justifies their need for a variety of satellite communications capabilities.

Army Space support equipment must evolve to provide relevant and valuable capabilities for Army Space Forces and supported units.

5. Expand Army Space Support Team Role in Headquarters Without Space Support Elements. The headquarters that do not have organic Space expertise — Marine Expeditionary Forces, Theater Special Operation Commands, Theater Support Commands and Combined Joint Special Operations Task Forces — are growth areas for Army Space Support Teams. SMDC/ARSTRAT has assessed the Space requirements of some of these organizations, and should assess the requirements of others to aid in organizing and training Army Space Support Teams, and writing the appropriate doctrine to provide the necessary support. To provide Space Support Element-like support where an element does not exist, Army Space Support Teams should be

tailored and potentially augmented with an additional FA40 if appropriate.

Properly configured Army Space Support Teams, deployed with units lacking organic Space support, can provide tailored, tactical Space support to critical headquarters on the battlefield.

CONCLUSION

In the past five years, the Army Space Community has had considerable success in developing the means to deliver, and in delivering, tactical and operational Space support during a very challenging time. In order to keep the Space support that we provide relevant and valuable, the doctrine, organization, training and equipment for Army Space Forces must evolve. Tactical and operational Space support can be improved significantly by developing unique Space capabilities, improving Space technical training, modifying FA40 manpower allocations, expanding Army Space Support Team roles in headquarters without Space Support Elements, and updating the Army Space Support Team/Space Support Element equipment set. Without making some necessary changes in the near-term and the long-term, we are at risk of not being postured to provide adequate Space support to a changing Army in a dynamic operating environment.



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SPACE CONTROL MATRIX

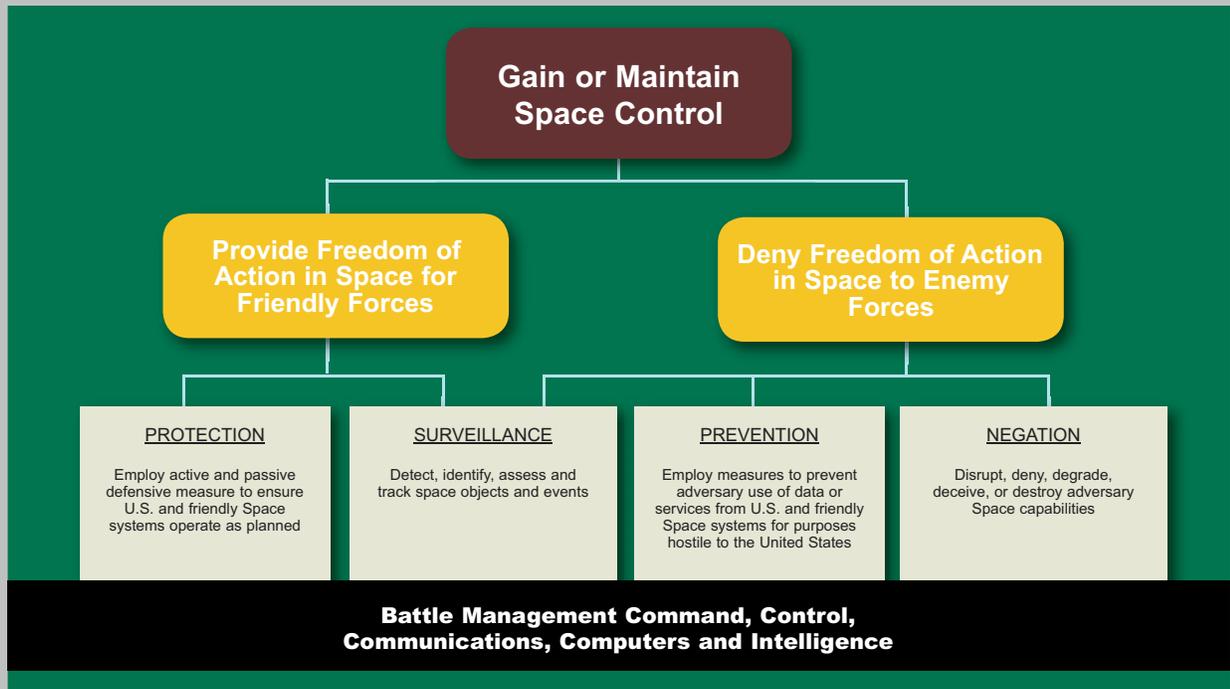


Figure 1. Space Control Matrix from JP 3-14

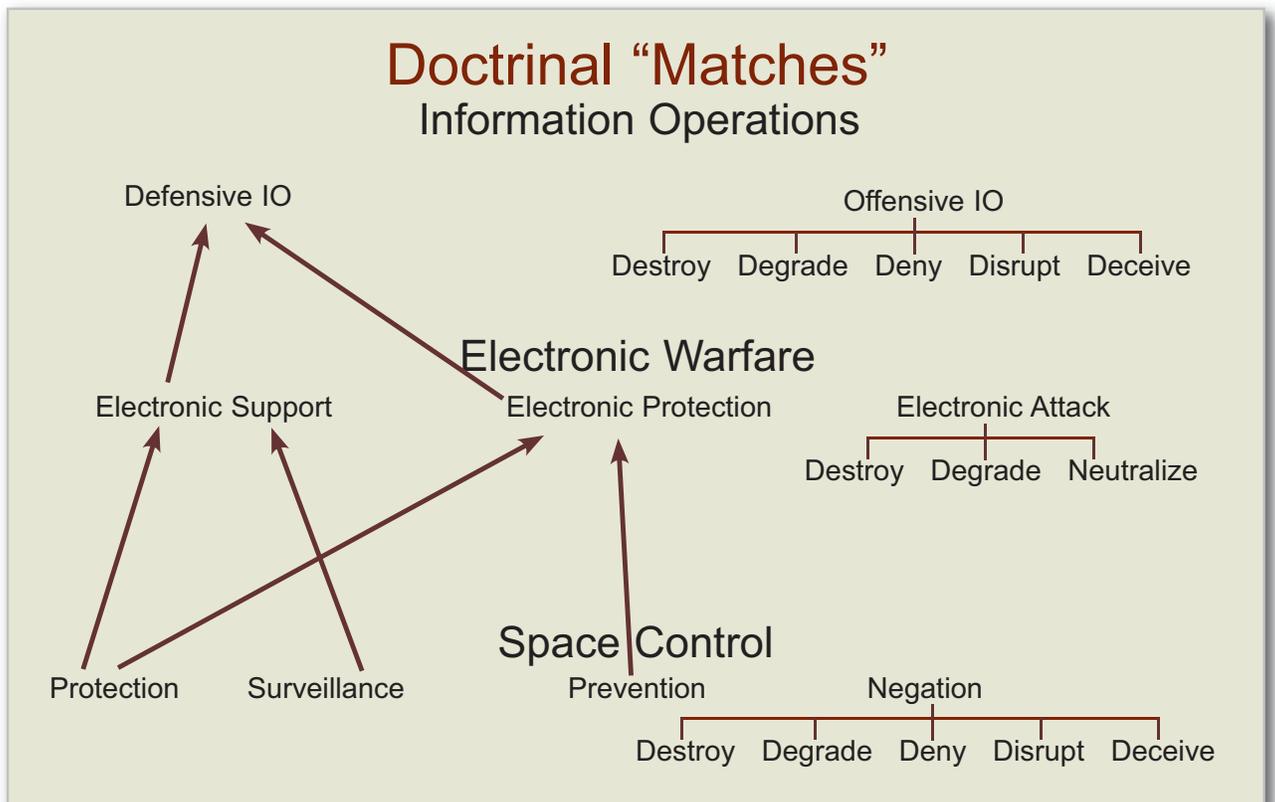


Figure 2. Space Control Similarities to EW and IO

Position on Space, from ... page 17

Force Space personnel, one is left to conclude that Space Coordinating Authority rests with the newly created Director of Space Forces. Further evidence of this position can be found in the Schriever IV Quicklook Report. That report, dated March 2007, seeks to codify the Director of Space Forces “in the joint/coalition environment” with the “full-time assignment of a Director of Space Forces.” The Director of Space Forces is an Air Force position. Seeking to codify the position in joint doctrine would only make sense if it were to have joint implications and make the Director of Space Forces the director of all joint Space forces.

The Global War on Terror provides proof that there will be potential conflict for the foreseeable future that will be a predominantly land-based fight. Codifying the Space Coordinating Authority as a joint position with a joint staff in the new joint publication will ensure Army expertise and capabilities are not lost to parochial tendencies.

POSITION 2

Joint Doctrine should be revised so that the field of Space Control is better defined to show those effects that fall under the realm of Electronic Warfare and those that do not.

The JP 3-14, Joint Doctrine for Space Operations defines Space control and its associated mission areas very broadly. Figure 1 shows and defines the four mission areas of Space control.

A problem that arises from such a broad definition of Space control is that an infantry platoon destroying an enemy satellite’s ground station falls under the realm of Space Control Negation. Similarly, a Military Police unit assigned to perform security for a Joint Tactical Ground Station unit is performing Space control protection yet neither of these units fall into the Electronic Warfare portion of the Information Operations campaign plan. This situation should be rectified by better delineating Space control to effects achieved primarily within the Information Operation/Electronic Warfare campaign plan and those that are not.

What SMDC/ARSTRAT Soldiers do in Space Control is accomplished primarily through the electromagnetic spectrum. That is not to say that the effect is not considered Kinetic Energy or that Kinetic Energy is not Space control, it is. Clarifying Space control definitions would make many Space Control missions elements of Electronic Warfare and therefore permit them to be appropriately captured in the information operation campaign plan. Figure 2 shows the similarities between mission components of Information Operations, Electronic Warfare and Space control.

Currently there is no doctrine that defines the linkage shown in Figure 2. To ensure we are all reading off the same sheet of music, it would be wise to take advantage of the Information Operation/Electronic Warfare campaign plan and input that portion of Space control that fits. This, of course, would require some manipulation of both Joint and Army Space Doctrine defi-

nitions and/or processes. But for the Army, it would help clean up some knotty issues and hopefully reduce in-service antagonism. Input from the field may provide insight that can modify this position to one that makes sense, yet is palatable to the other components in the joint community.

POSITION 3

Near Space and High Altitude Airship (HAA) operations need to remain out of the new JP 3-14

Right now, the U.S. Air Force has balloons that already operate in the portion of the atmosphere that would be considered “near-space” yet these balloons are not designed to meet Army mission requirements. If the current rewrite of JP 3-14 is allowed to define near-space, the Air Force would be designated as the lead service to handle that mission area. If that happened, they would be able to prohibit the Army from continuing development of High Altitude Airships designed to meet Army requirements.

Both SMDC/ARSTRAT and Missile Defense Agency are researching airship platforms that will establish an Army foothold in this area. Later, when SMDC/ARSTRAT and Army components of Missile Defense Agency have developed significant High Altitude Airship capability, we can claim proponenty and include it in the JP 3-14 then.

The following are some other positions being considered for inclusion in the official Army position on Space:

- The JP 3-14 rewrite needs to say that the Army is the proponent for providing Space expertise through Army Space Support Teams and Space Support Elements to all ground forces including Marines.
- The Army theater commanders must retain direct downlink capability for all ground forces.
- The Army must maintain command and control relationships of all Army Space systems. (Directed energy platforms, Space control assets, near-space/high altitude platforms, Joint Tactical Ground Stations, Air and Missile Defense assets, the Commercial Exploitation Team, coalition/joint Blue Force Situational Awareness, and spectral Measurement and Signal Intelligence operations)
- The Joint Task Force will select the service that will provide Space Support to Special Operations Forces.

This list is by no means complete. Please take some time to e-mail your thoughts and observations on the listed positions so they can be considered for the final position on Space. Other positions will also be considered and greatly appreciated. 🙏

MAJ Patrick O'Brien is an FA40 assigned to the Future Warfare Center's Directorate of Combat Development in Colorado Springs. Comments and feedback on this article will be greatly appreciated. E-mail the author at patrick.obrien2@us.army.mil or patrick.obrien@smdc-cs.army.mil

Tactical Space Tiger Team - Successes from the Field

Focus on
101st Airborne Division (Air Assault)
Space Support Element

By LTC Jim Rozzi, Bill Coffey and Bob Zaza

The 101st Airborne Division (Air Assault) (AASLT) Space Support Element (the Army's second Space Support Element to be activated) made preparations and deployed on its second rotation to Iraq, its first deployment as a "modular division" headquarters.

The 101st Space Support Element was the first Element to provide extensive Space support to its staff and command group during garrison operations. The Army's first divisional Element (3d Infantry Division) had less than three months in garrison prior to their deployment. Because Space Support Elements (also referred to as "G3-Space") are organic to division, corps, and Army headquarters, the Space support provided to their staff and command group during pre-deployment preparations provides significant opportunities for the planning, integration and coordination of Space capabilities into division plans and orders. In garrison, Space Support Elements support force modernization efforts and conduct leadership education across the staff and command group on their collective ability to better integrate Space capabilities and effects into their combat operations.

During garrison operations at Fort Campbell, Ky., (July 2004 to July 2005), the 101st Space Support Element:

- Supported force modernization by identifying, testing, and integrating several emerging Space-based capabilities for divisional use, to include a commercially available handheld Blue Force Tracking device for use by the Iraqi Army, a global positioning system (GPS)-enhanced handheld digital camera for use by U.S. ground forces and in support of counter-improvised explosive device efforts, a software application that provided pattern analysis and predictions to improvised explosive device detonations.
- Supported force modernization by identifying, testing, and evaluating several high-bandwidth satellite communica-

tions-based systems to support the 101st Division's mobile command post.

- Supported the integration of legacy and emerging Blue Force Tracking devices, architectures, and display software into a common operational picture, to include enhanced position location reporting system-based Force XXI battle command, brigade-and-below, L-band satellite-based FBCB2 (named "Blue Force Tracker"), movement tracking system, and battle command sustainment support system.
- Developed the Space operations annex to divisional operation plans or operation orders.
- Conducted extensive leadership education across the entire staff and command group. This education ensured that the division headquarters was able to better access, integrate, and exploit all available Space capabilities and effects throughout its combat deployment.

While deployed, the 101st Airborne Division (AASLT) headquarters served as the Multinational Division – North at Contingency Operating Base Speicher, near Tikrit, Iraq, from September 2005 to September 2006. The 101st Space Support Element Soldiers, organized under the original division Space Support Element modified table of organization and equipment (MTOE) is composed of four Space Operations Officers and two noncommissioned officers. The members of the 101st Space Support Element are LTC Elizabeth Kuh, MAJ Andrew Hittner, MAJ Timothy Tubergen, MAJ Dave Perry, SSG Shane Short and SSG Ken Merritt. Other Soldiers that served with the 101st Element in addition to its approved MTOE included SGT Jason Burnett, SPC Bob Comment and PFC Matt Jacyna.

During combat operations at Contingency Operating Base Speicher, Iraq (September 2005 to September 2006), the 101st Space Support Element:



101st Space Support Element Soldiers at Contingency Operating Base Speicher, Tikrit, Iraq. Photograph courtesy of SMDC/ARSTRAT

“We must optimize and distribute Space-based applications to the lowest level to improve maneuver commander’s access and use.”

— BG Michael Oates
Assistant Division Commander for Operations
101st Airborne Division

- Supported U.S. military transition teams and the Iraqi Army by providing commercial satellite imagery files and products, handheld GPS device training, and the fielding of thousands of commercially handheld GPS devices.
- Provided technical assistance and necessary interfaces to allow messaging capabilities between Enhanced Position Location and Reporting System- Force XXI battle command, brigade-and-below and L-band Force XXI battle command, brigade-and-below devices.
- Served as the division lead for GPS electromagnetic interference and Space weather
- Served as collection manager for commercial satellite imagery, overhead nonimaging infrared, and an emerging space-based intelligence, surveillance, and reconnaissance capability (multiple source human activity).
- Supported multiple staff section’s ability to more efficiently and rapidly access archived national and commercial imagery to support situational awareness.
- Supported the counter-improvised explosive device fight with multiple efforts to include exploitation of spectral measurement and signature intelligence analysis, change detection, and Space-based overhead nonimaging infrared that were used collectively to detect and locate improvised explosive device activities (e.g., weapon emplacements, active caves, weapon caches, and improvised explosive device testing and training areas).
- As the lead for GPS electromagnetic interference, supported the testing and evaluation of electromagnetic interference testing of the collocation of counter-improvised explosive device systems, precision lightweight GPS receivers, and Force XXI battle command, brigade-and-below satellite transmitters. This evaluation resulted in tactics, techniques, and procedures and physical configuration changes that decreased electromagnetic interference incidents of this high mobility multipurpose wheeled vehicle-mounted system.
- Supported personnel recovery missions with the exploitation of

overhead nonimaging infrared data (using the Widow Web site) and the rapid access to archived satellite imagery.

- As the lead for Theater Ballistic Missile Early Warning, developed and tested a fully integrated Standard Operating Procedure that detected and tracked Theater Ballistic Missile threats.

The Space Support Element’s value to division-level plans and operations continues to be its expertise on space systems, capabilities, and architectures and their ability to integrate space systems, capabilities, and architectures in ways that better enable the ability of headquarters to plan and conduct combat operations. 🇺🇸

The Tactical Space Tiger Team consists of LTC Jim Rozzi, Bill Coffey and Bob Zaza.

Rozzi is a Space Operations Officer with U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command. He received a B.A. from Washington and Jefferson College, and an M.S. from The Joint Military Intelligence College. He is a graduate of Command and General Staff College and the U.S. Army Space Operations Officer Qualification Course, and has served in numerous command and staff positions including Tactical Space Tiger Team Chief, 3rd Infantry Division Space Support Element Deputy Team Chief, Army Space Program Office Advanced Plans and Fielding Officer, Combined Joint Task Force-180 Army Space Support Team Leader, and Combined Intelligence Watch Commander, Cheyenne Mountain Operations Center.

Coffey has been a member of the Tactical Space Tiger Team since February 2003 and has served in the Space and Missile Defense Battle Lab since 1993. A retired Army Military Intelligence Officer, he served in various tactical and strategic assignments to include 2nd and 4th Infantry Divisions, V Corps and Northern Command. He served in Iraq and Afghanistan in 2006 conducting assessments of Theater Space Operations. He is currently a Senior Space Operations Analyst with CAMBER Corporation.

Zaza is a member of the Tactical Space Tiger Team since February 2005. An FA40 LTC in the Army Reserve, he has served in various leadership and staff positions, including Combined Joint Task Force-180 Army Space Support Team Leader; S-2, 4th Brigade, 4th Infantry Division; Observer/Controller, 1st Brigade, 91st Division; and Antiterrorism and Force Protection Officer, J2, U.S. Southern Command. He is currently a Senior Space Operations Analyst with CAMBER Corporation.

Training Insights



by Larry Mize

Larry Mize graduated from Xavier University with a Bachelors of Science in Mathematics in 1973. He entered active service in the United States Navy serving a career specializing in Naval Intelligence, Aircraft Carrier Operations, Naval Special Warfare (SEALs), and Space Operations. Mize attended French language training at the Defense Language Institute and subsequently served as U.S. Navy Liaison Officer to the Commander French Forces Indian Ocean/French Foreign Legion/Commandos Marine in Djibouti. He attended the Naval Postgraduate School and was awarded a MS in Space Systems in 1986, subsequently serving at U.S. Space Command and U.S. Strategic Command. Mize is currently Chief of Space and Global Missile Defense Education and Training.

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Trainer Experiences Firsthand OIF Space Operations

Dave Berge, FWC DCD Space Operations Officer Qualification Course Director, conducted a 12-day TDY to the Central Command Area of Responsibility in order to gather insights from the field for the purpose of improving Army FA40 Space operations training venues. Dave visited the Combined Forces Air Component Command Al Udeid (Qatar), Multinational Coalition - Iraq 1st Cavalry, and 3rd Infantry Division in Baghdad, and the 3rd Army staff in Kuwait. The Army Space professionals at these locations face many challenges in supporting a Multinational Coalition force operating in a complex counter insurgency environment. They often find themselves executing duties not directly related to space. For instance, the FA40s primary emphasis is often in supporting Special Technical Operations because their unique space skill set matches well with STO, and they have the high level clearance which is required for working STO requirements. Additionally, general space knowledge within Corps and Division staffs is improving such that FA40s are finding a unique niche with respect to tackling the tough technical space issues. What this means for DCD is that our FA40s need a comprehensive training program both in the entry level Space Operations Qualification Course, and then for continuing education as they progress through their careers. FA40s need this training as well as the necessary (and unique) space tools in order to be truly relevant from the tactical through national space level. Special notes of thanks go to LTC Gordon Quick (3USA) and LTC Robert Nieves (Deputy DS4) for their direct support during pre-trip coordination and on site hosting.

Tactical Space Operations Course Being Formalized

Future Warfare Center Directorate of Combat Development Training is in the process of formalizing the Tactical Space Operations Course (TSOC), five of which have been conducted ad hoc since 2005. The objective is to formalize these heretofore ad hoc TSOCs course, develop and execute them to TRADOC standard, enter it into ATTRS in order to provide a formal training venue for Army tactical and operational space forces that will prepare soldiers to deliver effective full spectrum space support in that tactical/operation environment. TSOC will present emerging tactics, techniques, and procedures focused training for space support. Course material will cover, but is not limited to, blue force tracking; overhead non-imaging infrared; intelligence, surveillance and reconnaissance; position, navigation, and timing; satellite communications; space control; and environmental effects. First iteration of the formal course is planned for September 2007.

Training Conducts Ballistic Missile Defense System Training Analyses for Army Units

The training developers of the Future Warfare Center Directorate of Combat Development (DCD) Ballistic Missile Defense System Training Team have recently been conducting foundational analyses for the 94th Army Air and Missile Defense Command, 100th Missile Defense Brigade (Ground-based Midcourse Defense) and the 49th Missile Defense Battalion. In February, DCD trainers chaired a Critical Task Selection Board with members of the 94th Army Air and Missile Defense Command to identify the unit's critical tasks for executing their mission in managing the first AN/TPY-2 (FWD) radar deployed to Japan. The Board identified 23 critical tasks which have been approved by U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command Deputy Commanding General, BG Roger F. Mathews. Subsequent to the Critical Task Selection Board, DCD training developers have been expanding the critical task list with further work to derive the conditions, standards, performance steps and performance measures. In February, DCD also chaired a Critical Task Selection Board for the Missile Defense Master Gunner program. Personnel from the 100th Missile Defense Brigade (GMD) and the 49th Missile Defense Battalion participated. 36 critical tasks were identified during the day and a half Board. The critical tasks were approved by COL Cunningham, SMDC/ARSTRAT G3, in April. DCD continues to facilitate G3 Training and Exercise development of the Master Gunner Course. Most recently, DCD conducted an immersion course on the Training and Doctrine Command standards for lesson plan development for four G3 Training and Exercise Master Gunner Course developers.

JTAGS Initial Qualification Training Critical Task Selection Board Conducted

Michael Hersh, Future Warfare Center Directorate of Combat Development Trainer, facilitated a Critical Task Selection Board conducted by the 1st Space Battalion on March 23 for JTAGS Skill Levels 1-4 (Operator and Supervisor skills). The board recommended 73 Skill Level 1-4 tasks divided among seven subjects. The task list was approved by COL Timothy Coffin, 1st Space Brigade commander, on April 20. Tasks in Skill Level 1 will be used to train JTAGS operators attending the JTAGS Initial Qualification Course and include the subject areas: JTAGS march order, JTAGS emplacement, JTAGS initialization, JTAGS mission operations, and JTAGS maintenance and troubleshooting. Subject area for Skill Level 3 is crew chief duties and the Skill Level 4 subject area is JTAGS operations sergeant duties.

2007 FA40/SOOQC Critical Task Selection Board a Big Success

The sixth FA40 CTSB was conducted on 17-18 April in Colorado Springs. Extensive behind the scenes planning went into making this CTSB particularly successful. For the first time three FA40 Colonels (Bruce Smith, Kurt Story, and Tom Quintero) attended the complete board sessions. Joining them were LTCs Bob Guerriero, Chris Livingstone, Tom James, Joe Carroll and Major Chauncy Nash. Prior to the CTSB all FA40s were accorded the opportunity to participate via survey review of the critical tasks and option to comment on new or revised tasks. The CTSB assessed the current FA40 tasks, developed modifications and/or new tasks based on operational experience and lessons from OIF/OEF, SSE fielding to Divisions and 3USA, and FA40 growth in commands such as JSpOC, JFCC Space, SMC, SPAWAR, and ASPO. FWC DCD has an aggressive program to assess and incorporate lessons learned from our operational rotations, but these require formal adjudication via the CTSB process. Mr. Dave Berge, SOOQC Director, provided a briefing to open the floor to discussion relative to the current FA40 training and potential new areas that may need to be trained. The board deleted one task, "EXPLAIN missions and functions of Joint and Service IO Organizations." The board felt that information from this task did not require the status of "critical task" and should be included as a performance step under another task. One new task was also developed, "INTEGRATE Space Force Enhancement." This new task was developed in response to the need to provide more technical depth for all FA40s to be able to effectively articulate to commanders and staffs in the field, specifically what they are able to provide in the way of space expertise and advice. More technical focus will be added to the SOOQC program of instruction, especially in the areas of Space Control, The Military Decision Making Process (MDMP), and STO with SOOQCs 07-01 and 07-02 June-November 2007. At the conclusion of the CTSB, COL Bruce Smith CTSB Chairman and Director of DCD stated "This was the most effective board we have held to date. The results of this board will go a long way in providing the needed training our FA40s require to fulfill their various assignments in the Army." The 2007 Critical Tasks are approved by the DCG, SMDC/ARSTRAT, BG Roger Mathews, for immediate implementation.

Tours "R" Us, A Practical Alternative To Traditional Space Training

A picture is worth a thousand words, a video is worth tens of thousands of words, but actually being there ... priceless. Do you remember your school field trips as a kid? If so, you now realize how beneficial they were and the impact they made on you. Throughout the years, two acclaimed highlights of the Space Operations Officer Qualification Courses have been its tours, locally in Colorado and to California and Washington DC. While in California, FA 40 students visit both military and commercial contributors to military space operations, starting at Vandenberg Air Force Base.

Vandenberg is the key military space operations and support facility on the west coast, and is home to 14th Air Force Headquarters/U.S. Strategic Command's Joint Functional Component Command for Space and the Joint Space Operations Center, which is exercises Operational Control primary reachback source for global space forces. Vandenberg also hosts the an Intelligence Operations Squadron and a Ground-based Midcourse Defense (GMD) site as well as space launch and associated range operations. In a couple of past classes, students have actually witnessed space launches.

The students also tour Los Angeles Air Force Base's Space and Missile Center, the U.S. Air Force research, development and acquisition agency for military space systems. Space and Missile Center also conducts on-orbit check-out, testing, sustainment and maintenance of military satellite constellations. Students get a first hand look at new satellite systems being developed. After visiting the military installations, the students then visit both Northrop Grumman and Boeing contractor space facilities. They get an opportunity to walk through satellite assembly plants to understand the processes involved in getting a satellite ready for launch.

Washington D.C. provides a second tour-rich environment for FA40 students to continue their space training. While in the D.C. area, the students visit the 1st Information Operations Command observing various techniques used by the command to identify and deter the enemy using varying information operations tactics and techniques. Next, the students visit the National Reconnaissance Office to better understand national assets and how they are used, along with the introduction of new space software applications developed by the National Reconnaissance Office. The following day, students visit the National Security Agency understanding the different centers and how they contribute to the military effort during war, and peace time. The students also visit the Pentagon, the Joint Space Staff, the National Security Space office and the Army Space Program office.

In 2007 the course will add a new tour to National Air and Space Intelligence Center (NASIC) at Wright Patterson Air Force Base in Ohio. NASIC is the primary Department of Defense producer of foreign aerospace intelligence. NASIC develops its products by analyzing all available data on foreign aerospace forces and weapons systems to determine performance characteristics, capabilities, vulnerabilities, and intentions. As the DoD experts on foreign aerospace system capabilities, the center historically has also been involved in supporting American weapons treaty negotiations and verification.

These tours are important to the FA 40s as they expose FA40s to critical reach back venues to support space related situations in the field, who provides what products to whom, and aspects of the nation's space industrial base. Organizing these tours is not like planning a family vacation, unless, of course you have a family of 29 and you go to multiple locations. A lot of logistics is involved to pull off these tours. The logistics includes but is not limited to, scheduling flights for a large group to travel together, at the best fares; scheduling a variety of ground transportation options; arranging hotels, tour visits, and meals. A glitch in any of these areas requires the skill of adapting because in every class "Murphy" is alive and well. In the end, though, it's all worth it in meeting the challenging requirements to educate the Army Space Professionals.

Lenny Gehrke, FWC DCD Training Branch

Advanced Geospatial Intelligence Node, the Regional Satellite Communications Centers, the Global Satellite Communications Center, and the Joint Blue Force Situational Awareness Mission Management Center. Several of these organizations supported Joint Task Force Katrina and relief operations in the wake of the catastrophic devastation inflicted by Hurricane Katrina on America's Gulf Coast Region in August 2005. All of these activities support joint warfighters engaged in Operations Enduring Freedom and Iraqi Freedom. The Joint Blue Force Situational Awareness Mission Management Center, for example, provides combatant commands with near-real-time blue force tracking data gathered and disseminated by Space-based systems. This data is pushed as far forward as technically possible and serves as actionable blue force location information within the commander's common operating picture, and lends to more robust situational awareness and fratricide prevention. Currently, the Joint Blue Force Situational Awareness Mission Management Center's main effort is the Central Command area of responsibility.

At the tactical level, the integration of Space-related capabilities and operations into planning, exercises, training, and all phases of combat operations is the mission of the Space Support Elements. Trained and equipped with SMDC/ARSTRAT support, these four-to-six Soldier teams are being established as units organic to each Army Modular Forces headquarters at division, corps, and Army echelons. As of spring 2007, eight Space Support Elements have been manned and equipped. Several of the Elements have deployed with their units in support of Operations Enduring Freedom and Iraqi Freedom.

Complementing the expanding representation of Space professionals in support of tactical formations are ongoing efforts to enhance understanding of Space systems and capabilities across the Army. The core of these efforts is the Army Space Cadre, which currently has more than 180 Army officers with the Functional Area 40 (Space Operations) designation. A robust Space education program, spearheaded by the Space Operations Officer Qualification Course, is also part of Army Service school curricula.

As the Army's proponent for Space and integrated missile defense, SMDC/ARSTRAT, fulfills its Army Title 10 responsibilities (to train, maintain and equip forces assigned to the command) working closely with combatant commands to identify operational requirements. For areas requiring possible materiel solutions, the command's research, development, and acquisition activities develop the concepts and systems for detailed testing and evaluation. Other SMDC/ARSTRAT activities, including the Future Warfare Center and the Ballistic Missile Defense System Manager for Ground-based Missile Defense, ensure synchronization of the doctrine, training, and

operational requirements.

SMDC/ARSTRAT's Research, Development and Acquisition activities support the Army's Rapid Fielding Initiative that works to fast-track capabilities and deliver them into the warfighters' hands. Capabilities in the areas of surveillance of potential suicide bombers, target acquisition, detection of improvised explosive devices, and blue force tracking have increased importance in Afghanistan and Iraq. Tremendous effort is ongoing within SMDC/ARSTRAT Research, Development and Acquisition activities to develop capabilities that will provide our warfighters actionable information on the locations of insurgents' gunfire. These initiatives include the High Altitude Airship, the Overwatch Advanced Concept Technology Demonstration, and the Tactical High Energy Laser Advanced Concept Technology Demonstration.

We are also working within the joint community to deliver capabilities to warfighters faster than currently possible. The Operationally Responsive Space program shows promise to place small tactical satellites into mission-optimized orbits upon demand in a lower-cost manner. This reduces the time line from combatant commander call-up to on-orbit capability. Operationally Responsive Space will also use new paradigms such as net-centricity to exploit existing capabilities. SMDC/ARSTRAT is working closely with other members of the Operationally Responsive Space team to implement their 120-Day Study Report to Congress recently approved by the Deputy Secretary of Defense.

A Legacy of Success — A Future of Expanded Capabilities

Today, our Nation, our Army, and joint services are at war confronting a unique type of enemy. Defeating this enemy and winning this war will be a protracted process. As a result, operational requirements are likely to expand in the areas of missile defense and space-based products and services. We will also see continued linkage between space and missile defense, both vital to the Army, fighting as part of the Joint, Interagency, and Multinational team.

SMDC/ARSTRAT's lineage reflects the Army's vigilant attention to the security needs of our Nation and warfighters. Our 50-year legacy of service has been carefully constructed by talented professionals deeply committed to our Nation's defense in the areas of missile defense, technology development, and space-based capabilities. This command has also pioneered innovative and revolutionary technologies and then developed, organized, and deployed the means to leverage these capabilities to support joint warfighters. We are proud of this legacy and are equally committed to its continuation in the future. 🇺🇸

New Training With Industry Opportunity Offered at The Johns Hopkins University Applied Physics Laboratory

By Charles Anderson, Applied Physics Laboratory and LTC Chris Livingstone, FA40 Personnel Proponent Office Chief

The Functional Area 40 (FA40) Personnel Proponent Office and the Space Department of The Johns Hopkins University Applied Physics Laboratory (APL), in Laurel, Md., recently established a formal Training With Industry (TWI) relationship that will provide FA40 Space Professionals a unique opportunity to work with leading industry experts.

Officers selected to participate in the program will have the chance to work for one year at APL, a not-for-profit center for engineering, research and development, which manages several NASA and Department of Defense missions and has built 64 Spacecraft over the past four decades. A division of one of the world's premier research universities, APL meets critical national challenges through the innovative application of science and technology.

"We're excited about this TWI relationship with the Army," says retired BG Duane Deal, director of APL's National Security Space programs. "It's a great step ahead in our effort to gain further insight into the expanding missions of Army Space while exposing the FA40 to the core competencies of APL. TWI is a highly selective Army program that places extremely qualified officers with industry, and it's an honor for APL to be a partner in this effort."

APL provides a one-of-a-kind opportunity for selected officers because of its focus on both national security and civilian Space technologies and missions, according to Deal. This allows for interaction and support with the Department of Defense and Intelligence Space communities, as well as with NASA and other leading Space organizations. The program also provides APL with greater insight and understanding of Army Space mission areas, which could further the Lab's contributions to the Army's critical challenges.

The fact that APL's Space facilities are collocated with facilities and experts in related areas gives the Lab an advantage over other TWI participants, says Deal. "We have mission operations centers here for several NASA and Department of Defense Spacecraft that APL operates, including New Horizons, STEREO [for Solar TERrestrial RELations Observatory] and the Midcourse Space Experiment, just to name a few," he says. "We have national security and civilian Space industry experts here, as well as precision engagement and air defense experts working in missile defense. National security analysts at APL focus on policy that feeds back into the Space industry, and various research and technology development efforts that could benefit the Army and other military branches. There's a wealth of opportunities here that I think distinguishes APL from other TWI organizations."

MAJ Bill Beck has been selected as the first FA40 to take part in APL's TWI program; he'll begin working at the Lab this summer. He's currently a Space Operations Officer assigned to U.S. Army Europe G2 in Heidelberg, Germany, where he specializes in exercise support, intelligence architectures, TENCAP and serves as a national security liaison. He has a master's in Space Systems Engineering and a bachelor's in American Politics.

"It's an honor to be selected as APL's first FA40. I'm looking

forward to applying my systems engineering background at APL, and learning more about mission operations, intelligence applications, and Space control," Beck says.

From the Sun to the Planetary Frontier

Headlining APL's Space-related efforts during the past 18 months has been its key contributions and involvement in the development and launch of three major NASA missions.

New Horizons, the fastest Spacecraft ever launched, began its three billion-mile journey in January 2006 to conduct the first close-up, in-depth study of Pluto and its moons in summer 2015. The APL-designed and operated Spacecraft recently swung past Jupiter to pick up more speed on its voyage to Pluto and the Kuiper Belt.

Since their launch in October 2006, NASA's twin STEREO Spacecraft, built and operated by APL, have produced the first 3-D images of the sun. The new view will improve Space-weather forecasting and greatly aid scientists' ability to understand solar physics. STEREO is the third mission in NASA's Solar Terrestrial Probes Program. APL also built and operates the first STP mission — TIMED (Thermosphere, Ionosphere, Mesosphere Energetics and Dynamics) — that's studying the influences of the sun and humans on the least explored and understood region of Earth's atmosphere, the mesosphere and lower thermosphere/ionosphere.

MESSENGER (MErcury Surface, Space ENvironment, GEochemistry, and Ranging) is a NASA-sponsored scientific investigation of the planet Mercury and the first Space mission designed to orbit the planet closest to the sun. The MESSENGER Spacecraft launched on Aug. 3, 2004, and after flybys of Earth, Venus and Mercury, will start a yearlong study of its target planet in March 2011. APL built and operates the Spacecraft and manages this Discovery-class mission for NASA.

Additionally, APL was recently awarded a contract for initial design work on the Lightweight Electro-Optical Space Sensor (LEOSS) program, managed by the Air Force Research Laboratory, that serves as a pathfinder for future Department of Defense geosynchronous Space situational awareness sensors. During this phase of the contract, an APL-led team will study the use of lightweight, electro-optical technology and data products for searching, acquiring, tracking and characterizing resident Space objects.

For more information about APL, please visit www.jhuapl.edu. 

Charles Anderson, a retired Army major and a former FA40 Space Operations Officer, is the section supervisor of the Systems Concepts and Applications section of the Defense Analyses and Applications Group and TWI program manager at the Applied Physics Laboratory. LTC Chris Livingstone is an FA40 Space Operations Officer, currently assigned as the Chief of the FA40 PPO.

The authors would like to acknowledge the efforts of the following who helped establish this new TWI opportunity: LTC Clay Scherer, former chief of the FA40 PPO; LTC Jerome "Jay" Driscoll, FA40 Career Manager; and Patsy Campbell, FA40 PPO.

Soldiers engaged in Operations Enduring Freedom and Iraqi Freedom face the same battlefield questions as their predecessors: Where is the enemy? Can they see me? Where are other friendly forces? What does the ground look like on the other side of a hill? SMDC/ARSTRAT works across the Joint community to provide capabilities that can best answer these tactical questions.

Nation's Ballistic Missile Defense System spent the 2006 July Fourth holiday on full alert. Their actions were a tribute to years of effort, going back to 1945 when the Army's Project Thumper (high-altitude defense against aircraft) examined how Allied forces could defend against Germany's new V-2 rockets.

Army Soldiers, as part of the joint team in support of commander, U.S. Northern Command, staff the Nation's first line of defense against an intercontinental ballistic missile launch toward our shores. Soldiers from SMDC/ARSTRAT's 100th Missile Defense Brigade (Ground-based Midcourse Defense or GMD), headquartered at Peterson Air Force Base, Colo., and its 49th Missile Defense Battalion (GMD) located at Fort Greely, Alaska, operate the ground-based portion of the integrated Ballistic Missile Defense System. These units, manned almost entirely by Army National Guard Soldiers, provide the battle management and fire control functions as well as site security.

SMDC/ARSTRAT, as the Army's global missile defense integrator, in partnership with the Missile Defense Agency (MDA), USSTRATCOM, and the Geographic combatant commands, is intensely engaged in ensuring the successful deployment of the Ground-based Midcourse Defense component of the Ballistic Missile Defense System. We are also working with other members of the Ballistic Missile Defense System team regarding expansion of the current architecture and a future European-based site.

Potential adversaries have become more aware of the tremendous advantages the U.S. military derives from the use of Space-based assets. Advances in technology and the changing nature of the threat have

made the effective use of Space crucial to our success. Although the U.S. has overwhelming Space capabilities, U.S. dominance in Space is not guaranteed. Potential adversaries are quickly developing adaptive strategies, tactics, and capabilities to exploit our perceived vulnerabilities and to counter or mitigate our strengths. The rapid growth in global Space capabilities increases potential adversaries' ability to monitor our forces and negate our advantages in Space.

The Chinese test of an anti-satellite missile in January 2007 against one of their aging weather satellites in Low Earth Orbit highlights the potential vulnerability of our own satellites to attack. Additionally, the debris field created by the destruction of this Chinese satellite produced thousands of fragments that will keep posing a physical hazard for decades to our satellites and those of the international community.

A Legacy and Current Mission to Support Army and Joint Warfighters

The commanding general, SMDC/ARSTRAT also serves as commander of the Joint Functional Component Command for Integrated Missile Defense (JFCC IMD) in support of commander, USSTRATCOM. The JFCC IMD allows USSTRATCOM to focus on strategic-level integration and advocacy for one of their critical Unified Command Plan assigned missions. The JFCC IMD is responsible for planning, integrating, and coordinating global missile defense systems and operations to provide an optimized layered missile defense system against missiles of all ranges and in all stages of flight. SMDC/ARSTRAT



The Patriot Advanced Capability-3 (PAC-3) represents the next generation in theater missile defense with the added ability to intercept tactical ballistic missiles, cruise missiles, and air breathing threats. The system achieved its first intercept - a tactical ballistic missile 0 on March 15, 1999 during a Seeker Characterization Test. In September 2001, the Army received the first production PAC-3 missiles. The Perimeter Acquisition Radar could detect and track multiple targets the size of a basketball at a range of 2,000 miles. Its function was to scan northward for threatening Intercontinental Ballistic Missile warheads as they passed over the north pole to allow the Missile Site Radar to begin preparation for interception. Following deactivation of the Safeguard system in 1976, the PAR was transferred to the U.S. Air Force, which currently operates the radar as part of its space track and early warning system.

complements and provides the Army forces that are globally integrated by the JFCC IMD along with the other elements of the Ballistic Missile Defense System.

The JFCC IMD interfaces with the Missile Defense Agency and serves as an advocate between the missile defense developer and joint warfighter. This organization complements the capabilities inherent in the other USSTRATCOM Joint Functional Component Commands of Space; Global Strike and Integration; Network Warfare; and Intelligence, Surveillance and Reconnaissance. Coordination is also conducted with the three Functional Commands that support USSTRATCOM: Joint Information Operations Warfare Command, Joint Task Force — Global Network Operations, and the Center for Combating Weapons of Mass Destruction. The JFCC IMD, manned by Army, Navy, Air Force, and Marine Corps personnel is located at the Joint National Integration Center at Schriever Air Force Base, Colo.

Supporting Warfighters Engaged in the Long War

Soldiers engaged in Operations Enduring Freedom and Iraqi Freedom face the same battlefield questions as their predecessors: Where is the enemy? Can they see me? Where are other friendly forces? What does the ground look like on the other side of a hill? SMDC/ARSTRAT works across the Joint community to provide capabilities that can best answer these tactical questions.

Space-based products and services are used every day by our joint warfighters supporting Operations Enduring Freedom and Iraqi Freedom. Wideband satellite communications (SATCOM); position, navigation and timing data; weather, terrain and environmental data; intelligence, surveillance and reconnaissance information; and early missile warning data

are readily available to our military forces. SMDC/ARSTRAT is engaged daily in supporting these operational capabilities.

Operationally, as the Army's proponent for Space, SMDC/ARSTRAT relies on its subordinate activities, deployed worldwide, to provide a multitude of Space-based capabilities in support of combatant commanders. 1st Space Brigade provides joint warfighters with Soldiers, Civilians, equipment and access to a variety of Space-based products and services and their related capabilities. These resources extend the range and effectiveness of ground-based communication systems, enhance situational awareness of the battlefield beyond terrestrial systems, and increase the actionable-intelligence available to joint warfighters to synchronize theater-level operations. The brigade's three battalions [the 53rd Signal Battalion (SATCON), the 1st Space Battalion, and the 117th Space Battalion, headquartered in Colorado Springs, Colo.] provide in-theater, strategic and tactical ballistic missile warning, SATCOM and Space force enhancement capabilities.

Army Space Support Teams, assigned to the 1st and 117th Space Battalions, have deployed repeatedly in support of Operations Enduring Freedom and Iraqi Freedom. These Space professionals provide satellite imagery from commercial and military sources and extensive reach-back to Space forces, organizations, and analysis centers within the theater or back to the United States via their own communications systems. 1st Space Battalion's Theater Missile Warning Detachments, supported by JTAGS, provide continuous, assured ballistic missile early warning and cueing in-theater systems. These units currently support combatant commanders in the Pacific Command, European Command and Central Command.

SMDC/ARSTRAT provides other Space-based capabilities that include the Measurement and Signatures Intelligence/



Part of the Advanced Concept Technology Demonstration, the Tactical High Energy Laser (THEL) at the High Energy Laser Systems Test Facility (HELSTF) has successfully demonstrated the Army's ability to intercept rockets and artillery pieces. On June 6, 2000, the THEL intercepted its first Katyusha rocket. Since then, testing in November 2002 has illustrated the THEL's increased abilities with intercepts of smaller and faster moving artillery pieces.

missiles. The Safeguard system subsequently deployed, beginning with the sites in Grand Forks, N.D., and Malmstrom, Mont. The Anti-Ballistic Missile Treaty, ratified in 1972, and subsequent protocols restricted the deployment to one site, North Dakota. In compliance with these new guidelines, the Stanley R. Mickelsen Safeguard site reached full operational capability on Sept. 28, 1975, and became the first anti-ballistic missile site deployed in the Western Hemisphere.

The 1970s and early 1980s saw a new direction for our Nation's missile defense program. At the direction of Congress, Safeguard deactivated in 1976 with the Perimeter Acquisition Radar transferred to the U.S. Air Force. Follow-on initiatives, such as site defense terminated. Rather than pursue complete systems, greater emphasis was then placed upon component technologies, the exploration of directed energy, and the development of kinetic energy or hit-to-kill intercepts.

In a series of five successful flights in the early 1980s, the Designating Optical Tracker demonstrated the feasibility of onboard infrared seekers. This was followed, in June 1984, by the Homing Overlay Experiment, which proved that it was possible to "hit a bullet with a bullet," with the successful intercept of a test Minuteman reentry vehicle at more than 20,000 miles per hour. Two years later, the Flexible Lightweight Agile Guided Experiment further validated the concept with low altitude intercepts of various small high-velocity targets.

In March 1983, President Ronald Reagan announced plans to begin the Strategic Defense Initiative. With 25 years of proven missile defense

technology, the Army and this Command were designated as the leads on six of 11 Strategic Defense Initiative programs with shared responsibility for three others. At the forefront were the Ground-Based Laser, the Ground-Based Surveillance and Tracking System, the Exoatmospheric Reentry Vehicle Interceptor Subsystem, the High Endoatmospheric Defense Interceptor, and the Ground-Based Radar. These projects were followed later by theater missile defense efforts such as the Arrow, Extended Range Interceptor (later the PATRIOT Advanced Capability 3 or PAC-3), and the Theater (later changed to "Terminal") High Altitude Area Defense, the first specifically designed Theater Ballistic Missile Defense system.

"Space to Mud"

On another front, the 1980s also saw the reemergence of the Army in Space. LTC Robert Stewart, in February 1984, became the first Army astronaut in Space as he stepped from the secure confines of the Space shuttle Challenger for an extravehicular activity ("Spacewalk") to conduct the first flight evaluations of the Manned Maneuvering Unit. These bold steps represented man's first untethered operations from a Spacecraft in flight. That same year, the Army institutionalized the study and application of Space. Since 1984, Army astronauts have traveled on multiple missions to Space, including, most recently, COL Jeffrey Williams, who spent six months in Space on the International Space Station during Expedition 13. Currently, five Army astronauts serve with the National Aeronautics and Space Administration's Johnson Space Center in

Although the U.S. has overwhelming Space capabilities, U.S. dominance in Space is not guaranteed. Potential adversaries are quickly developing adaptive strategies, tactics, and capabilities to exploit our perceived vulnerabilities and to counter or mitigate our strengths.

Houston, Texas.

The significance of the Army's role in Space was further realized in 1991 during Operation Desert Storm, commonly referred to as "the first Space war." Global Positioning Systems (GPS), data from weather receivers, and other Space-related equipment provided information to navigate quickly and effectively in the vast deserts of Saudi Arabia and Iraq. GPS proved invaluable in supporting engagements by PATRIOT missile batteries.

In many respects, 1992 was a pivotal year for the Command as the Strategic Defense Initiative redirected to ballistic missile defense and deployment plans deferred. At the same time, the Army Space Command merged with the Strategic Defense Command to form the U.S. Army Space and Strategic Defense Command. Recognized by key stakeholders as a hub for research and testing, this new organization soon served as a center for the consolidated Army Space program.

Throughout the 1990s, the Command continued to develop the Army Space program, focusing on increasing its operational impact. The Joint Tactical Ground Stations (JTAGS) were fielded to receive theater missile warning sensor data directly from Defense Support Program satellites, process ballistic missile warning information in-theater, and then transmit it to theater and worldwide users by data and voice. Army Space Support Teams were created to deliver Space technologies and information to tactical warfighters. The Army also established the 1st Satellite Control Battalion (Satellite Control or SATCON), the first Army unit devoted strictly to a Space mission. This unit, currently designated as the 53rd Signal Battalion (SATCON), continues to operate 24/7 to provide reliable, robust, worldwide, continuous communications support by the Defense Satellite Communications Systems satellites to U.S. warfighting forces

and strategic military users.

In missile defense, the Command kept forging ahead into new territory. The Tactical High Energy Laser achieved the first directed energy intercept of a rocket in flight in February 1996. The Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System detected and relayed cruise missile tracking information to either ground- or air-based assets for engagement. With the proliferation of advanced missile technology in the late 1990s, the command once again became intensely engaged across multiple mission areas in support of the deployment of a national missile defense system.

Missile Proliferation — A New Challenge

The importance of the command's contributions over the past 50-years in missile defense was validated on the Fourth of July 2006. While America was preparing to observe and celebrate our Nation's Independence Day, the world witnessed a startling display of the dangerous capabilities it faces in the 21st Century. In quick succession, the Democratic People's Republic of Korea (North Korea) test-fired six short range ballistic missiles and one intercontinental ballistic missile. If successful, the missile was capable of reaching the United States. North Korea's subsequent test of a nuclear warhead in October 2006 made this event even more alarming. These launches were the first serious missile tests by North Korea since Aug. 31, 1998, when it caught the world by surprise with the launch of a three-stage Taepo Dong-1 missile that over-flew Japan.

While most Americans engaged in routine holiday activities, Soldiers, Sailors, Airmen, and Marines were prepared to respond to North Korea's tests. Equipped with information these tests were imminent, warfighters responsible for the command, control, and operation of the



The Spartan, an exoatmospheric missile developed from the Nike-X system received the designation LIM-49A. The LIM-49A Spartan was stored in and launched from underground silos, and the first Spartan launch occurred in March 1968. In August 1970, an LGM-30 Minuteman RV was intercepted for the first time.

Insets top, members of an Army Space Support Team examine satellite imagery. Center, on December 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. Bottom, a helicopter flies in the distant background of a satellite dish used to provide Space support to the warfighter. Background, an artist's rendition of Nike-Hercules titled Atomic Era City Defender.

50 YEARS

Supporting our Nation's Security Interest

We are a Nation at war. Our Nation also faces a variety of challenges that threaten the Homeland and the regional security of our allies and friends, and could impact geo-strategic stability. This increasingly diverse security environment includes the proliferation of ballistic and cruise missile systems and related technologies, pursuit by some rogue-states and non-state actors of weapons of mass destruction and the means to deliver them, and increased threats to our capabilities in Space.

Confronting these challenges while supporting warfighters engaged in combat operations in Afghanistan and Iraq requires cutting-edge Space-based and missile defense capabilities and related technology. Concurrently, this is the mission and 50-year legacy of the men and women proudly serving with U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command (SMDC/ARSTRAT).

SMDC/ARSTRAT's lineage parallels our Nation's engagement as well as our Army's response since 1957 to the growing security threats from ballistic missiles. More recently, our responsibilities expanded with SMDC/ARSTRAT's designation as the Army Service Component Command to U.S. Strategic Command (USSTRATCOM). Our responsibilities as the Army Service Component Command are to plan, integrate and coordinate utilization of Army forces and capabilities in support of USSTRATCOM's mission areas of global command and control; integrated missile defense; information operations; strategic deterrence; Space operations; intelligence, surveillance and reconnaissance (ISR); global strike; and combating weapons of mass destruction.

Support to Warfighters: A Half-Century Legacy

In 1957, the world experienced a period of dramatic change as the Soviet Union announced a successful intercontinental ballistic missile test flight and launched Sputnik, the world's first satellite. The same year, the Army took important steps to meet our Nation's new security requirements, establishing the Redstone Anti-Missile Missile System Office, the first organization assigned a distinct missile defense mission.

Building upon proven Nike anti-aircraft missile technologies, the nascent Army organization developed the Nike-Zeus anti-ballistic missile system, and, on Dec. 12, 1962, achieved the first intercontinental ballistic missile intercept. Although the Nike-Zeus served a short period in an anti-satellite mode, the initial plans to deploy an anti-ballistic missile system was deferred (until 1967) as research and development continued. Nevertheless, the priority was the development of an anti-ballistic missile system, centralized under a single system manager for all elements of the development process — "From Concept to Combat."

Five years later, in 1967, China successfully conducted nuclear tests and missile flights. In response, the U.S. announced plans in September 1967 to proceed with its Sentinel anti-ballistic missile system, which called for deploying 700 interceptors to defend selected cities from a limited Chinese attack. The system was composed of previously proven Nike components: Spartan and Sprint missiles, the Perimeter Acquisition Radar, and a missile site radar.

The deployment concept was revised in 1969. Its mission was to protect American Minutemen intercontinental ballistic missiles with a limited defense against incoming ballistic

The Flipside

A section dedicated to Space Operations

Celebrating

50 YEARS

