Army Space Journal

A Professional Journal on U.S. Army Space Operations

2009 Spring Edition Vol. 8, No. 1

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CREATING A COP FOR SPACE

Common Operational Picture

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 – Space Cadre News/Features; and FLIPSIDE – USASMDC 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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The views and opinions expressed in the Army Space Journal are not necessarily those of the Department of the Army or U.S. Army Space and Missile Defense Command.

From The Top

Leadership Updates

Army Space Support to Civil Authorities 4
By LTG Kevin T. Campbell
These pages contain an edited transcript of LTG Kevin T. Campbell's presentation at the 11th Annual SPACECOMM Defending America Symposium. Campbell spoke on how the Army is coping with today's ever-changing technology.

Space Soldiers and Technology 6
By CSM Ralph A. Borja
With the rapid change in technology, Borja encourages today's Space Soldiers to stay abreast of the new trends in technology and challenges them to be the best in their respective fields

Using Creativity to Develop Space Concepts 8
By BG Kurt S. Story
In 1958, LTC Robert Riggs set about painting artwork of future military technology based on what he thought would be the needs of the future force. Today, the military holds in its arsenal systems much like the ones in some of Riggs' paintings of 50 years ago. With the ever-changing needs of today's military, BG Story challenges the technology industry to emulate Riggs and think outside of the box as they work on developing new Space concepts for the next 50 years and beyond.

Hot New Space Concepts to Operationalize Space 10
By COL Bruce Smith
Smith addresses the Army and Joint community's continued pursuit of newer Space capabilities. In his column Smith expresses the Future Warfare Center's commitment to the warfighter through the development of new Space concepts..

Cover Photos: Courtesy of Boeing Corporation
Back Cover Photos: DJ Montoya
Front and Cover Design and Layout : Michael Kahl

Contents

Journal Forum
Space Topics

18

SPOC:
It's Only Logical
By MAJ William S. Moncrief
In this article, Moncrief introduces the SPace Operations Common Operational Picture or SPOC, a collection of multiple systems that is paving the way for how data is processed and used on the battlefield.

24

Army Warfighter Panel
Space Cotributions to the Warfighter
These pages contain an edited transcript of LTG Kevin T. Campbell's presentation at the 11th Annual SPACECOMM Defending America Symposium. Campbell spoke on how the Army is coping with today's ever-changing technology.

36

Asymmetrical Challenges
Technology in an Era of Persistent Conflict
These pages contain an edited transcript of LTG Kevin T. Campbell's presentation at the 11th Annual SPACECOMM Defending America Symposium. Campbell spoke on howthe Army is coping with today's ever-changing technology.

Tip of the Sphere
Space Cadre News/Features

Space Professional Personnel Update 58
By Michael Connolly

Training Insights 64
By Larry Mize

Career Management 70
By MAJ Ed Anderson

Transforming Army Space 41
By James G. (Sam) Lee and MAJ Jason Conroy
In this article, Lee and Conroy address the need for Space capabilities at the tactical warfighter level, and challenge

In Search of Ground Truth 46
For Army Space Operations Training
By David Berge, Daryl Breitbach and Lenny Gehrke
Based on a recent trip by DCD Army Civilian Space trainers, this article focuses on the lessons learned needed to improve Space training for members of the Space Cadre.

Developing a Process 52
Providing a Lessons Learned Facility and a collaborative Problem Solving Environment for USASMDC/ARSTRAT
By Chris G. Baker
Knowledge Management is an integral part of U.S. Army Space and Missile Defense Command and the Army as a whole. In his article, Baker reviews the command's challenges and possible solutions to effectively manage critical information.

Editors Blog

An open forum to discuss everything Space related

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"Change is a Coming"

Mike Howard Editior-in-Chief
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Join the Discussion
http://armyspacejournal.blogspot.com

18 May 2009

Thirty years ago, I began kicking old cardboard boxes every time I wrote an article. It was a cumbersome affair between my old manual typewriter, the wobbly stand it sat on, a partial roll of yellow teletype paper and my feet. The cardboard box held paper that I fed into the roller so that the finished article would be typed onto one continuous but long piece of paper. Journalists at the time typed out their articles before giving them to the editor and typesetter to prepare for publication. Having the entire article on one single piece of paper avoided mixing up pages as the article passed from one desk to another. This also saved the effort of changing paper every time I typed enough lines to fill a standard-sized sheet. So it became useful and therefore habit for me to use the cardboard box to keep the paper from rolling all over the office floor as I typed.

This, of course, gives some understanding to my perspective of the whole cut-and-paste computer world we live in today. Writing before computers was not clean. For me, cut-and-paste was always a literal thing whenever a paragraph or sentence needed to go away or be placed somewhere else. A pair of real scissors took care of that on actual paper alongside a messy jar of rubber cement with its' unique odor and stickiness. The result of the writing process – clear concise wording that hopefully told the story – for me was usually an ugly wad of yellow, sticky paper placed carefully into the editor's box on his or her desk. It was through the magic of designers, vision of wise editors and skill of graphic artists that the yellow wad transformed to something attractive that readers would want to pick up and, preferably, read.

Over the years a romantic relationship developed between the process, words and me in my storytelling affair – gritty blue-collar efforts as first steps to flashy professional appearing executive products. I guess that's still true today as youngsters who were born after manual typewriters became obsolete blog and twitter away in the social media world of technology. For them, the relationships that make words special are founded in a world that I will vaguely understand and, I guess, will never fully appreciate. For me, I like my comfort zone. An example of these different approaches to words came when our graphic design mastermind collaborated with the senior editor to influence me to update the appearance of the Editor's Blog pages. For me, I liked the ink-to-paper feel of the old Blog. For them, they thought we needed a design using computer and blog icons to bring things current.

What I feared – and fear – was that journalistic personality of a computer age would be swallowed by the glamour of a fad or series of fads. Don't get me wrong. I threw that cardboard box and teletype paper roll away as soon as I could get a computer screen and keyboard onto my desk. I embraced – and embrace – technology. Admittedly, though, this acceptance has been through the perspective of how the computer-printer combination has improved the process of publishing printed products such as newspapers and magazines. While I hate that the experts say that newspapers are doomed and probably going away, I hate more that there is a possibility that journalism may lose its shine of human connection and feeling.

Maybe I am wrong. Maybe I should trust that there will always be the emotion and feeling tied to words and images and the packaging of all that regardless of the medium. I was still skeptical when I went to the Army Worldwide Public Affairs Symposium earlier this month where the topic was hot on how social media can help inform the American population about our efforts. MG Kevin Bergner, chief of Army Public Affairs, told us that our end state of the current worldwide information environment must always seek a better informed public. Tom Curley, president and CEO of the Associated Press, indicated that technology is forcing journalists to embrace new ways to find and participate in a larger conversation. As I left the symposium, I e-mailed the change in direction for these pages. I invite our readership to participate in our newly established online blog and twitter accounts. Please join the conversation.

Posted by Mike Howard at 10:37 AM | Comments

twitter

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What are you doing?

Posting the Army Space Journal Spring editon on the web … shifting gears to the Summer edition … theme "Tapping in to Space, a How-To Manual" … later …

Latest: Sending Spring edition to printer … finally … on street soon … one of our best efforts … start using social media tools to plug the gaps with Space Community.

Update

Home

theASJeditor Heading home … emailed ASJ staff to dig out the books on twitter and blog … the ASJ is gonna change its ways!
3 minutes ago from the web, 7 May 2008

theASJeditor CEO of Associated Press says internet forces news orgs to reorganize and connect new dots … like using social media tools … to get info out … issue is how orgs get paid. *3 days ago from the web, 4 May 2008*

theASJeditor Secretary of the Army tells us that strategic communications was key to war efforts 1000 years ago and is still true today … product is moral fiber to hang in there. *3 days ago from the web, 4 May 2008*

theASJeditor Attending Army Public Affairs Worldwide Symposium … Chief of Public Affairs says we need to improve efforts to inform the American population.
3 days ago from the web, 4 May 2009

theASJeditor

3 Following **0** Followers **1** Updates

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Home
http://twitter.com/theASJeditor
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Favorites

- ASJ Archive
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Search

Production Schedule

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June 2009

Su	M	T	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

July 2009

Su	M	T	W	Th	F	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

August 2009

Su	M	T	W	Th	F	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Edition Focus

- **Summer Edition**
  "Tapping into Space"
- **Special Edition**
  "Space - Best Job in the Army"
- **Fall Edition**
  "Space Warrior Misson Essential Task List"

Important Dates

- **1-12 June 2009**
  Design – Summer Edition
- **22 - June 2009**
  Article deadline – Special Edition
- **15 - 26 June 2009**
  Printing – Summer Edition
- **6 -17 July 2009**
  Design – Special Edition
- **20 - 31 July 2009**
  Print – Special Edition
- **3 -7 August 2009**
  Cover FA40 Conference
- **TBA**
  Stay tuned for the Fall Edition's production schedule

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

New Capabilities On the Horizon

Welcome to the spring edition of the Army Space Journal. I believe you will find the array of articles that deal with the topic of "Hot New Space Concepts" very informative.

This issue, the authors provide interesting perspectives on what is new on the topic of Army Space, such as the article about "SPOC" (SPace Operations Common operational picture) by MAJ William Moncrief, an FA40 who is the 8th Army deputy Space support officer. BG Kurt Story, deputy commanding general for operations, discusses processes that bring "Hot New Space Concepts" to the front such as the Joint Concept Test Demonstration process. There are more articles that touch on other aspects of Army Space. I encourage you to read and share a copy of, The Army Space Journal.

Two topics that I would like to briefly address are new capabilities – SMDC-ONE and WGS. One has gone from an idea to a reality within 12 months, and the other is increasing our communications capability tenfold.

SMDC-ONE (Orbital Nano-satellite Effects)

In April, USASMDC/ARSTRAT will take delivery of eight Nano-satellites for a technology demonstration. It has been almost 50 years since the Army last developed a communications satellite – Courier 1B was launched into Space, Oct. 4, 1960.

The Army has again developed communications satellites, albeit much smaller. We believe these low-cost Nano-satellites can satisfy Warfighter needs for Beyond Line-of-Sight (BLOS) communica-

> "I encourage you to provide comments about the articles to the editor and to submit your own articles about Space topics that may be of interest to the community. This is your magazine – use it."

tions as well as other requirements. Given the Army's dependence upon Space-based assets to carry out its missions, it is critical that we take steps to assure the Army's access to Space-based communications, data and sensors.

USASMDC/ARSTRAT and our industry partners have been hard at work for the past 12 months developing and building the Nano-satellite Space vehicles.

Wideband Global SATCOM

We are taking a giant step forward in reducing one capability gap – communications – as the Wideband Global SATCOM (WGS) constellation of satellites come on line. WGS provides a tremendous new capability to Warfighters.

The Army Space Master Plan states that, "the largest gap in Space capabilities, and the greatest potential risk to ground operations, is limited high-throughput, protected military satellite communications." Our reliance on SATCOM has increased significantly since Operation Desert Storm. To put things into perspective: during Operation Desert Storm, deployed forces used about 47 megabits per second; Operation Iraqi Freedom and Operation Enduring Freedom use about 5.5 gigabits per second – more than 50 times greater. What's driving the change? Some of the demand is being driven by applications familiar to the young Soldier such as e-mail, chat, and video teleconferencing albeit in a military setting. Demand is also driven by collecting Intelligence, Surveillance, Reconnaissance information with an increasing number of systems and sources. The use of full-motion or video imagery, and the exchange of complex graphics to facilitate common understanding of the battlespace also increases demand.

Employment of collaborative planning tools between dispersed headquarters and the increasing use of joint force tracking devices which facilitate the coordination of maneuver and the reduction of fratricide come with a high communications tax.

The second WGS satellite was launched in April and marks the beginning of a new era in SATCOM support for the Warfighter. The WGS system provides a 10-fold increase in satellite capacity to the Warfighter. Just one WGS satellite is comparable to the entire Defense Satellite Communication System (DSCS) constellation; preliminary tests have demonstrated extraordinarily high data rates. To put the data rates into context: You could download approximately 4,000 novels in one second – astronomical capacity.

SMDC-ONE and WGS are two new capabilities that I believe will provide Warfighters an advantage on the battlefield.

Lastly, the Army Space Journal is your publication. The Soldiers and Civilians of USASMDC/ARSTRAT continue to work hard to provide the Army dominant Space and Missile Defense capabilities, but we need your input as well. Let us know what works or doesn't work in the realm of Space-based technology. I encourage you to provide comments about the articles to the editor and to submit your own articles about Space topics that may be of interest to the community. This is your magazine – use it.

"SECURE THE HIGH G

CSM Ralph Borja
U.S. Army Space and Missile Defense/
Army Forces Strategic Command

Space Soldiers and Technology

This issue of the Army Space Journal focuses upon "hot new Space concepts." We are at the "tip of the spear" for all operational issues associated with providing Space force enhancers to the United States Army. This makes it critically important for the Soldiers assigned to USASMDC/ARSTRAT to stay abreast of what is happening within the Space community; understanding where our Nation is headed in Space operations and what new technologies are coming within grasp of the Warfighter.

LTG Campbell recently discussed the tremendous responsibilities we place upon our Soldiers in this era of "Persistent Conflict." He noted that today's battlefield "is a collage of factions, cultures, chaos, and fleeting advantages … where NCOs and Junior Officers operate independently … that it is at the squad, company and battalion level where these wars are won."

Army Space operations offer a unique opportunity for our Soldiers and Civilians to work with leading edge technology; to be at the forefront of what's new within the technical and scientific realms. Unlike our Sister Services who rely heavily upon Officers to operate Space assets and to use/manage Space-based resources, Army enlisted personnel assigned to USASMDC/ARSTRAT are responsible for providing the Army's Space Priorities:

> "Each Soldier should strive to become a recognized expert within his or her area of expertise."

- Enhanced SATCOM
- Theater Missile Warning
- Persistent Surveillance
- Position, velocity, navigation, timing services
- Weather, terrain and environmental monitoring

Around the world, our Soldiers man crew positions in Joint Tactical Ground Station shelters, Wideband Satellite Operations Centers, Missile Defense Fire Direction Centers, and as members of deployed Army Space Support Teams and Commercial Exploitation Teams. Each Soldier is uniquely trained and certified, and contributes significantly to USASMDC/ARSTRAT's vision and mission.

Each Soldier should strive to become a recognized expert within his or her area of expertise. You should go further than becoming the best Joint Tactical Ground station crew member, Wideband Global SATCOM payload manager, or Commercial Exploitation Team member. It's important that you not rest on your laurels; being satisfied with being the best at your assigned task. In order to fulfill your duty as members of the Army's operational Space force, you must stay current with trends and technology that affect all areas of Space, not just those related to your current mission.

As you are all aware, the Secretary of the Army has established 2009 as the "Year of the NCO." As noted on the Army's Year of the NCO Web page, "throughout 2009, the Army honors NCOs through initiatives and events that:

- Enhance awareness and public understanding of the roles and responsibilities of today's NCO.
- Enhance and accelerate the development of NCOs through education, fitness, and leadership development initiatives.

Maintaining knowledge on current issues and trends within both the military and civilian realms of Space operations supports these initiatives. Demonstrate your knowledge and expertise by speaking at school and civic events or by writing factual articles for local papers. Enhancing the public's understanding of the roles and responsibilities of today's NCO is an excellent way of supporting the "Year of the NCO." Just remember to clear all presentations, articles, or papers through your local public affairs office.

As I mentioned earlier, we have Soldiers and Civilians working around the world providing support to the Warfighter. Some are currently in harm's way, working with the Warfighter to help define requirements and to obtain Space resources on a daily basis. I continue to be proud of the Soldiers and Civilians assigned to USASMDC/ARSTRAT. Your dedication to duty and job performance continues to be outstanding!

"SECURE THE HIGH G

BG Kurt S. Story

Deputy Commander for Operations
U.S. Army Space and Missile Defense Command/
Army Forces Strategic Command

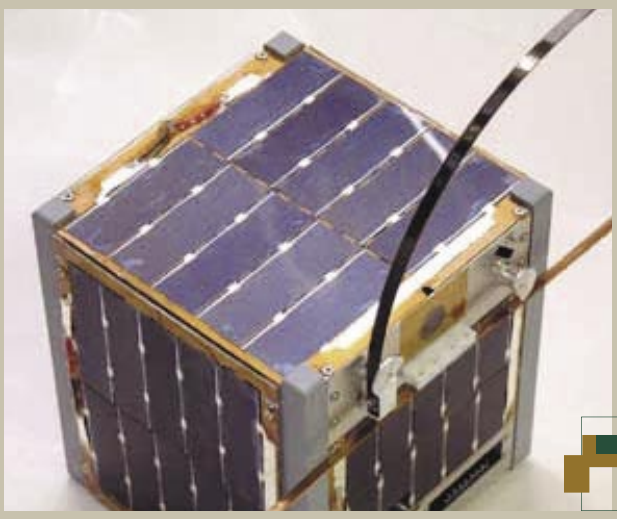
Using Creativity to Develop Space Concepts

Editor's Note: This column was written with input from LTC Dennis Brozek

Artwork of future war machines painted in 1958 by LTC Robert B. Rigg gives a perspective of how possible military power today was seen then. This collection by the Army artist, decorates the U.S. Army Space and Missile Defense Command/Army Forces Strategic Command's Command Conference Room in Colorado Springs, Colo., as a reminder of the need for vision among military leaders. Each painting is the artist's rendering of a future weapon system – each one looks like something from a science fiction novel – some drawings look like parts of systems that are in the military inventory today. The point is: People can envision the future and imagine new and useful capabilities or concepts, and then work diligently to develop and test the ideas until they become realities in some form.

There's the tilt-wing plane – Vertol 76 – an Army/Navy joint research project that was to achieve flight in 1958 but never did. The U.S. Marines continued its development and today's Marine V22 Opsrey has logged well over 1,400 combat sorties in Anbar Province, Iraq, since October 2007. Another print is called "Flying Spy – Army Jet Drone." It is an unmanned, remote controlled plane that research and developers in 1958 were working on to conduct surveillance, reconnaissance and target spotting. Sound familiar? The painting and the concept look a lot like the U.S. Air Force's Predator Unmanned Aircraft System and, to some extent, the Army's XM157 Class IV Unmanned Aerial Vehicle of the Future Combat System family.

This provides an appropriate frame of reference for this edition of the Army Space Journal, which is dedicated to new Space concepts.



CubeSat, with dimensions of 10 x 10 x 10 cm, is a pico-satellite

The concepts discussed in this article have evolved either from a combatant commander's urgent need or surfaced from requirements identified by Soldiers on the ground. In an effort to fulfill these needs, scientists and combat developers have used their imaginations, intellect, and knowledge to come up with various solutions, many of which are still in the test and evaluation stage. LTC Dennis Brozek, USASMDC/ARSTRAT Future Warfare Center Experiments and Transformation Division Chief, provided several examples of concepts and hardware that survived the testing stage and are in use today.

Tactical Satellites

Although not a new concept, the reality of launching tactical satellites – an overarching term for satellites that can be built and launched within months and days rather than years that are in direct support of a joint force commander – is gaining momentum. For years, warfighters have seen the utility of the products and services that satellites provide them. Because of the demand for satellite bandwidth and the continuing threat to our current satellites, combatant commanders recognize the utility of adding small, agile satellites in order to "augment, surge and/or reconstitute existing assets."[1] However, up until now these "on-call" satellites were impractical because of the long lead time to launch and the overall costs of developing, building and launching them.

In 2007, the Department of Defense stood up the Operationally Responsive Space office at Kirtland Air Force Base, N.M., in order to rapidly "exploit and infuse Space technological or operational innovations; adapt or augment existing Space capabilities, and reconstitute or replenish critical Space capabilities …"[2] in response to joint force commanders' and others' immediate and urgent needs for Space capabilities. To complement improved responsiveness in existing capabilities, the ORS office is also developing more affordable, small satellites/launch vehicle combinations that can be launched in relevant timeframes. To meet this goal, the ORS engineers, under the direction of Dr. Peter Wegner, are exploring the potential use of the "plug and play" concept of the USB (Universal Serial Bus) for computers on tactical satellites. USBs have a standardized design that allows peripherals made by different manufacturers to be plugged into a personal computer.[3] ORS/Air Force Research Lab has published a catalog that tells civilian firms what protocols they need to follow in order to be compatible with others. So when a firm develops a product, that product can be plugged into/with/in conjunction to other products or systems developed by others. To be a part of the ORS program, competitors can no longer use company-proprietary data that makes it hard to produce compatible systems; instead, they must use open networks. As a result, ORS/AFRL is working and testing common payloads, a common bus, and common interfaces to create new satellites within days.

USASMDC/ARSTRAT's Battle Lab is the primary U.S. Army partner in the ORS office's Joint Military Utility Assessment for TacSat-3 and TacSat-4. The ORS office will use the lessons learned from the TacSat scientific experiments in their development of other responsive Space projects. Building on the results of TacSat 2's focus on electro-optical and radio frequency sensors to demonstrate enhanced Specific Emitter Identification and Automatic Identification systems and with tactical tasking and data dissemination, TacSat 3, when launched (tentatively in May 2009), will operate in two modes. The routine mode will collect imaging spectroscopy data to be processed and analyzed in traditional manner such as many of the national technical means currently available. This is nothing new. What is new is that the tactical mode will allow the theater commander to task the satellite where to look and for which spectral signatures. When the satellite "sees" that signature, the onboard processor will directly download the requested data into theater to the tactical warfighter. The fact that the warfighter is able to task the satellite, and receive its products within seconds to minutes is the groundbreaking innovation that is being demonstrated and evaluated for future warfighter application. TacSat 3 represents a new paradigm in Army-Air Force collaboration from the beginning or Research and Development throughout design,

Space Concepts >> page 12

COL Bruce Smith
Director
Directorate of Combat Development
Future Warfare Center

Hot New Space Concepts to Operationalize Space

Man-portable Space Control systems; SATCOM laser linked constellations and networks; theater controlled Space imaging systems; jam resistant, positioning, navigation and timing systems; and networked, theater missile warning systems. These are a few of the concepts I have heard about or been involved in working on during the past six years. While some of these ideas seem far fetched and have almost no chance of ever becoming operational systems, others do seem plausible and in fact are in various stages of development. Whether feasible or not, what links them together is the fact that they all began as someone's idea in an effort to solve an operational shortcoming.

This quarter's issue of the Army Space Journal is dedicated to exploring "Hot, New Space Concepts." Articles in this issue will focus on efforts within the joint community, as well as within the Army and the Future Warfare Center to identify, explore and develop new concepts. Merriam-Webster's dictionary defines a concept as, "something conceived in the mind; a thought or notion, or an abstract or generic idea generalized from particular instances." Currently, the Army and the joint community are pursuing a number of new Space capabilities, among them; improved satellite communications, enhanced Space-based intelligence, surveillance and reconnaissance, responsive launch, and improved protection. The National Security Space community, as well as industry, is developing these new technologies and systems to provide new operational capabilities, expanded capacities, and/or gain operating efficiencies. Yet one concept, above everything else, is driving the Army's thinking about Space and shaping our participation in developing these future Space capabilities.

Since the launch, of then Chief of Staff, General Shinseki's Army transformation efforts the Army has sought new ways to leverage

> "The Army has recognized that it is more than just a Space enabled force, but is in fact a Space empowered force."

Space capabilities in order to enable, enhance, and support land component operations. The Army has been actively seeking to operationalize Space; bringing Space capabilities into its operational and tactical level forces and formations from the national/strategic level. The Army is pushing Space enabled capabilities and systems down to tactical echelons and forward on the battlefield. The Army has recognized that it is more than just a Space enabled force, but is in fact a Space empowered force. Soldiers on the front lines rely on imagery, communications, timing, navigation and missile warning provided, or enabled, from Space-based systems in order to accomplish their missions successfully. "Hot, new Space concepts" are of little or no value to the Army if they are not providing direct support capabilities to the Land Component Commander and the forces under his command.

Two and a half years ago U.S. Training and Doctrine Command published the Space Operations Concept and Capability Plan authored by the U.S. Army Space and Missile Defense Command Battle Lab. The Concept and Capability Plan's central thesis stated that the traditional role of Space support to land component operations had focused on global strategic missions, and that theater focused operational and tactical Space applications had generally been "piggy-backed" on strategic assets. This traditional way of thinking about Space is no longer acceptable. To realize the Army's Capstone Concept, of becoming a "strategically responsive, campaign quality force, dominate across the spectrum of conflict," the capabilities provided by Space-based systems must move into a direct support role for land component operations.[1] In order to develop these Space-based direct support capabilities the Concept and Capability Plan defined four imperatives:

- Facilitate the integration of Space capabilities across the full spectrum of Army and joint operations.
- Improve the Army's ability to exploit existing Space capabilities.
- Deliver Space capabilities that address Army needs (capability requirements) and priorities by influencing the design of Space-based systems and payloads.
- Systematically and deliberately evolve Army Space support operations over time to provide dedicated, responsive theater focused support operational and tactical commanders.[2]

On going work within U.S. Army Space and Missile Defense Command's Future Warfare Center, which includes the Directorate of Combat Development, Decision Support Directorate and the Battle Lab, is focused on achieving these four imperatives and consequently integrating and operationalizing Space into the Army in a direct support role. For example the Directorate of Combat Development recently has been working with Headquarters Department of Army Command Information Operation/G6, PM-SATCOM, Air Force Space A5 and U.S. Training and Doctrine Command to define the Army's satellite communications needs and determine if the Transformational Satellite Communications System Digital Core variant met the Army's operational requirements. Specifically the group has been assessing the brigade combat team's future communication requirements and determining if Digital Core has the ability to meet these operational needs. In addition, the Future Warfare Center has been working with Command Information Operation/G6 and Air Force Space A5 to shape the design of the forthcoming GPS III constellation in order to ensure it meets the Army's Time to First Fix operational requirements. Time to First Fix directly affects deployed soldiers; properly defining its requirements are critical to ensuring Army Forces have access to positioning, navigation and timing services immediately upon deploying into a distant theater or switching a GPS receiver on. Any delay or disruption to the timing signal could adversely affect land component operations. At the same time, Directorate of Combat Development's Training Division is rapidly expanding training programs for uniform personnel, our Space Operations Officers, as well as our Space Cadre civilian personnel. Our goal is to improve training in order to systematically evolve Army Space support operations so as to provide enhanced, responsive, theater focused capabilities. These are only a few of the efforts that the Future Warfare Center is working on in order to bring "hot, new Space concepts" into operational reality.

A "hot, new Space concept" may be exciting and hold great promise. However no concept, no matter how hot or new, is of any value in itself. A concept on its own does not provide any capability to our forces, only a foundation or starting point to developing a usable capability. It is the logical, progressive hard work done through experimentation, analysis, war-gaming, combat development, force design, doctrine writing, and training that brings a concept into operational reality and ultimately provides capabilities to our Soldiers. In the coming months and years the Future Warfare Center will continue to identify and develop new concepts – in the realms of high altitude, Space, and cyber – but our underlying objective will remain; bringing enhanced, responsive, theater focused operational capabilities to the Soldier on the front lines, ensuring his continued success!

Footnotes

[1] TRADOC Pamphlet 525-7-4, Space Operations Concept Capability Plan, Nov. 15, 2006, p. 18.

[2] Ibid., page i.

Here is an computer generated image of all the orbital debris in low earth orbit (LEO). LEO stands for low Earth orbit and is the region of Space within 2,000 km of the Earth's surface. It is the most concentrated area for orbital debris. (Courtesy of the NASA Orbital Debris Program Office)

Space Concepts >> from page 9

development, test and operations.

FYI: Max Delgado says UHF will support COTM. Planes use it. From satellites it doesn't work very well. UHF is definitely part of the experience.

Unlike the other three experiments, TacSat 4 – slated for launch in September 2009 – will focus on enhancing existing ultra high frequency-based communications with three mission sets: satellite communications-on-the-move, friendly force tracking and data exfiltraton from unattended U.S. Navy sensors. TacSat 4 is also a test bed for payload control via the new software tool called Virtual Mission Operations Center. This software is designed to allow the request for services, the approval process, and user feedback to be on a single Web-based tool that can be used by any authorized user with a Secret Internet Protocol Router connection. If successful, the communications-on-the-move package will allow the current generation of tactical radios such as the PRC-117, PRC-148 and PRC-152 to execute satellite communications on-the-move without using today's cumbersome satellite antennas that have to be set up at a halt. The goal is to allow for the use of whip and baton style antennas in order to make it as easy as talking on the cell phone in your car. During its experimental life, the satellite will offer an alternative method of data exfiltraton from unattended sea sensors and will provide higher levels of friendly force tracking than currently exists for U.S. Southern Command.

Both TacSat 3 and 4 experiments have a projected life of about two years. Both systems are experimental – not operational – systems. Because there is only one satellite in each experiment, each system will have limited, available orbital coverage. As with any experiment or test, the success or failure of each system tested will influence the development of future operational systems. Each system will go through extensive testing by each of the services and then seek approval to support high level (combatant command or joint) exercises as a sort of "graduation" event prior to them being launched and fielded to support any real world operations.

The take away point is that tactical satellites were someone's vision, developed from a need, and today these satellites are becoming a reality.

Space Debris

What will be the hot, new Space concept to either eliminate debris in Space or limit the damage it can do to orbiting items that military and civilians depend on? The problem is that countless pieces of trash are in Space – this trash can severely damage satellites and spacecraft. Some sources estimate that over 300,000 objects of at least 10mm in size are in orbit, and some 18,000 are over the 10cm size. It is estimated that the COSMOS 2251 crash into the Iridium 33 in January yielded 212 pieces of detectable debris.[4] The Chinese ASAT test in 2007 created about 2,500 debris particles. With over 900 satellites in orbit and a world dependent upon their services, we need to be concerned about things that can damage them. The reality of the danger was especially highlighted on March 12 when the astronauts on the International Space Station had to take shelter in the Soyuz capsule because a piece of Space debris was coming into close proximity. The problem will only get worse, according to Nicholas L. Johnson, NASA's chief scientist for orbital debris, in the NASA Orbital Debris Program Office. He says we need to figure out how to clean it up.[5]

> "With over 900 satellites in orbit and a world dependent upon their services, we need to be concerned about things that can damage them."

Bloggers on NETWORKWORLD have offered some humorous solutions: A big Space vacuum cleaner similar to the one in "Spaceballs" or a Space janitor like the one in Space Quest. How about a Space-roving WALL-E – that Disney-Pixar character from the 2008 movie of the same name? Some of the seriously considered suggestions include attaching balloons to pieces of debris to increase drag or attaching an electrodynamic tether to debris to create electricity so man can re-direct the used craft back to earth.[6] In 1990 SPECS, Inc. of the University of Texas at Austin studied the problem and designed a transfer vehicle with a net, and NASA has experimented with a gel in a honey-comb like mitt to catch and bring the debris back.

Many people are looking for a solution to this serious issue. The key here is that there may be leaders in our Army Space community with ideas that could work. If so, refer it to Nicholas L. Johnson, NASA's chief scientist for orbital debris, in the NASA Orbital Debris Program Office at http://orbital-debris.jsc.nasa.gov/

Concepts put to the test

While NASA and others work on solutions to the Space debris problem, USASMDC/ARSTRAT is working on solutions that can be applied today though the Joint Capability Technology Demonstration. As the Army Service Component Command to U.S. Strategic Command, USASMDC/ARSTRAT is entrusted with the mission to rapidly deliver Space and high altitude capabilities. Through the Technology Center and Battle Lab, the command does this mission in support of the Joint, Interagency, Intergovernmental and Multi-National community's combat and Security, Stability, Transition and Reconstruction operations. The Joint Capability Technology Demonstration is one of the primary science and technology programs that USASMDC/ARSTRAT leverages.

The Department of Defense initiated the precursor to this program in 1995 – it was called the Advanced Technology Demonstration Program – with the purpose of demonstrating new, mature technologies in an operational environment. The goal was to obtain new technology and put it into the hands of users as quickly as possible. Using a streamlined development approach, the Joint Capability Technology Demonstration program brings together technologists and military – from all the Services – and civilian operators, who together insert advanced technologies into live demonstrations and exercises, evaluating their operational utility in the field, while tailoring operational concepts and tactics, techniques, and procedures for Joint, Interagency, Intergovernmental and Multi-National user employment. The program model specifically addresses congressional concerns and recommendations regarding rapid development and transitioning of commanders' relevant capabilities to the Joint, Interagency, Intergovernmental and Multi-National user in a more cost effective, timely and efficient model.

The Joint Capability Technology Demonstration and its precursor program have a long history of supporting rapid development of High Altitude capabilities. For example, in 1995, the U.S. Air Force began the High-Altitude Endurance Unmanned Aerial Vehicle program that we now know as Global Hawk. The High Altitude Airship was the next program to explore how the Department of Defense could further provide wide area, long endurance coverage for the Joint, Interagency, Intergovernmental and Multi-National community. While the

Revolution in Future Flight: The Tilt-Wing Plane

The first tilt-wing plane. the Vertol 76, is turbine powered. Funded by the Army and developed in cooperation with U.S. Naval Research, it is expected to achieve flight conversion in 1958.

Atomic Era City Defender: Nike Hercules

There was no further information provided by the artist.

Flying Spy: Future Army Jet Drone

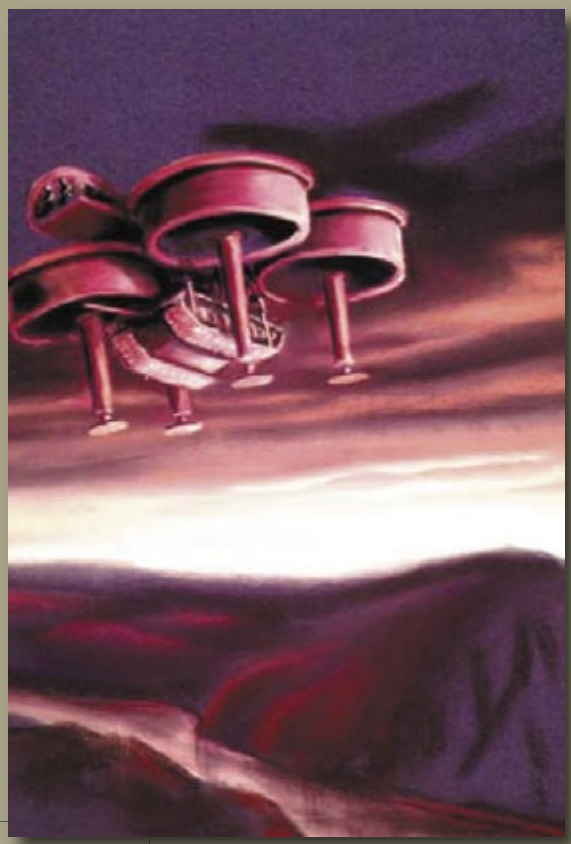
A concept of unmanned, remote-controlled drone – a 1958 Research and Development project to provide drones to accomplish: battlefield surveillance, target spotting, nuclear fallout monitoring, radiation detection, countermeasures control and tactical reconnaissance.

Night Reconnaissance

Air Cavalry's flying jeeps of the future will shoot to obtain information. A ducted-fan aerial jeep of this undergoing Army development

Army Air Cavalry Vehicle of the Future

An aerial assault vehicle and aerial jeep — 1958 Research and Development projects designed to provide the pentomic Army with 3-dimensional means of target acquisition, reconnaissance and attack.



Breaking Traditional Terrain Barriers

Army R&D is in quest of a flying crane, which can carry payloads of up to 12 tons for distances of 50 miles, and lift small armored vehicles over rivers and other terrain barriers. One 1958 concept is the Hiller duct-fan type crane.

U.S. Army SGT Ryan Pike from 2nd Battalion, 8th Infantry Regiment, 2nd Brigade Combat Team, 4th Infantry Division and SSG Altaf Swati set up a tactical satellite radio during a patrol to check the progress of several school construction projects, funded by the Iraqi government, in Afak, Iraq. Department of Defense photo by Senior Airman Eric Harris, U.S. Air Force.

full scale High Altitude Airship prototype ran into program and engineering challenges, USASMDC/ARSTRAT – along with the Missile Defense Agency – have continued to push the capability forward and will fly a sub-scale prototype of the original High Altitude Airship design in 2009.

In 2007, USASMDC/ARSTRAT became a partner on two Joint Capability Technology Demonstrations: Global Observer high altitude platform and the Zephyr. The Global Observer will demonstrate a long-endurance, liquid hydrogen-powered, unmanned aerial vehicle in 2009 and 2010, which can stay on station a week and provide both intelligence, surveillance, reconnaissance and communications support. The Zephyr is a solar-powered, fixed- wing, unmanned aerial vehicle designed to meet urgent operational requirements for U.S. Central Command and U.S. European Command. This program, if successful, could provide low-cost persistent surveillance and communications relay, flying continuous operations for months at a time using solar power and batteries for continual flight. The Zephyr has already had successful test flights and is the current record holder for High Altitude endurance flight. Its mission set will provide communications relay and electro optical capability to the Joint, Interagency, Intergovernmental and Multi-National community should the operational utility prove worthy.

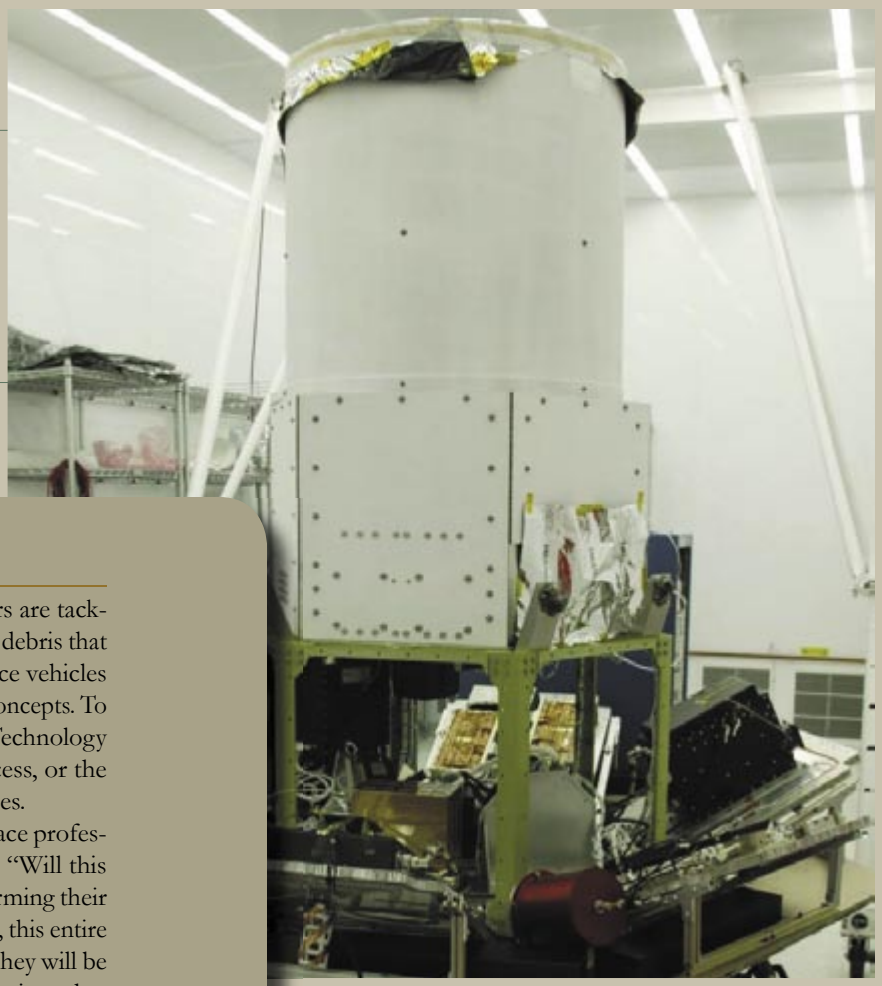
Space systems have also enjoyed the benefits of the Joint Capability Technology Demonstration rapid capability development program. In 2000, the Global Monitoring of Space Intelligence, Surveillance and Reconnaissance Systems program demonstrated the operational value of providing near-real-time information on potential threats to theater operations posed by commercial Space systems. This capability allows the theater commander to take mitigation actions to avoid the threat of detection from commercial spacecraft. This capability is in use today with joint Space forces around the globe.

In 2006, USASMDC/ARSTRAT began another Space related Joint Capability Technology Demonstration program called Extended Space Sensors Architecture. The program addresses gaps in Space situational awareness and integrates technology from different mission areas (missile defense and Space superiority) to give commanders the situational awareness they need to act within their time requirements. USASMDC/ARSTRAT's Technology Center is playing a major role in technology development and the Battle Lab is acting to integrate and demonstrate this new capability in operations.

The Battle Lab's most recent Space capability programs are the Internet Router in Space and Communication AirBorne Layer Expansion Joint Capability Technology Demonstration. The Internet Router in Space program will leverage a wholly-owned and operated commercial payload onboard IntelSat's IS14 satellite scheduled for geo-stationary orbit in late 2009. The program has the potential to be a transformational technology capability as it seeks to provide routed cross-band, (Ku-C) and cross beam transceived Internet Protocol communications to the European, African and South American regions. Internet Router in Space capability could provide secure, reliable access to the network with a common toolset of infrastructure services, information assurance and interoperability. If the program proves to have operational utility, its transition will provide a Defense Information Systems Agency contract mechanism to enable the Joint, Interagency, Intergovernmental and Multi-National community use of the Internet Router in Space capability on a fee for service basis. Communication AirBorne Layer Expansion is aimed at enhancing air, land and maritime domain communications systems, and will provide a next generation airborne network extension capability to the tactical edge.

The Joint Capability Technology Demonstration program has been an invaluable tool in rapidly developing hot, new Space and high altitude platform concepts. This program will continue to be instrumental in providing a vehicle to integrate and demonstrate new capabilities in both combat and Security, Stability, Transition and Reconstruction operations.

ROUND"



Tactical Satellite-3
Integration of the modular bus components on Tactical Satellite-3 is photographed at the Air Force Research Laboratory's Space Vehicles Directorate, located at Kirtland Air Force Base, N.M. (Air Force photo)

Conclusion

Today's scientists, combat developers and others are tackling tough Space-related issues like dealing with Space debris that could damage our satellites, building responsive Space vehicles and developing high altitude platforms with hot, new concepts. To do this, the community is using the Joint Capability Technology Demonstration process, NASA's experimental process, or the civilian industry's research and development resources.

The primary question military operators and Space professionals ask about the process and final products is: "Will this new concept serve the warfighter well?" While performing their duties as Space operations officers and Space enablers, this entire community will continue to ask the same question. They will be assessing all aspects of military operations to determine what other urgent needs can be satisfied by the Space-based systems being developed. The goal is to push the needs statement forward. Space professionals with operational experience should be involved in the development, test and evaluation of new concepts. Who knows, they may become the ones configuring or reconfiguring the payload on a High Altitude Airship or a small satellite in the future. It is not beyond the reach of any of those Space professional/Space enablers to have a viable solution to the issues that face the Space community.

These solutions begin with an intellectual dissection of the problem and an educated imagination asking "what-if" or "I think we could use this to do. . . . " The resulting Space machine or Space concept could become the subject for an Army artist's canvas in tomorrow's military context.

Footnotes

[1] "Plan for Operationally Responsive Space, A Report to Congressional Defense Committees," Department of Defense, Washington, D.C., Apr. 17, 2007.
[2] Ibid
[3] Holmes, Erik (Feb. 20, 2009) Lab To Build Special Order Satellites in Days. Air Force Times
[4] Brown, Peter J. (February 2009) Things That Go Bump In Space, Part 1. The Asia Times, GET PAGES
[5] Experts Seek Solution to Space Debris Orbiting Earth. (Feb. 20, 2009) RedOrbit.
[6] Experts Seek Solution to Space Debris Orbiting Earth. (Feb. 20, 2009) RedOrbit.

"SECURE THE HIGH G

SPOC

ACE PERATIONS OP

"IT'S ONLY LOGICAL"

BY: MAJ WILLIAM S. MONCRIEF

CONTRIBUTION BY: KEVIN CRUMLISH
FUTURE WARFARE CENTER
MODELS AND SIMULATIONS DIVISION

Imagine yourself in Iraq or Afghanistan conducting Missile Warning, Space-based Battlefield Characterization, Space Situational Awareness, Blue Force Tracking (Air, Land and Sea: surface and sub-surface), and Enemy force tracking. Imagine doing all this as well as monitoring the status of satellite collection. While doing this job you don't need five different computer systems and programs the rest of the Army is using; you only need one. This is not science fiction it is science fact. Let me introduce you to, the SPace Operations Common operational picture, or (SPOC).

The 8th Army Space Support Element, with the approval of the U.S. Army Space and Missile Defense Command/Army Forces Strategic Command's Future Warfare Center (FWC) and Battle Lab in Colorado Springs, Colo., and with the support of the FWC Models and Simulations Division in Huntsville, Ala., developed the SPOC. 8th Army uses SPOC as a replacement for multiple systems. SPOC takes multiple data feeds that are normally processed by different systems and merges it into one display that can be filtered. (See Figure 1) SPOC uses a classified Google Earth EC as its base platform for displaying all the incoming data. Currently the Overhead Persistent Infrared data is fed into the system through the Joint Embedded Messaging System; the other feeds are Keyhole Markup Language-based. Joint Embedded Messaging System was developed by L3 Communications for USASMDC and will be further explained later in this article. We

are attempting to move away from Keyhole Markup Languages as a primary means of data feeds and toward direct feeds with the use of Joint Embedded Messaging System. For now the Keyhole Markup Languages primarily come from, but are not limited to, three sites: Counter-IED Operations Integration Center (User Defined Operational Picture), National Reconnaissance Office, and another classified sensor Web site.

During exercise Key Resolve 2009 the 8th Army Space Support Element put the SPOC through its paces. After multiple changes to the baseline mapping code we ended up with an extremely effective and highly sought after tool used to provide global Space Situational Awareness. Our system was so effective the Air and Missile Defense element started using it as opposed to the Web warn, which is the theater system of record for providing tactical missile warning information. SPOC received the Overhead Persistent Infrared data faster and it provided clearer amplifying data. The immediate solution was to remotely display SPOC at the Air and Missile Defense desk using an extra monitor linked directly to our Space Operating Systems Workstation. This exercise would not have been as great a success had we not received excellent support from Kevin Crumlish's team in Huntsville and the augmentee Army Space Support Team leader CPT James French. This group of people took our requirements and direction and created an extremely powerful tool from what was already a working product. (See Figure 2)

We also conducted real world tests before, during, and after Key Resolve 2009. Tracking everything from real world Blue Force Tracking, to real world missile launches. We tracked the launch of the H2A prior to Key Resolve 2009 as well as Overhead Persistence Infrared hits from combat operations in the Central Command Area of Responsibility. After Key Resolve 2009 we were asked to provide our system to the U.S. Forces Korea commander GEN Walter (Skip) Sharp to monitor the TD-2 Launch out of North Korea. We established two systems, one with the 8th Army watch team and one with the J2 at U.S. Forces Korea. During the launch GEN Sharp was briefed using our system. Comments from the J2 and others were that our system was invaluable.

The best part about SPOC is that it is extremely versatile and can be tailored. If you have new data you want to display you can. This will allow you to adapt SPOC to your units needs. With this system you also ensure multiple methods of gaining access to data. This came in handy during the TD-2 launch in April 2009. Prior to the TD-2 launch the operator, a non-FA40 and someone not familiar with our system, had not turned on the Joint Embedded Messaging System feed. Fortunately we had configured a secondary and tertiary back up which allowed them to maintain situational awareness without even knowing the main system was offline. This is not to say the system is complete. I don't think that will ever be the case, but I do believe it is an effective

"JEMS (Joint Embedded Messaging System) will bring the SPOC (Space Common Operational Picture) to the desktops of not just Space officers but every staff officer who needs to know."

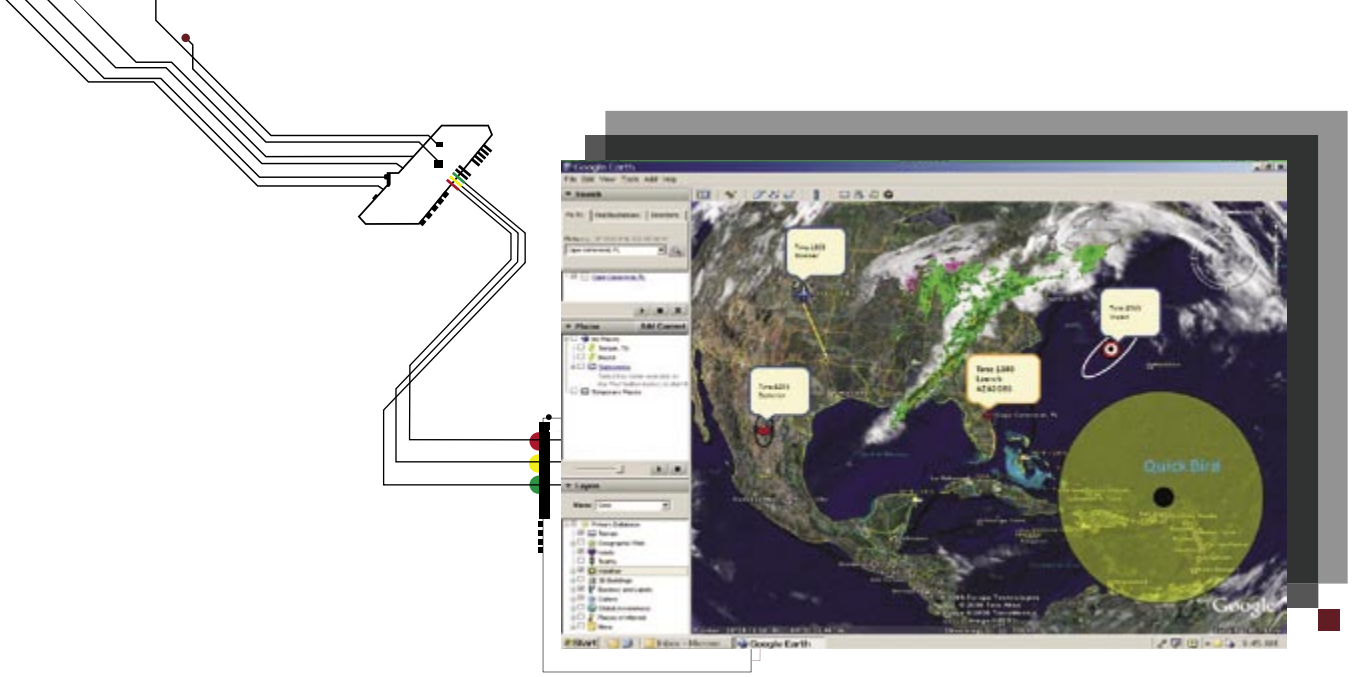
CPT James French, EN
Army Space Support Team
15 Team Leader

tool that if used properly is a huge combat multiplier.

The questions that continually come up when anyone sees SPOC in action is where did this concept come from, and how did we do it? First, it was a long and painful process with lots of smart and dedicated people working together to make this vision a reality. It all started in 2006 when I was a missile commander at Cheyenne Mountain in Colorado Springs, Colo. The, then, Missile Correlation Center was transitioning from the Command Center Processing and Display System Replacement (CCPDS-R) to the Missile Analysis and Reporting System. The CCPDS-R system we were using was decades old but it had been upgraded. While the display looked like something out of the 1960's, (See Figure 3) CCPDS-R gave us the big picture, however; it was designed for the strategic missile warning mission, i.e. Intercontinental Ballistic Missiles. Although it could detect smaller systems it was extremely inefficient for tactical warning and giving the combatant commander good situational awareness. One reason for this is there was an extremely limited drill down capability on the CCPDS-R and it would not give you city locations of the events. The Processing Display System – Migration was designed to fill that gap in the theater missile warning mission area however; the way the system was designed it automatically filtered out much needed Overhead Persistent Infrared data that is extremely valuable to the ground forces commanders. The Processing Display System – Migration was a little better with its drill down capability but was still limited. Ground forces need something more effective for battlefield characterization. If a large explosion was detected usually the best location we could give was Russia and a latitude and longitude. (See Figure 4)

When we transitioned to the Missile Analysis and Reporting System we incorporated the limited Processing Display System – Migration map type display with the strategic feeds. This system was better than CCPDS-R but for 2006 it was terribly inefficient. (See Figure 5) When I attended the Tactical Space Operations Course I discovered how to integrate certain Overhead Persistent Infrared Keyhole Markup Languages into Google Earth on SIPR. This gave me an idea. First, I lobbied to get Google Earth on the Cheyenne Mountain Operations Center computers to assist us in our daily duties. This would give us drill down capability and the ability to update the imagery as the terrain changes due to construction and battlefield damage, thus giving us excellent situational awareness. This would also allow us to make an initial assessment to the cause of some large explosions. For example the Circular Error of Probability is represented by an ellipse. So if we detect a large explosion we can drill down and if the ellipse encompasses an industrial area it could be an industrial fire or refinery. If it is in the middle of the woods it could be a forest fire. If it is in the middle of the desert miles from the city it could be an Improvised Explosive Device testing facility.

The next step I took was to look around for a way to pull SIPR Integrated Broadcast Service data into Google Earth. The first call I made was to the Integrated Broadcast Service Support Office at the National Security Agency. I asked if there was away to pull Integrated Broadcast Data into a Google Earth readable format. They told me they had heard someone was working on it but they did not know who. I continued to ask around and found David Estacio, a contractor supporting the FWC Models and Simulations Division in Huntsville. He put me in contact with Kevin Crumlish, the government lead for Joint Embedded Messaging System. I outlined my idea and although this was not a part of the original design for the system he believed it would work. For the next few months I spent time on the phone with Chris Rule, a member of the Joint Embedded Messaging System team developing the Missile Warning display. By the time I moved to Korea we had established a baseline of what we wanted the Missile Warning display to look like. We also tested the display by running real world historical data through a closed system and comparing the new display with the historical Processing Display System – Migration display screen captures; both displays use the same data feed. The next step was to see if we could get the



system to accept a live feed. When I got to 8th Army I pitched what I had been working on to LTC Annie Merfalen, the 8th Army Space Support Element Chief. She was very supportive and allowed me to continue to develop this concept for 8th Army use. After I received the blessings of the USASMDC/ARSTRAT Battle Lab to conduct testing on the concept using our Space Operating Systems Workstations, I went back to work with the Joint Embedded Messaging System team. We ran into many brick walls but ultimately through trial and error we found the right configuration. With the use of the Global Network Initiative network and Joint Embedded Messaging System we are able to pull in all the Overhead Persistent Infrared data we needed to conduct the missile warning mission.

To better understand the flexibility of SPOC you must first understand the power of Joint Embedded Messaging System, so I asked Kevin Crumlish to give an overview of it.

- The Joint Embedded Messaging System was developed by the FWC Models and Simulations Division. The system translates messages and protocols for command and control, simulation, and other systems using an operator configurable application for input and output formats. The system is typically used to translate simulation-based information into tactical message formats and other simulation formats. Command and control systems are often at the mercy of incompatible message formats, differing transmission protocols, and bandwidth limitations. The command and control systems and message formats are continuously evolving, often rendering preset message translations obsolete. The Joint Embedded Messaging System was developed as a more adaptable solution – a generic translation tool to apply as needed and without software changes. It is used in Joint and Army experiments and exercises to enable disparate simulations to participate and also to drive Command, Control, Communications, Computers, and Intelligence systems like Command and Control Personal Computer, Force XXI Battle Command, Brigade-and-Below (FBCB2), Global Command and Control System, and Command Post of the Future.

A Joint Embedded Messaging System operator interfaces with its Graphic User Interface editors to establish translations and communication routes; through the use of three main options: the Message Editor, the Map Editor and the Communications Path Editor.

The Message Editor is used to create text, binary, or mixed messages defined at the field, line, or group level with characteristics like length, delimiters and content rules. Messages are created using a point-and-click interface and a completed definition is called a Message Specification.

The Map Editor centralizes the translation between input and output message specifications. This editor provides graphical representation of translation logic and operations. The Map Editor uses more than twenty data conversion operators. They perform functions like transforming coordinates, generating unique track numbers, and completing mathematical calculations. The combination of input and output message specifications with associated translations is called a Map.

The Communications Path Editor routes message specifications to defined recipients. Routes are data, protocol, and translation relationships between external systems. The external systems can have the following characteristics: interface type, communication protocol, supported data formats, high level protocol and classification. All the editors can be used during the operation of the system to affect changes without interruption of other translation activities.

The Joint Embedded Messaging System Input/Output (I/O) Component controls the transmission and receipt of data from external systems. The Joint Embedded Messaging System can be configured with multiple I/O Components on sepa-

> "The creation of a standard Space operations COP (common operational picture) allowed 8th Army's SSE (Space Support Element) to take our support to the next level. The integration of SPOC on the Combined Operations and Intelligence Center floor allowed us to incorporate multiple data sources into one common display, and thereby enabling the SSE to provide a continuous assessment of theater Army operations and recommend actions to achieve the CDR's key effects."
>
> LTC Annie Merfalen, Chief,
> 8th Army Space Support Element

rate computers to allow remote operations. In single machine operation, the system can test message routing for validity and accuracy before an exercise or operation takes place to ensure that the training event or operation is not hindered by message incompatibility issues.

USASMDC/ARSTRAT is expanding the Joint Embedded Messaging System to become a Cross Domain Solution, facilitating allied and multinational participation in experiments and exercises. This effort provides and ensures a secure, Department of Defense accredited, interoperable and multi-level security solution to share data across networks of varying classifications. The connections between these networks prevent intentional infiltration of the network and unintentional loss of classified data. Each field in a message specification is individually classified and connections cannot be made via the Map Editor to fields of differing classifications. All Maps are approved by the foreign disclosure officer and security officer. Classified data must be routed through a data converter to filter or change the data to the appropriate level. The Joint Embedded Messaging System Cross Domain Solution enables command and control and simulation systems to be interoperable and reduces the timelines for passing critical command and control information to and from coalition partners.

Once the Joint Embedded Messaging System was online and we had the missile warning data process flushed out, we began to look at other applications of the system. With the help of Navy LT Rollie Wicks from the J2 at U.S. Forces Korea we were able to bring in additional dynamic Keyhole Markup Languages to improve the situational awareness seen on SPOC. Through the use of the SIPR Counter-IED Operations Integration Center Web site we can generate a dynamic Keyhole Markup Language with specific filters allowing us to track friendly and enemy forces to include but not limited to; current land, sea, and air locations. We can establish a National Reconnaissance Office account and generate a dynamic Keyhole Markup Language for limited satellite and intelligence, surveillance and reconnaissance collection tracking. We can also import a dynamic Keyhole Markup Language from another classified sensor and all of these can be displayed in Google Earth EC.

Through this development process we discovered many other uses for the SPOC. For example, 8th Army used Google Earth EC to conduct a Non-combatant Evacuation Operations Rehearsal of Concept Drill for Key Resolve 2009 as well as other exercises. This received enormous praises from GEN (Ret) John W. Hendrix, Battle Command Training Program, and the other 8th Army staff sections. When you bring the whole SPOC online with all the live feeds during these rehearsals you give the command a better understanding of the battlespace they will have to conduct these operations.

Another use for this system highlighted a shortfall in our battle tracking during Non-combatant Evacuation Operations. How do we track the Non-Combatant Evacuee locations on the battlefield in near real time? The answer is we can't. We are now in the process of rectifying that. We are working with a company

in Virginia in conjunction with the Joint Embedded Messaging System team to integrate individual GPS trackers for bus, train, and air movement of Non-Combatant Evacuees. By pulling in data off the Radio Frequency In-Transit Visibility server and feeding it into the Joint Embedded Messaging System we can track the Non-Combatant Evacuees' movements.

Another function includes a propagator for our satellite tracking; I built one but I have not tested it yet by integrating it into Google Earth EC. We are capable of receiving electronic intelligence data but we have not established all the proper filters. We also want to integrate the NEO Tracking System or Web version into our system so when you select a Non-combatant Evacuation Operations location it can give you an accurate count of the number of personnel on station. This is all possible but we have just not had time to complete it. 8th Army has built a handbook for the SPOC which tells you how to set it up and outlines operating instructions and warnings but they are at the Secret level. If anyone is interested in getting this system contact the 8th Army Space Support Element. In the near future we will hand this responsibility off to the USASMDC/ARSTRAT Battle Lab in Colorado Springs, and if approved, it can be configured on all Space Operating System workstations.

My recommendations to USASMDC/ARSTRAT are as follows. First, put the Joint Embedded Messaging System on all Space Operating System workstations and at the Joint Tactical Ground Stations to use in conjunction with their current systems. Second, ensure all 8th Army Keyhole Markup Language links are also loaded on all Space Operating System workstations. Third, put the SPOC Operators guide on the Space Operating System help desk Web site. Fourth, USASMDC/ARSTRAT needs to continue to develop the Joint Embedded Messaging System capability to augment the Keyhole Markup Language feeds. Fifth, add Joint Embedded Messaging System training to the Tactical Space Operations Course, Space Operating System Training and the Basic course. Sixth, USASMDC/ARSTRAT needs to put a full-time or part-time Joint Embedded Messaging System programmer in each of the U.S. Central Command, U.S. Pacific Command, and U.S. European Command theaters. Finally, maintain the Joint Embedded Messaging System program; I believe we have only touched the tip of the iceberg as it relates to its capabilities.

"The Space Operations Common Operational Picture (SPOC) provided near real time refinement of areas affected by theater ballistic missile threats ... this capability and situational awareness enabled the Air and Missile Defense cell to accurately provide detailed early warning of areas affected to all Joint and Coalition forces in the KTO (Korean Theater of Operations) ... a force multiplier at the Field Army level using Army Battle Command Systems to provide a Common Operating Picture to the Commander and his subordinate units."

LTC Roland Quidachay,
(USA) 8th Army Air and Missile Defense

SPACE TECHNOLOGY

THE WARFIGHTER'S PERSPECTIVE

BY: SHARON L. HARTMAN

SFC Douglas Wilderman, GSC Signal Detachment Sergeant, 10th Special Forces Group, loads up his team for a mission Department of Defense *Photo by Senior Airman Eric Harris, U.S.* Air Force

The importance of Space to the warfighter, in particular Special Forces, was the main topic of discussion during the warfighter panel at the 11th Annual SPACECOMM Defending America Symposium, conducted Jan. 28 at the Broadmoor Hotel. This year's warfighter panel was chaired by BG Kurt S. Story, Deputy Commanding General for Operations, U.S. Army Space and Missile Defense Command/Army Forces Strategic Command. Also on the panel were MAJ Ty Hensley, Group Support Company Commander, 10th Special Forces Group (Airborne); 1Lt. Patricia Rodriguez (USAF), Deputy Flight Commander, Plans and Resources Flight, 60th Communications Squadron; SFC Douglas Wilderman, GSC Signal Detachment Sergeant, 10th Special Forces Group (Airborne); and CPT Jeff Fish, Rear Detachment S6, 10th Special Forces Group (Airborne).

Story opened the event with a brief look at where the military has been and where they are currently as a result of the Space capabilities now in hand. Following Story, each panel member gave various personal accounts on how Space enabled them to successfully engage and defeat the enemy by using satellite communications; position navigation and timing; intelligence surveillance and reconnaissance and more.

Later in the day, USASMDC/ARSTRAT Commanding General, LTG Kevin T. Campbell spoke to the same audience touching upon hot topics including the operational environment of Space, current and future Space systems, and ballistic missile defense.

The following pages contain edited versions of the comments from the panel discussion and LTG Campbell's presentation.

STORY: BG Kurt S. Story, Deputy Commanding General for Operations, U.S. Army Space and Missile Defense Command/Army Forces Strategic Command, chairs the warfighter panel at the 11th Annual SPACECOMM Defending America Symposium, conducted Jan. 28, at the Broadmoor Hotel.

ABOVE: From left to right, MAJ Ty Hensley, Group Support Company Commander, 10th Special Forces Group (Airborne); 1st Lt. Patricia Rodriguez (USAF), Deputy Flight Commander, Plans and Resources Flight, 60th Communications Squadron; SFC Douglas Wilderman, GSC Signal Detachment Sergeant, 10th Special Forces Group (Airborne); and CPT Jeff Fish, Rear Detachment S6, 10th Special Forces Group (Airborne), sat on the warfighter panel at the 11th Annual SPACECOMM Defending America Symposium, conducted Jan. 28, at the Broadmoor Hotel. RIGHT: SFC Douglas Wilderman tells a story about PFC Wilson. *Photos by DJ Montoya*

ARMY WARFIGHTER PANEL

SPACE CONTRIBUTIONS TO THE WARFIGHTER

The following edited text was taken from the warfighter panel chaired by U.S. Army Space and Missile Defense Command/Army Forces Strategic Command's Deputy Commanding General, BG Kurt S. Story, at the 11th Annual SPACECOMM Defending America Symposium. Other members of the panel included: MAJ Ty Hensley, Support Company Commander, 10th Special Forces Group (Airborne); 1Lt Patricia S. Rodriguez, Deputy Flight Commander for Plans and Resources Flight in the 60th Communications Squadron; SFC Douglas A. Wilderman, GSC Signal Detachment Sergeant, 10th Special Forces Group (Airborne); and CPT Jeffrey Fish, Detachment S6 for the 10th Special Forces Group (Airborne).

Space Mission Areas

Fig. 1

- Space Force Application
- Space Control
- Space Support
- Space Force Enhancement
  - Intelligence, Surveillance and Reconnaissance
  - Environmental Monitoring
  - Satellite Communications
  - Space-based Positioning, Navigation and Timing
  - Missile Warning

BG KURT S. STORY:

Today I have the honor to chair a panel of Army and Air Force warfighters, some of who have recently returned from Iraq. SFC Wilderman returned from Iraq on Monday of this week, so he's still got mud on his boots. They're going to share some of their experiences with us this morning in regards to how Space enabled them to be able to carry their fight to the enemy. They are going to talk about how friendly force tracking, satellite communications and ISR (intelligence, surveillance and reconnaissance) enabled them in real missions and they'll provide you some very clear examples.

I think most of you are familiar with Joint Pub 3-14. Joint Pub 3-14 was recently signed on the Jan. 6, 2009, and these are the mission areas (Figure 1) that you see reflected in the new version, the JP 3-14. No major changes in these mission areas. Today though, we are going to focus in on Space force enhancement mission area and how those Space force enhancement functions enabled these Soldiers to be successful on the battlefield.

Fig. 2 Fulda Gap Defense – 1990

Fig. 3
Iraq – 2008 Current Space Enabled Battle Space

The importance of Space operations increasing is due to its enabling capabilities and the recognition of these enabling capabilities. Space operations multiply force strength, combat power, and allow freedom of movement across the battlefield. So, as I've said, Space force enhancement is a significant force multiplier.

When it comes to enabling dominant land power, if you "see first, understand first, act first and finish decisively," you'll understand what Space is allowing us to do in terms of dominating land warfare. For the foreseeable future, our Soldiers are going to engage in full-spectrum operations. Space will allow our Soldiers to dominate full-spectrum operations. Not survive, but dominate full spectrum operations.

I'd like to give you a quick example in regards to battlespace and how Space enables the domination of that battlespace. On a map of Germany from the Cold War era (Figure 2), you'll see a red line that is the interzonal border between what was West and East Germany. The red portion was the frontage that was covered by the 11th Armored Cavalry Regiment. It was a 368 km front. Now this was a symmetrical battlefield, linear, and it had contiguous battlespace. At that time, pilots in the 11th Armored Cavalry Regiment would fly their helicopters patrolling the border using line of sight communications, 1:150,000 scale maps, and they'd have to pop up to do position reports because there was no friendly force tracking.

The next map (Figure 3) shows you Iraq. And it shows you the orange and the yellow shaded portions are the battlespace occupied by the 3rd Armored Cavalry Regiment on separate deployments to Iraq. You can see that we've superimposed on this the 368 linear border from Germany, as well as in green, the state of New Jersey. This gives you an idea of how Space has enabled us to expand our battlespace. This is an asymmetrical threat on a non-linear battlefield.

At this time I'd like to turn it over to MAJ Hensley who is going to talk to you about the role of the special operations Soldier.

MAJ TY HENSLEY:

I appreciate the opportunity to come and speak to you all today. The remainder of the panel members here worked in the Combined Joint Special Operations Task Force in Iraq for the last seven to eight months. On my part, I'm going to talk about special operations, specifically Army special operations, to give you an idea of what our warfighters look like on the ground. I'll give you a brief overview of the organization; go into a little detail on the Special Forces Soldier and then the heart of the Army Special Forces, the Operational Detachment Alpha, or "A team." Then I'll talk a little bit about Special Forces missions.

The Army Special Operations Command is a component of U.S. Special Operations Command out of Tampa, which is represented by the four different services of special operations. The second tier of blocks (Figure 4, page 28) shows some of the Army special operators, the 75th Rangers, the psychological operations group, and the third tier down below shows our civil affairs element and our special operations aviation. As a Special Forces Officer, I'm going to remain biased to on the third tier on the left side our U.S. Army Special Forces Command and or Green Berets.

I'd like to give you a quick look at what the average Special Forces Soldier looks like. He's a little bit older, a little bit more mature than a normal Soldier. We ask him to be. He's specially selected and trained. He's culturally attuned and we ask them to be independent thinkers. They speak at least one foreign language and we ask them to go anywhere in the world to be able to operate and carry the flag for the United States.

Now those Special Forces Soldiers make up the backbone of Army Special Forces, the "A team." The "A team" is a twelve man element commanded by a Special Force Captain. A Senior Noncommissioned Officer is the team sergeant, and then the Special Forces team is made up of two each of the following specialists: weapons, engineer, medical and communications. These guys spend up to two years training at Fort Bragg to learn their trade to be able to go and serve on a Special Forces "A team."

Fig. 4
Command Relationships

Once they get to that "A team," that old crusty master sergeant goes ahead and whips them into shape so that they're combat ready and turns them into a specialized and cohesive unit.

Now we can deploy this twelve man team anywhere in the world independently and they can be self sufficient. They have the medical guys, they have the communicators and they have the engineers to be able to build stuff, fix stuff and talk to people. It's important to point out that this twelve man team may sometimes be the only twelve guys wearing the uniforms and carrying the flag for the United States in a particular country. Other times, we'll move multiple formations or multiple Operational Detachment "A teams" into country, at which time they're command and controlled by what General Story alluded to, a Special Operations Task Force. In Iraq and Afghanistan it is a combined Joint Special Operations Task Force. Special Operators from each of the four services and from multinational forces are represented within that task force. The remainder of the panel members are the folks that provide that echelon of command and control to make sure these twelve guys can do their job on the ground.

Some of the advanced skill we ask our Special Forces guys to learn and be able to execute from military freefall operations or jumping out of the plane. (Figure 5) We also ask them to be dive qualified so that they can work in littoral areas and maritime operations. And then I'll put in a plug for our 10th Special Forces Group here in Fort Carson, in Colorado Springs, the premier element for cold weather and mountain training in U.S. Army Special Operations.

These are the five core missions of the Army Special Forces. Unconventional warfare is warfare by, with and through a host nation force. Then foreign internal defense is really what our predominant mission is these days in places like Iraq and Afghanistan. We're working with foreign governments, national defense forces to protect their citizens from aggressors. Special Forces are often talked about as a force multiplier. One twelve man Operational Detachment "A team," is suppose to be able to go in and link up with, and operate with, a battalion or brigade sized element of host nation forces. Those are the kinds of things that we're doing on the ground today.

As I alluded to before, and I'm near to closing here, several echelons of support are required to make sure our Special Forces guys can do these missions. In Iraq and Afghanistan that command and control is provided by the Combined Joint Special Operations Task Force. That task force provides the backbone, the logistical, the technological and communications support required for our guys to work on the ground.

I've been in Special Forces for ten years and in that ten years, I've noticed a dramatic improvement in the equipment and technology provided to the Special Forces Soldier, which greatly improves our battlefield awareness, our lethality and most important to me, our survivability on the battlefield. If you can imagine a twelve man team outside the wire, working in austere locations, it's great to have, I'll use your cliché, the "eye in the sky" or that communications reachback that can go anywhere in the world to make sure these guys are safe and can bring effects on the battlefield.

I'm going to go ahead and turn it over now to First Lieutenant Rodriguez. She is going to talk about some of those communications and critical SATCOM based systems that are so important to our Special Forces Soldiers on the ground. She worked at the Combined Joint Special Operations Task Force J-6 or communications shop during this most recent Iraq deployment for 10th Special Forces Group.

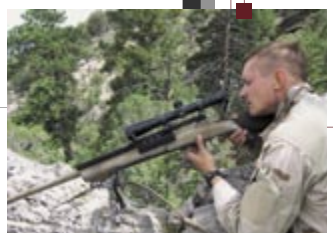
1Lt PATRICIA RODRIGUEZ:

When people think of communications, the most common assets that come to mind are telephones, internet and radios. My primary mission back at home station is to make sure communications are up so that the planes are in the air. Once the planes take off, we refocus on other missions.

My first deployment was to an Army unit. I had to change gears from providing support to the air, to the ground troops. I

Fig. 5 Advanced Training

- Special Forces Advanced Urban Combat (SFAUC)
- SF Advanced Reconnaissance Target Analysis and Exploitation Techniques Course (SFARTAETC)
- Special Operations Target Interdiction Course (SOTIC)
- Military Free Fall (MFF)
- Combat Diver Qualification Course (CDQC)
- Cold Weather Training (CWT)
- Special Operations Mountaineering Course



served as the future plans officer while I was deployed. I had to plan network infrastructure to new facilities. I also had to plan the implementation of SATCOM systems across the theater. When a new SATCOM system or an upgrade to an existing one came down from higher headquarters, I had to make sure we had all the required equipment and I would get with our technicians to make sure to test the equipment. We wanted to make sure the systems actually worked and would be utilized by our team guys. To make sure the team guys can use the SATCOM systems, we also sent our technical experts to show them the capabilities the systems can provide.

Two of the projects I was responsible for were intelligence, surveillance and reconnaissance feeds through Global Broadcasting System and our Blue Force Tracker (Force XXI Battle Command Brigade and Below). We'd received live feeds from unmanned aerial vehicles. These vehicles would fly up in the air and take live video footage from the battlefield. The video feed would then shoot up through the Global Broadcasting System satellite link, and then send the signal back down to our operations center. This live video streaming provides the commander "eyes on target" and live battle updates. This also provides the commander real time situational awareness.

FBCB2 is our Blue Force Tracker which shows all the friendly forces in the battlefield. It ranges anything from planes to vehicles. The FBCB2 equipment sends the information via satellite back to the United States to be translated, and then sends the information back down to the ground forces with real time friendly positions. This decreases the friendly on friendly contact and also allows our team guys to get assistance if needed.

I realized when I was deployed how close the Space and communication careers fields are to each other. It's funny since I wanted to avoid the Space career field like the plague when career selections came down. I also realized that delivering communications to the team guys is much more than just giving them connectivity. We have to know how the communications are being delivered, if they can be utilized, and take into account all echelons, especially the team guys on the ground.

Internet and radios are important, but Global Broadcasting System and FBCB2 are our lifelines. They enable the amount of missions we can conduct, and without the SATCOM capabilities, our team guys would be dead in the water.

SFC Douglas Wilderman:

As they told you, in the last three days, I arrived back; I'm still a little jet lag so excuse me if I start to waiver here. I just arrived back from Iraq where we served as part of the combined Joint Special Operations Task Force, Arabian Peninsula. My detachments mission there is to support the entire theater special operations with all communications, intelligence, surveillance and reconnaissance, FBCB2, Blue Force Tracker, soft deployable node mediums, command posts of the future and a whole lot of other acronyms.

When I was asked to come here, I really didn't know what to say at first. So I thought I would just tell a little story about some things that have happened. We always joke that we fought this war in the beginning on three SATCOM nets, which we did, but it was soon after that, we began to see American ingenuity at its very best: intelligence, surveillance, reconnaissance birds started to dot the skies. Blue Force Tracker, FBCB2 appeared in every vehicle. And this equipment was allowing us to do our jobs faster and better. We quickly realized the extreme importance of being able to have virtual eyes along with the real eyes on the battlefield, which we had relied on for so very long in special operations.

In late 2004, our unit received its first global broadcast system which was the platform that we received the intelligence, surveillance and reconnaissance on. It was kind of handed to us in a box. We really didn't know what to do with it, and a couple of my super smart kids put it together and made it work, which again comes back to the American ingenuity. This was the beginning of the actualization that these systems, although they were powerful by themselves could be used together to

Fig. 6
PFC Brent Wilson and crew in Iraq.

deliver a crushing, deadly, surgical, precise blow to the enemy, while at the same time putting less lives in danger and decreasing collateral damage. Over the past three years, these systems have highly evolved from being two completely separate systems into a synergistic relationship that when used completely, potentially enables commanders the ability to virtually be everywhere on the battlefield at any given moment.

Intelligence and targeting could be done in days, not in weeks. Some trigger targets could be eliminated almost on demand through the use of internet relay MIRC (Military Intelligence Reserve Command) chat, flash messaging, FBCB2, and the ability to monitor intelligence, surveillance and reconnaissance, we could alert ground forces of "squirters" and other dangerous situations. We could give joint tactical controllers and tactical controllers the ability to call for close air support and emergency close air support by using precision GPS information that was provided by Blue Force Tracker, the One System Remote Video Terminal and the Medidata. Each day we use these key elements to build the mission data for the concepts of operations to build the overall picture of the battlefield, which includes the combination of radio, intelligence, surveillance and reconnaissance, One System Remote Video Terminal, Blue Force Tracker and FBCB2.

Now I'd like to talk about what I really came here to talk about. All this stuff which we use every day, in great detail, the multitude of it, it really talks about the story that I'm going to tell you now. And you'll have to excuse me, but I get a little choked up every time I tell it.

The story begins with a young Private First Class Wilson (Figure 6). Just like any other father, as it is being the platoon sergeant, I look at him as my son, and everything that he does makes me proud. Well there was a particular day that I was the proudest that I could be. It's like watching your son throw a touchdown for the first time, or see him drive off in the car with his brand new license in his pocket, and the two dollars burning a hole that he's going to spend on his girlfriend.

Private Brent Wilson came to me from Arizona. He just got here right before the deployment, and he was pretty wet behind the proverbial ears as most people would say, having never been in combat and only seeing movies. I took Brent into our family and his sergeants and I began to tell him the stories and mentor him, and train him, and lead him down the road to combat. But there is no way to really prepare your son to see the things that you see, or do the things that you do. He would put his life in danger. That was a fact. Others would put their lives in his hands. That was a fact. We had no idea what was to come.

It was Aug. 10, of this past year. I was sitting in my station just outside of the operations cell where we monitor the radios FBCB2 and intelligence, surveillance and reconnaissance. I was listening to the normal day of radio chatter as there were seven or eight teams outside the wire conducting operations at any given moment, when I heard PFC Wilson call out "troops in contact." This is a term that we coined at the beginning of the war that we all knew was going to send shivers up our spine, cause we knew it was our brothers out there, our sisters out there who needed us.

He was alone in the operations cell and I ran in to help him. To my surprise he didn't need my help. He went straight into action. It's like watching your son for the first time do something that you had shown him once upon a time and never thought that he had listened. He took the entire situation into his hands.

There was a unit outside the wire just outside of base that was being engaged by the enemy. PFC Wilson had seen it on the intelligence, surveillance and reconnaissance feed that we were monitoring. He quickly jumped on the radio noticing that there was a fault, understanding what that fault was, he jumped on the radio and began to relay information to the team that was isolated from its headquarters. He used the FBCB2 to quickly find the grid location of the unit that was being engaged. They were taking small arms fire and mortar fire. One of the trucks had been destroyed and the communications equipment in it was destroyed also. Brent knew that he had to get a message to them to tell them to come up on a different net or they were probably going to perish. They had no way to contact a Quick

Fig. 7 Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance

ISR	SATCOM	C2
• GBS	• PHOENIX	• GBS
• OSRVT	• DCET	• CPOF
• ROVER III	• SDN	• FBCB2
• ROVER	• SDN-M	• C2PC
NAVIGATION/ TIMING	• BGAN	• MIRC chat
• PLGR	• PRC-117	• PSC-5
• DAGR	• PSC-5D	• SOTM
	• PRC-152	
	• INMARSAT	
	• IRIDIUM	

Reactionary Force, or anyone to come and help them. PFC Wilson then scrambled to the FBCB2, sent out a flash message, connected with the unit, and was able to direct and command the entire recovery of the unit that was being engaged.

The point of the story is that due to the fact that PFC Wilson had possibly listened to someone at some time, he was able to use all the assets that he had at his fingertips to develop a plan in a quick moment, and his actions led to the capture of four enemy combatants, and saved the lives of twelve of his brothers who were being engaged that day. This is the real story. The real story is that PFC Wilson was able to utilize these assets that three to five years ago only generals and colonels had access to. As a result, no flags will be folded, no mothers will grieve these sons, and this is the reason why we are here today … all of us. We're here to make sure that we move forward, that we continue the efforts to better the equipment and to deliver it to the warfighter on the ground, the smallest element available, the PFC Wilsons, the privates on the ground. I'd like to close by borrowing a little phrase, a piece from Theodore Roosevelt when he said, "the credit belongs to the man in the arena. His face marred with dust and blood, for he's the doer of deeds."

Thank you for your support. Thank you from the battlefield. With this I'd like to give it over to Captain Fish.

CPT JEFFREY FISH:

I'd like to talk a little bit today about the Space enabled Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance, which the Special Forces use. I'll then go into a little bit of future applications and then we'll wrap up with some challenges.

Here (Figure 7) is an alphabet soup of systems. I'm not going to talk about all of them, just the three that are highlighted. Special Operations Forces operate in a geographically distributed environment almost exclusively dictating a dependency on SATCOM. For example, in Iraq we operate from northern Mosul all the way down to southern Basra, across five multinational divisions. Talk about a nonlinear battlefield. Line-of-site communications have limited applicability for most of our operations. We do use them, however it is fairly limited, even from an operational detachment to a company.

In our deployed configuration, we do integrate assets from the Navy and both the Naval Special Warfare Task Group, the SEALS, as well as some SEEBIES, with the Air Force, with the Combined Joint Special Operations Air Component, and our Tactical Command Posts and Joint Tactical Ground Stations. One of the reasons I put up this slide of alphabet soup is actually to give you a broad overview of each of the systems we have down at the lowest operational level. At our team level, two people have the opportunity or have the responsibility for installing, operating and maintaining most of these systems. Unprecedented and quite a challenge for not only somebody who goes out on missions and kicks down doors, but also has the responsibility to enable those communications for that operational detachment.

It was mentioned both by Lieutenant Rodriguez and Sergeant First Class Wilderman the importance of the Global Broadcast System as a combat multiplier to folks on the battlefield. It has a very important role in synchronizing operations by developing a common operational picture, meaning each level of command has the same real time, eyes on a visual picture. In fact, we are just now finishing up installation of our Global Broadcast System or the ability to view every intelligence, surveillance and reconnaissance platform down at the company level. Company commanders can see the exact same thing as the Multinational Corps – Iraq commander can. That enables a company commander an incredible amount of power to command and control his forces that have never been seen before.

Further, using our One System Remote Video Terminals, and our Rover 3s, the team approaching their target and getting ready to do their mission can see exactly what's happening on the ground before they get there. That makes Special Forces an even more dangerous force. With fifty plus teams, operating in Iraq currently, each commander has that hard, fast requirement to be able to command and control his own elements because

Fig. 8
Space Support to Future Combat System (FCS)

Communications
- Transformational Communications Satellite (TSAT)
- Mobile User Objective System (MUOS)
- Advanced EHF (AEHF)
- Wideband Global Satellite (WGS)

Position, Navigation, and Timing
- Global Positioning System, Block III (GPS-III)

Environmental Monitoring
- National Polar-Orbiting Operational Environmental Satellite System (NPOESS)

Intelligence, Surveillance and Reconnaissance
- Space Radar (SR)
- Distributed Common Ground Station – Army (DCGS-A)
- National Systems

Theater Missile Warning
- Space-Based Infrared System (SBIRS)

the battalion could be quite busy watching quite a few intelligence, surveillance and reconnaissance feeds. It gets worse the higher up you go, so it's quite, quite important to have it there.

The next thing I'd like to talk about is one of our newest systems that we have fielded over the last couple years. The Broadband Global Access Network, or BGAN, is an INMARSAT based system utilizing the Thrane and Thrane antenna with a Hughes modem and of course we encrypt it. The BGAN and 117 are tied to our growing bandwidth requirements or the informational needs of the operational detachment level.

Back to the BGAN, we use them with a wide variety of applications. First and foremost we started using them in our Jump Tactical Operations Centers. Whenever a commander would go forward and have to set up another operations center, we would send them out with one of our BGANs so we'd have connectivity and some communications broadband in austere locations. We then started to actually distribute them down into the lowest common level, down to the operational detachments. This was necessitated by use doing split-based operations, where instead of it being a full twelve man team on one location, they might split their forces and go to two different locations and that hard requirement for Secret Internet Protocol Router, or SIPR access is required. It can also be used as a primary platform for SIPR at a team house or for a team location. And, the latest and greatest thing that we're actually using BGANs for is SIPR at the quick halt.

The next thing I'd like to talk about is actually something we're getting ready to receive soon in March. It's a PRC 117 Gulf. As I was coming in and perusing around today, it's actually featured out here in one of the booths, and we're actually very excited to get this for our growing bandwidth requirements. It's a multi-band, multi-mission radio, operating from 30 megahertz to two gigahertz. It has interoperability with most of our radio communication systems that we have in the soft inventory. One of the key features that we love about it is it's a lot lighter than what it's replacing which is always important when you're putting a radio in a rucksack. It has some pretty decent power output so you don't have to carry an amp, and it has fairly significant data rates and some very interesting waveform propagations. So, we're looking forward to integrating that in March and integrating that with our current SATCOM-based systems.

One of the future applications of Space-based systems is biometrics. It's coming and it is right around the corner. In order to effectively accomplish this task, or to do biometrics on the objective, three things are actually going to be required. First is going to be broadband SIPR on the move. When I talk about broadband SIPR on the move, it's very, very important to transmit large files, when we're actually talking about sending up finger prints, retinal scans or sending information forward, that broadband SIPR on the move or at the objective has to be accomplished.

Next thing is high bandwidth SIPR connectivity to the Operational Detachment "A team" – something beyond our current capabilities. It is very important so we can synch near-real time data, and have those transmissions get back to the database to be searched.

The third and final thing I'll talk about with biometrics is a logical network topology or a low latency network. If we're taking multiple satellite hops to get back to the database over a commercial, an INMARSAT and a MILSAT system, we actually have problems with timing out.

I'd like briefly address the challenges we face and constraints for some of our SATCOM systems. Most of this is fairly common knowledge for most people in the room.

First is Electronic Warfare – not only friendly, but foreign. We face an intelligent, resourceful enemy who quickly adapt to our tactics, techniques and procedures. It is a threat out there. We face it daily, and we also have our own protective measures where we inflict some of our own damages.

Next challenge is urban terrain. It is very difficult to do SATCOM when you're operating in an urban environment with large buildings blocking your line of site to the satellite bird.

Fig. 9
Future Combat System (FCS)

Manned Ground Vehicles (MGV)

Unmanned Ground Vehicles (UGV)

Unmanned Aircraft Systems (UAS)

Unattended Ground Sensors (UGS)

FOR MORE INFORMATION

The doubletruck on pages 42 - 43 gives a more detailed look into these smaller systems that make up the Future Combat System.

The last challenge I'd like to mention is low visibility operations. It is very difficult to do SATCOM on the move when you're trying to put an X-wing on the top of a local national car. It has a tendency to stick out just a little bit. Also it is very difficult to blend in with the local populace when you have a 2.4 meter commercial dish sticking off the side of your building. It kind of screams U.S.

So, those are the challenges we face. I'd like to finish this by saying often the most powerful weapon our teams have is that SATCOM radio in the rucksack, that tactical satellite terminal at their team house, that intelligence, surveillance and reconnaissance flying overhead providing them with security.

BG STORY

Man, what a group of great Americans. I have a few more issues I want to cover and I see the questions are piling up, so I'm going to keep the final wrap up brief, cause questions are probably why a lot of you came here. We talked a little bit about the Cold War, the battlespace in the Cold War. We've had these great Americans talk about the current fight and the future fight, and I want to spend a minute here just to talk about the future fight.

(Figure 8) These are the systems that are going to able the Army's future combat system. It is a system of systems that the Army is migrating toward and transforming toward with its brigade combat teams. It's a system as you can see which relies very, very heavily on Space assets. I'm quite sure that many of you in the audience are involved in some phase of the acquisition, development or technologies involved in the systems you see there.

(Figure 9) Here are some elements that make up the Future Combat System. There are the manned ground vehicles on a common chaises platform, and the unmanned ground vehicle, and then the unmanned aircraft systems and unaccounted ground sensors. The first Future Combat System Brigade Combat Team will be fielded in 2011, and a lot of these technologies will migrate to Brigade Combat Teams that are not Future Combat System Teams.

Some of the items in yellow have already been fielded. If you see the Class I unmanned aerial vehicle … that has already been fielded by two separate units. One of them was the 25th Infantry Division and one of them is a National Guard unit. Those are already being employed in combat. You might have seen pictures of them. They actually hover around and it is a very great system, as well as the unmanned ground sensors you see are being used.

The line-of-sight cannon has been tested and demonstrated and is highly successful. So all those systems (Figure 9), those technologies, they are going to enable this. You can also see the Army's portion of the global information grid and that's LANDWARNET and the layers that comprise LANDWARNET. Many of you are involved in those layers, and the standardization and the transport, etc.

I don't think that it takes a rocket scientist to realize that as our reliance on Space grows, our adversaries understand more and more how we're wed to Space and how it enables us. So they're going to do their very best to try to deny us Space, so really to be successful in the future, we're going to have to migrate toward a multi-domain solution. In order to provide the intelligence, surveillance and reconnaissance, the friendly force tracking and to fill gaps, this multi-domain solution is going to allow the U.S. warriors to dominate terrain and be successful in future battles.

As you look at this chart here (Figure 10, page 34), many of you who are out there in the defense industry can see that there is a lot of opportunity there. There's a lot of opportunity to do the things that you heard these great Americans talks about to get that technology down to the lowest level. It's no good for the intelligence, surveillance and reconnaissance, for the SATCOMs to reside at the general officer level, to be on big screens in the Pentagon. It's got to be down to the warfighter. When you heard that example of PFC Wilson using all those technologies having them at his fingerprints, it really speaks volumes for what the defense industry has done and how the warfighters are using that.

Now I'm going take a quick look at these questions and we'll get to answering some of them for you. Okay, I'll start with the first question here.

What capability in Research and Development holds the most promise in your opinion?

BG STORY: I think we have to put more energy into the protection of our Space assets. Not only do we have to work on that multi-domain solution, to provide layers and to fill gaps, but we have to be able to better prepare our Space assets. For many years, we have believed that we have freedom of access to Space and that nobody has the capability to deny us that. That is not true. Space is a contested domain, so I believe we've got to do a better job of protecting our assets.

I also think on the research, development and acquisition side, I know there's been a lot of work done, but near-Space and high altitude platform show a lot of promise. That's in between obviously air breathers and satellites. There are still some technology hurdles I think in terms of the configuration and the skin on these high altitude platforms but I believe that they are going to be a tool that the geographic combatant commander will be able to use to fill in his most important gaps and his urgent needs. He'll be able to tailor and configure the platforms to basically do friendly force tracking, communications, communications relay, limited intelligence, surveillance and reconnaissance, etc.

If PFC Wilson could choose which systems of C4ISR were most important due to the limited funding, which would he choose?

SFC WILDERMAN: Well that's kind of a loaded questions because there are really two platforms out there that we really, really need, and they coincide. They work together. First, I'd talk about the Global Broadcasting System, because that's what really brings down the feed to the group, battalion, or company level. We currently don't have that asset readily available to the Operational Detachment "A tem," the guy on the ground there who is actually making the hit on the targeting, but what we do have is the One System Remote Video Terminal, which is the One Source Remote Video Terminal. This allows the operator on the ground to pull out this small suitcase or even in an MRAP, they're previously mounted. As long as the jamming not on, he can bring down any intelligence, surveillance and reconnaissance feed within a certain range, depending on the antenna and the platforms he's pulling down. Those two assets are primarily the two major assets that really bring it down to the ground, to the warfighter, to the one guy on the ground who's making that call, who's targeting that target and taking down the bad guys.

You said GBS and FBCB2 were your lifelines. What capabilities do they provide that other command and control systems didn't?

1Lt RODRIGUEZ: Just kind of going back to that it is more than just one particular system, it's actually all systems working together, but there are times where a radio, telephone or internet goes down, where with Global Broadcasting System and FBCB2 you can no kidding, see exactly where your guys are. You can see where other people are and you can direct them. It's not like if radios or telephones went out, you won't know where they are. You will always have the eyes on target at all times.

With a joint environment and operations, do you see or notice any pitfalls that are due to service cultures or service specific training?

MAJ HENSLEY: I had a chance to kind of think about the question and my answer is no. I think in the beginning of large scale operations, and I'll just use Iraq as an example, yes it is a bit more prevalent and it took us some time, we had to go through some growing pains. In this day and age now, when we have done these joint operations and even interagency operations, we're working together and it has become much more apparent that the Army, Navy, Air Force, special operations to conventional, everybody brings a different piece to the fight. We're doing a much better job of working together and using all the same technology to put our specific skill sets on the battlefield. So, I really

Fig. 10
Multi-Domain Interdependence

don't see that anymore in my limited experience with the joint operations that are going on, and it's a testament a) to fielding the system across the board, and b) commanders at the highest level, and then folks all the way down to PFC Wilson's level, understanding the capabilities of those systems and being able to bring to bear their capability with folks on the ground.

1Lt RODRIGUEZ: And also just from personal experience, like I said, this is my first deployment, and it was to an Army unit, so I kind of had to learn the different cultures. For Air Force, our mission is to get our planes up in the air. Well I had to quickly transition that to be concerned with the eyes on the ground. I actually also had the experience to work with Navy guys as well, and to be honest with you, I think the different perspectives kind of make you think outside the box so you're just not limited to the one capability. You learn to use every single thing to put it all together.

SFC Wilderman talked about systems merging into one. What is that process, how quickly is it done, and is there any improvements?

CPT FISH: I will say that there is always room for improvement, and of the systems that we have, if we are really talking about a system of systems merging into one. Each one of those brings a different capability to the warfighter at a different level of tactical operation. He already answered how we use our Global Broadcasting System and our One System Remote Video Terminals to bring down live video feed. We also use FBCB2, the Command Post of the Future, and Command and Control Personal Computers at various echelons to transmit or keep a common picture for Blue Force Tracking or Friendly Force Tracking. Then we also have reliance upon not only satellite-based TacSat, whether it be over a 152, a 117 or a PSC 5, and so really, it's a system of systems being integrated together for each one serving a different function. I'd just like to take a little bit of time to talk about … we always do our communications pace planning. So much of what we do is mission dependent. If you're on the back of an all-terrain vehicle doing mobility training, it's going to be very different than if you're going down the highway in an MRAP.

Does each member of the team have independent communications with the rest of the team? If not do they need that?

SFC WILDERMAN: Yes they do. They have line-of-sight. Each team member has a 148 Multi-band Inter/Intra Team Radio. The problem is anything that is not line-of-sight is being jammed more or less, so being able to communicate to higher headquarters n a two-way line is not always available. We use what we call transmitting in the blind, which is a TTP that we've developed for reaching around jamming, and I know there's a lot of things in the works to try to evade that.

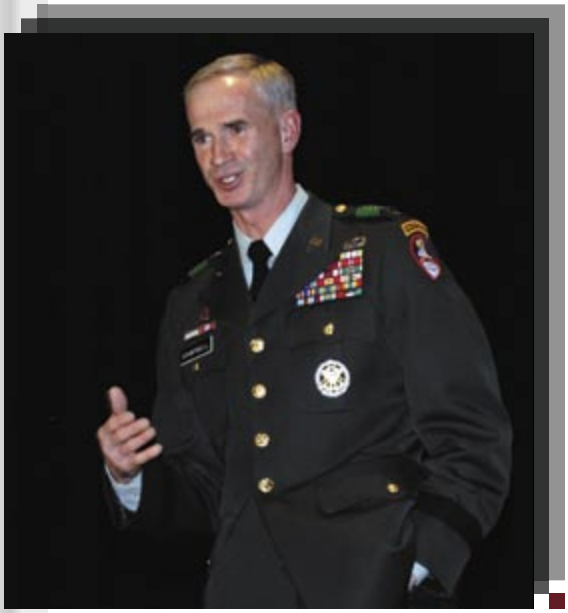
Yes, of course they need it. Generally speaking we use other platforms to mitigate those issues. Some units have them, which will allow them to drop down into a different type of bandwidth to be able to transmit these messages, so when they don't have the radio communications, they have the messaging. Hopefully in the future, we'll be able to evade all the jamming and all the other environmental issues. To say something else about what CPT Fish was just talking about. When we talk about the integration of all these systems, and what is the primary one stop. Well, to be honest with you, at this moment, and as it has always been, it is that human connection, that person who has the ability to think outside the box and take those individual systems and say "What can I use this for? What is it going to help me to develop a plan or an action to help these guys on the ground?" That I'm sure will stay the same for quite some time, although, if we can get more integration within the systems, that will always help the operator too.

BG STORY: That's a great point. Technology is great. We rely upon it heavily, but we also have to understand how to operate when our technology goes south on us, and it's the ingenuity of the American fighting force that allows us to do that and be successful. I'd like to thank the Rocky Mountain Chapter of AFCEA for inviting us here today. It's been a real pleasure speaking to you all. Thanks again for your attentiveness and have a great day.

ASYMMETRICAL CHALLENGES

TECHNOLOGY IN AN ERA OF PERSISTENT CONFLICT

The following edited text was taken from a presentation given by U.S. Army Space and Missile Defense Command/Army Forces Strategic Command's Commanding General, LTG Kevin T. Campbell, at the 11th Annual SPACECOMM Defending America Symposium.



Today I will talk a bit about what's in my title. My job title has Space and missile defense in it. It is not so much geared to communications, but I think as a user, I'll talk a bit about the communications paths we depend on to run our particular system.

In my introduction, some of my previous assignments were mentioned, but I'm really most proud of my time at U.S. Strategic Command as the chief of staff for three and a half years. Anybody who's been a chief of staff knows it's an interesting job.

Before I get into talking about Space and missile defense, I want to just take a moment and talk about your Army … an Army that's deployed 247,000 strong around the globe today. Today in the theater of war, in Afghanistan and Iraq, we have about 138,000 of our men and women deployed there. It's keeping us somewhat out of balance in our ability to meet every contingency. The Army does have a plan with the help of congress to field a larger Army over the next three years. And we think that by 2011, with some stabilization in Iraq, and what we see coming in Afghanistan that we'll be able to give our troopers more time at home. So it will look like boots on the ground for a year, and home for a minimum of two years. We think that's all achievable by 2011.

I just came back from Afghanistan and I am never surprised by what I see when I'm there talking with our Soldiers. They certainly find value in what they're doing. Their enlistment rates and reenlistment rates continue to remain at or above goals. It's

> "If you looked at Gross Domestic Product alone, if that was the sole determinant of military power, China could field the forces we have today, equivalent forces, by the 2030s."

almost counter intuitive. The young man that was driving us around was on his fifth tour in Afghanistan and happy to be there serving. I want to thank many of you in this audience for enabling our troops to do the jobs that they do, so thank you for your help.

Our Army chief of staff talks a lot about the environment in an era of persistent conflict for perhaps the next decade. We will be challenged asymmetrically, where hybrid threats such as irregular forces, terrorists, criminal elements combine and they create complex challenges. I really wanted to understand why do we foresee that there will be an era of persistent conflict?

I've read a couple books recently by Farid Zacharia, and it's title the "Post American World," and I'm in the midst of reading Freedman's new book, "Hot, Flat and Crowded," and I commend those books to you, because if some of the trends continue they described, we're going to be in competition for a lot of different things with a lot of different players that haven't been players heretofore. But just looking at what the trends would show us today, by 2030 there will be 50 percent more demand for energy. If you look at demographics, it may be more important to study demographics than terrorism.

Demographics: We're going to grow 60 million people a year until the year 2025. Sixty-five percent of the world will live in large cities. You look at Europe and Japan; they're going in the opposite direction. They stopped replacing their dead in Europe in 2007. So what's the implication? Will these nations as allies be willing to invest their treasure, their treasure being their young men and women, as they have a shrinking population?

The U.S. is projected to grow from 13 to 23 trillion over the next 25 years; China, 2 to 16 trillion over the next 25 years; Japan, 5 to 7 trillion; India, 2 to 5 trillion; Indonesia, Russia, France, Germany, on the order of 4 to 5 trillion; and Brazil, Vietnam, Egypt are all on growth paths. Okay, so what? The so what is we could be entering the period of rearmament around the world. There are a lot more dollars available to a lot more countries, and there could be more competitors being readied in the bull pen that we're going to have to face some time in the future.

If you looked at Gross Domestic Product alone, if that was the sole determinant of military power, China could field the forces we have today, equivalent forces, by the 2030s. That's pretty impressive. And as Zacharia describes in his book, it's not that America is getting any worse in what we do, it's just when we enter any competitive field he calls it the rise of the rest. That the Chinas, the Indias the Brazils, they're drawing even to us in many fields, and the technology's becoming available, and the funding is available to them to procure that technology. So, it's a very competitive world over the next forty years.

Just in technology, an iPod by 2020 will be able to hold the entire Library of Congress. A home computer in the 2030 timeframe could download the Library of Congress in 128 seconds. Well, so what? Well, technology may drive prices down. It becomes more available to people, allows them to communicate faster, and I think it'll complicate our lives when we are dealing with either terrorists or nation states.

So, I think the chief has it right that as we look into the future, the trends would say that there is much more competition for raw materials that are going to create problems for all of us. It's in this environment, where our men and women operate in complex terrain, where there's multiple cultures mixed in, and we're certainly in an environment now where our adversaries are poised and executing operations to deny us sanctuary, particularly in Space and in cyber. I think we are seeing that in spades today that they are laying down plans, they're talking about it publicly and we're seeing it in operations.

A recent unclassified report by the Defense Science Board said Space has ceased to be above the battle sanctuary. In an article written by Eric Sayers titled "China's Asymmetrical Strategy," he states that the Chinese strategists have written extensively on battlespace denial and they really see that the true dominance of the U.S. military is the result of our impressive network of command, control and communications. He goes on to say that the People's Liberation Army has concluded that attacking information systems could offset U.S. capabilities much more effectively than attacking combat systems. The DSP report goes on to say that the type of attacks, and we've seen this already at least in denial of global positioning system signals as well as

> "Today we find brigade combat teams of roughly 5,000 Soldiers operating across sectors much larger than what we had during the Cold War, when we were occupying a patch of land perhaps about 100 square miles."

satellite communications, we have a very limited capability to determine when we have been attacked or when there is an event occurring particularly against a Space system.

The Army's operational concept describes our concept as one where our commanders employ offensive, defensive and stability operations near simultaneous. Today we find brigade combat teams of roughly 5,000 Soldiers operating across sectors much larger than what we had during the Cold War, when we were occupying a patch of land perhaps about 100 square miles. A brigade combat team recently returned from Iraq was occupying an area they estimated was the size of New Jersey, so quite a change.

These are operations that are distributed. They're spread out where our Soldiers are making decisions on multiple planes: strategic level, tactical level, some with a military implication, others perhaps with a political or diplomatic implication. It's a collage of factions, cultures, chaos, fleeting advantages. It's where our NCOs and our junior officers operate independently. We recognize that it's at the squad, the company, and the battalion level where this fight is won or lost. It's our collective responsibility to empower them all the way at the far end of the spear. To give them the access to the information they need to conduct these operations and a sophisticated environment where tactical decisions have strategic implications.

The chief of staff of the Army has described the attributes he wants to see in our forces. He wants us to be versatile … move from the offense to the defense to stability rapidly; to be expeditionary; to respond to the unanticipated and operate in an austere environment; to be agile … that is to exploit their seams in complex environments whether that's cyber or physical; to be lethal, both using non-lethal means and lethal means; to be interoperable. We know that our forces can't achieve all that without Space capabilities and a lot of that is tied to communications paths. We know that terrestrial, airborne and even high altitude areas that we're starting to dabble in carry us only so far. We understand the profound impact that Space capabilities have on all aspects of our operations, and our leadership in Space is certainly being challenged. I think it's evident to all of us as Americans. In retaining our superiority, it's not just a military imperative, it's a national imperative.

The recently completed Allard Commission study found that our Space capabilities – and this is no surprise to anyone – they underpin our U.S. economic, technological and military leadership; that our global leadership is in jeopardy because global access to technology is leveling, that potential adversaries are gaining competitive advantages, and they observe the emergence of China as a Space power. That's sort of the "duh" observation, but nonetheless it's there. The commission members went on to say the U.S. military strategy, our concepts, our force structure, and our employment are all predicated on superior Space capabilities, and as we see an increased reliance on this, we know it's becoming a contested environment.

Bruce McDonald wrote in the Council on Foreign Relations Report, September 2008, that the People's Liberation Army envisions a conflict in Space, and they're preparing for it. Now at the same time we recognize these Space capabilities are foundational, we also recognize the potential vulnerability in exclusive dependencies.

We in our command are combing through the different layers. We're looking at terrestrial, airborne, high altitude as well as Space to better understand how a degree of adequate redundancy and complimenting capability can be achieved to preclude an overinvestment in one domain which creates vulnerability for our operating forces. We know that our forces can only be optimized when they're networked. I've described the size of the area that our forces are now operating in where previously you had Army divisions, now you have brigade combat teams. The networking is absolutely foundational to the success of that formation.

I think our Space systems and our CONOPS have to be designed to empower those operating in close contact, but not necessarily to the exclusion of others operating at the operational or the strategic levels. I think there's been some debate publicly that one size no longer fits all when it comes to Space. That may be right, but I still think that we can do a lot more with our concepts as we field national systems, as well as operational systems. If we get the CONOPS moving up front, we can do a better job of capturing the inherent capabilities that are onboard these Space platforms. And I think our CONOPS investment should match the hardware and software investment, and maybe not in terms strictly of dollars but perhaps in terms of our mental energy and time. We know the Air Force funds the lion's share of the operational Space-based capabilities, so it's through the CONOPS that the Army leverages the significant national investment in Space.

I really do believe our future challenges are going to be much more severe and we're certainly going to be operating in a contested environment both cyber and Space. I think only when we view these as contested environments can we adequately enable the users and make sure their needs are met.

It's really up to our Space combat developers and material developers to build the platforms in the sense that they're combat formations. Just like we look at a tank outfit or an infantry outfit, that we have to be able to self protect. We have to be able to detect, perhaps on Space platforms. We certainly need the ability to detect attacks. We perhaps need more fuel for maneuvering out of harm's way. But we have to start thinking like that given the challenges that I think will confront us in the years ahead of us.

In our service when we look at gaps related to Space, certainly at the top of the list is MILSATCOM, followed by intelligence, surveillance and reconnaissance, navigation and theater missile warning. I've described that our smaller tactical formations are taking on larger areas of responsibility and we're going to require protected communications, particularly for communications on the move because maneuver is a key element of surviving on the battlefield and knowing where the enemy is – knowing where we are and being able to pass that information quickly. So, we're going to need the bandwidth to support that while we're on the move, and certainly Space is going to help us with that. Unfortunately the demand just continues to rise and I don't think the pile on is going to stop anytime soon. Full motion video, very sophisticated graphics, video teleconferencing, collaborative planning tools … it's endless. There's more data, more info produced on the battlefield and I don't think MILSATCOM is going to be able to keep up with it at all. I think the national strategy has to take a hard look at incorporating commercial Space into our formations and it might reduce some of our vulnerability.

As an example of expanding pressure on the communications pipes, in an article by John Turpac in the January 2009 edition of the Air Force magazine, it states the Air Force plans to eventually field 197 predators, 352 reapers and 77 global hawks. I wanted to finish their sentence and say, "and 42 TSAT satellites to get at all this stuff."

Just in combat operations, we've seen an increase in predator combat air patrols of over 500 percent in over four years. So, there's a lot of stuff flying around the battlefield and there's going to be more stuff in the future in a more competitive environment. So, there's much work to be done when it comes to Satellite Communications, military or on the civil side.

In navigation, we find that the fight down at the squad level and the platoon level, with trying to tear this enemy away from the civilian population, we certainly need assured positioning, navigation and terrain, and it needs to be more accurate.

When it comes to intelligence, surveillance and reconnaissance, we've seen the proliferation of these tactical unmanned aerial vehicles and the reason we have to have that information directly down linked; we have to have it taskable to the ground commander because information today can't go through a bent pipe that becomes anything meaningful to Private Campbell who's standing out in front of a house about ready to get inside that house and find out what's going on in there. It's got to be very, very near real-time for that Soldier operating on the front lines.

In theater missile warning, we've been working with direct downlinks into theater for years. We're trying to take a look at how we can distribute that information broadly over an internet protocol network because I think it's a little too stove piped right now and too dependent on one communications means.

In the areas of friendly force tracking – blue force tracking – today our command does a lot of work creating a common operational picture for commandeers. The problem is we have different protocols, we have different hardware and software versions in the field, so we're doing a lot of middleware work. It's not the most efficient or optimized way to provide a blue force tracking picture, and there is much work to be done on developing standards and protocols.

I think we have a fairly good grip on our gaps and I think we understand the likely context of future battles. As a Space community, these are the areas I think need intense focus so we can make informed decisions about CONOPS and next generation systems. I think understanding this may even help us with the Department of Defense's Operationally Responsive Space initiative and what we think should come out of that. In any case, whatever we do as a nation, particularly when you're in the Space domain where things are very costly, we have to look for unified action and be able to take full advantage of all those capabilities on those platforms.

CONTINUED PAGE 50 >>

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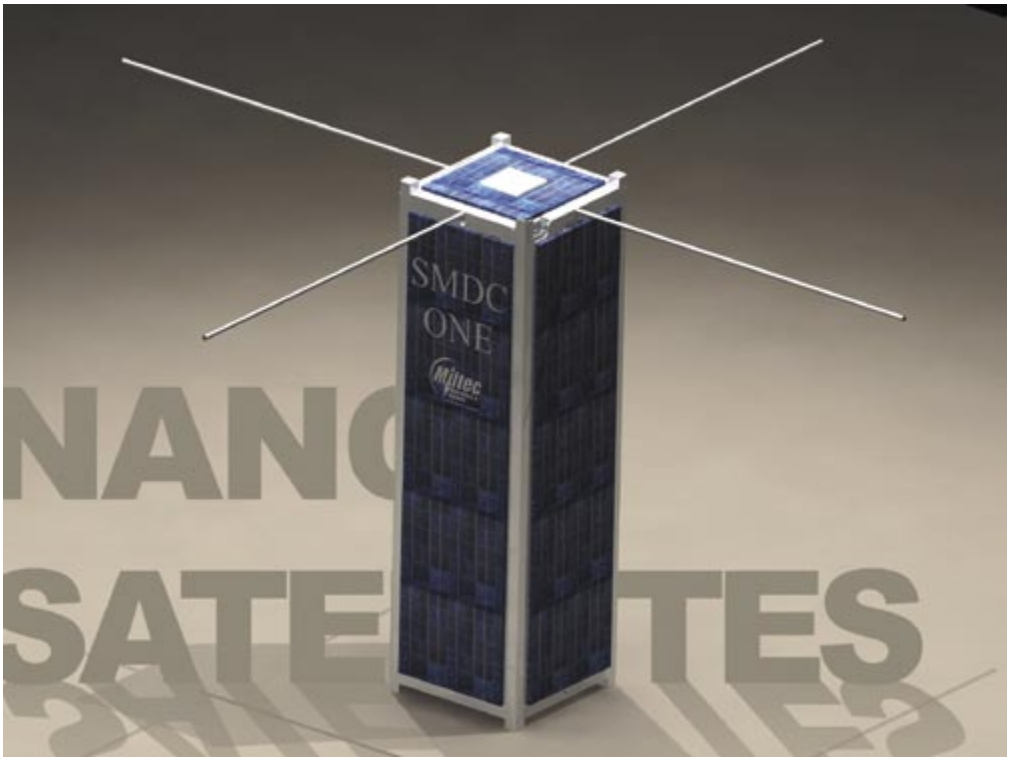
TRANSFORMING ARMY SPACE

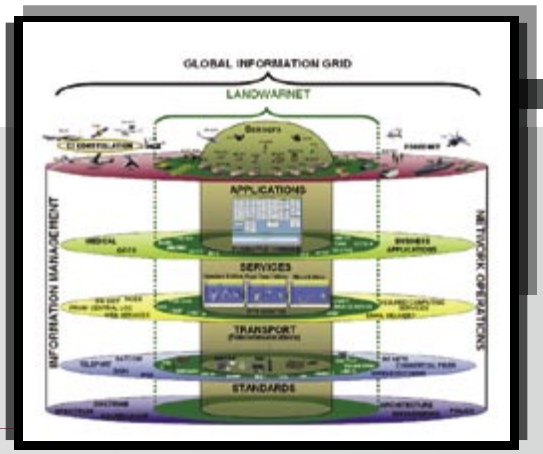
BY: JAMES G. LEE AND
MAJ JASON CONROY



Between World War I and World War II the Germans transformed their military doctrine and strategy leading to a revolutionary approach to war. "Blitzkrieg" emphasized speed and maneuver warfare as a means to escape and overcome the static defense strategies that led to the stalemate of trench warfare and their defeat in 1918. France and Britain on the other hand, deceived by their victory, overlooked the lessons of that war and operational implications of Blitzkrieg. By dogmatically clinging to the strategy they perceived as successful in the last war, France and Britain had clouded their strategic vision and consequently suffered defeat in the great battles that occurred in May 1940.[1]

Today, the U.S. Army is engaging in both conducting war and, unlike pre-war France and Britain, transforming itself to meet the challenges of future warfare. Central to the Army's transformation strategy is the Future Combat System. This system and the future force are enabled by and will rely on net-centric services with the creation and dissemination of operationally and tactically relevant information to achieve decision and maneuver dominance, and to promote and enhance precision and lethal effects on the battlefield. Central to Army transformation and Future Combat System is the Brigade Combat Team and the warfighting echelons at battalion and below. These are the tactical warfighters and Soldiers who will rely on information and net-centric

FUTURE COMBAT SYSTEMS NETWORK



The Soldier is the integral element of the FCS (BCT). The Soldier is connected and integrated to the FCS Network and Battle Command. This connectivity provides the Soldier superior situational awareness mounted and dismounted, enabling them to effectively perform Battle Command functions while maximizing Soldier and Force lethality and survivability.

The Future Combat System (Brigade Combat Team) Network is a layered system of computers and software, radios, and sensors all interconnected with each variant in the FCS (BCT). There are currently many radio and computer systems all using various different software, which makes it difficult to communicate. Communication is very important on the battlefield, and the FCS Network makes good communication possible. The Network enables leaders at all levels to see first, understand first, act first, and finish decisively. It connects FCS platforms to the Soldier at every echelon and gives the ability to integrate our communications with other Department of Defense Agencies and with our allies.

Network connectivity also enables the Soldier to more effectively employ and control FCS unmanned ground and aerial systems, and to take full advantage of embedded training, logistics and medical functions. These network-enabled capabilities are executed when mounted via the Manned Ground Vehicle Common Crew Station, and when dismounted via the Centralized Controller.

Manned Ground Vehicles

- Reconnaissance and Surveillance Vehicle (RSV) XM1201
- Mounted Combat System (MCS) XM1202
- Non-Line of Sight Cannon (NLOS-C) XM1203
- Non-Line of Sight Mortar (NLOS-M) XM1204
- Field Recovery and Maintenance Vehicle (FRMV) XM1205
- Infantry Combat Vehicle (ICV) XM1206
- Medical Vehicle Evacuation (MV-E) XM1207
- Medical Vehicle Treatment (MV-T) XM1208
- Command and Control Vehicle (C2V) XM1209

Unattended Ground Sensors (UGS)

Tactical and Urban Unattended Ground Sensors

- **T-UGS (AN/GSR-10(T))**
- **U-UGS (AN/GSR-10(U))**

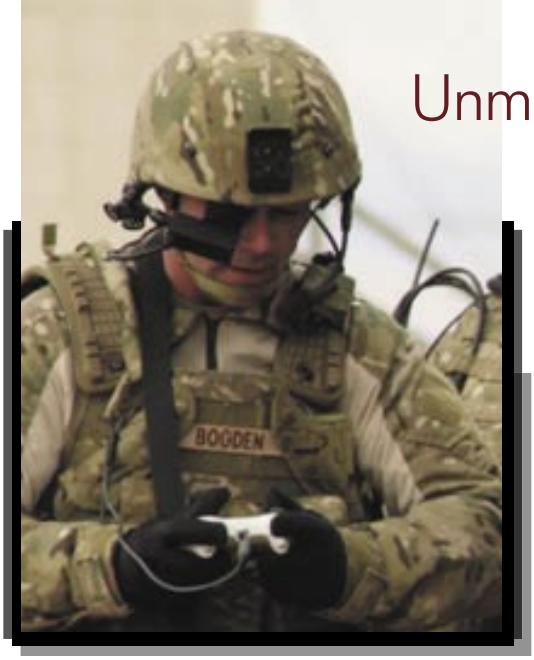
Non-Line of Sight Launch System (NLOS-LS) XM 501

The Future Combat System (Brigade Combat Team) Unattended Ground Sensors (UGS) program is divided into two major subgroups of sensing systems: AN/GSR-9 (V) 1 Tactical-UGS (T-UGS), which includes Intelligence, Surveillance and Reconnaissance – UGS and Chemical, Radiological and Nuclear – UGS; and AN/GSR-10 (V) 1 Urban – UGS, also known as Urban Military Operations in Urban Terrain Advanced Sensor System.

A UGS field will include multimode sensors for target detection, location and classification, and an imaging capability for target identification. A sensor field also includes a gateway node to provide sensor fusion and a long-haul interoperable communications capability for transmitting target or Situational Awareness information to a remote operator, or the common operating picture through the FCS (BCT) Joint Tactical Radio System Network.

The XM501 Non-Line of Sight-Launch System consists of a platform-independent Container Launch Unit with self-contained tactical fire control electronics and software for remote and unmanned operations. Each Container Launch Unit consists of a computer and communications system and 15 Precision Attack Missiles. The Non-Line of Sight-Launch System provides a rapidly deployable and network-linked precision guided munitions launch capability that is currently not available within the Army.

Unmanned Aircraft Systems (UAS)



Class I
Unmanned Air Vehicle (UAV)
XM 156

Class IV
Unmanned Air Vehicle (UAV)
XM 157

The XM157 Class IV Unmanned Aerial Vehicle has a range and endurance appropriate for the brigade mission. It supports the Brigade Combat Team Commander with communications relay, long endurance persistent stare, and wide area surveillance.

The XM156 Class I Unmanned Aerial Vehicle is a platoon level asset that provides the dismounted Soldier with reconnaissance, surveillance, and target acquisition, and laser designation. Total system weight, which includes the air vehicle, a control device, and ground support equipment is less than 51 pounds and is back-packable in two custom Modular Lightweight Load-carrying Equipment-type carriers.

Unmanned Ground Vehicles (UGV)

Armed Robotic Vehicle
Assault Light (ARV-AL)
XM 1219

The ARV-A-L MULE Vehicle (XM1219) is a mobility platform with an integrated weapons and reconnaissance, surveillance, and target acquisition package to support the dismounted infantry's efforts to locate and destroy enemy platforms and positions. As the program's centerpiece, the Common Mobility Platform provides superior mobility built around an advanced propulsion and articulated suspension system. This system gives Soldiers vehicles in which to negotiate complex terrain, obstacles, and gaps that a dismounted squad will encounter.

The XM1217 Transport MULE Vehicle (MULE-T) carries 1,900-2,400 pounds of equipment and rucksacks for dismounted infantry squads. The rugged vehicle relieves Soldiers of heavy equipment and packs while following them through complex terrain.

Multifunctional Utility/ Logistics and Equipment
Countermine and Transport
MULE-T XM 1217
MULE-C XM 1218

The Countermine MULE Vehicle (MULE-CM) (XM1218) will provide the capability to detect, mark, and neutralize anti-tank mines. The vehicle is equipped with an integrated mine detection mission equipment package from the Ground Standoff Mine Detection System (GSTAMIDS).

Small Unmanned
Ground Vehicle (SUGV)
XM 1216

The XM1216 Small Unmanned Ground Vehicle (SUGV) is a lightweight, manportable Unmanned Ground Vehicle capable of conducting military operations in urban terrain, tunnels, sewers, and caves. The vehicle aids in the performance of manpower-intensive or high-risk functions (i.e. urban Intelligence, Surveillance, and Reconnaissance missions, chemical/Toxic Industrial Chemicals, Toxic Industrial Materials, reconnaissance, etc.).

> "When Space is accessible to the tactical warfighters it can change the manner in which relationships occur and the way that organizations will act."

effects for the situational cognition to plan, decide, act and react. The Global Information Grid (GIG) net-centric services will be built upon capabilities deployed across the entire vertical domain and Space-based systems and Space-derived effects are critical capabilities underpinning the information engine that will drive the Army and the future force. It would follow that the strategies guiding the transformation of National Security Space are high interest items as they relate to the U.S. Army and the future force. Because Soldiers and tactical warfighters are heavily reliant on net-centric information distribution services, the Army's dependence on Space-based capabilities and Space-derived effects will continue to expand and the Army will arguably remain the largest service user of Space capabilities and effects. U.S. Army Space and Missile Defense Command/Army Forces Strategic Command (USASMDC/ARSTRAT) as the Army specified proponent for Space, is responsible for being the focal point to provide for a strong Army voice in the combat and material development process leading the advocacy, development, and fielding of Space capabilities to satisfy validated Army Capability Gaps.

Over the last fifteen years USASMDC/ARSTRAT has been up front as Army divisions evolved from having no satellite communications, no Global Positioning System/Blue Force Tracking, no missile warning, and no Tactical Exploitation of National Capabilities/Intelligence, Surveillance and Reconnaissance to the present "Modular/Digital Division" fully enabled by Space capabilities and effects. Today there are approximately 110 military Space professionals deployed to the Central Command area of responsibility and over 70 percent of these are Army Space personnel.

The U.S. is entering a time of political, strategic, economic, and technological uncertainty where the threats seem more indeterminate. For the Army, the linear battlefield and the strategies and operational concepts that resulted in past successes are giving way to technology enabled non-linear/non-contiguous operations in response to the irregular/hybrid warfare situations it is involved with today. On Apr. 6, Secretary of Defense Robert Gates, in response to these uncertainties, announced key decisions to move the Department of Defense, and the Army in a different strategic direction. One objective of this strategic shift is to "rebalance the department's programs in order to institutionalize and enhance our capabilities to fight the wars we are in today, and the scenarios we are most likely to face in the years ahead, while at the same time providing a hedge against other risks and contingencies."

The intent and focus of this strategic shift is clear: to shift resources and institutional weight toward supporting the current wars and other potential irregular campaigns. One consequence of this strategic shift is the proposed termination of the Transformational Satellite (T-Sat) communications system. When implemented, this decision will inevitably delay the communications-on-the-move capability the future force requires and lingering issues regarding how the demand for communications will be addressed given the proposal to procure existing Advanced Extremely High Frequency and Wideband Global SATCOM satellites will come up short.

Indeed, the Army and USASMDC/ARSTRAT are at a crossroads for Space. If the Army Space community stands firm on legacy while clinging to past success and overlooking past failures they risk doctrine, strategies, and operational concepts becoming outdated dogma as France and Britain did in 1940. They must step up, and push the envelope to innovate, adapt, and overcome institutional, organizational, and cultural barriers to move into the next level. Seamless, responsive, and integrated Space effects must reach down to the lowest tactical warfighting levels to provide our Soldiers the net-centric applications to plan and execute operations across the full spectrum or war. As USASMDC/ARSTRAT moves forward as a proponent of the Army there are four cornerstones of Army Space Strategy for consideration.

Focus on the tactical warfighter

On the surface this may be a statement of the obvious, however for this discussion consider the tactical warfighter to be the Army echelon at the Brigade Combat Team level and below. These are the warfighters that often find themselves in the "trade Space" when it comes down to Space effects such as bandwidth; tagging, tracking, and targeting; or intelligence, surveillance and reconnaissance information. The Army Space Support Elements and Army Space Support Teams are doing yeoman work at the Corps and Division level integrating effects created by national security Space capabilities for the theater strategic and strategic operations. While this level of support must continue, within the paradigm of irregular/hybrid warfare, non-linear/non-contiguous operations place the spotlight on the warfighters at the Brigade Combat Team level and below. In fact, current Army transformation strategies and the Future Combat System concept of operations hold that the Army will fight at or below that level. In deference to current doctrine and this strategic shift, the Army Space strategies must place a priority and focus on the tactical warfighters.

Think effects

As the Army's specified proponent for Space, USASMDC/ARSTRAT must completely understand the focus of current Army problem sets and future requirements in the context of the effects the tactical warfighter seeks to achieve in the course of operations. Although USASMDC/ARSTRAT is fully engaged with U.S. Training and Doctrine Command developing the Capabilities Needs Analysis, these gaps often address capabilities at the macro level and fall short informing the proponents on the nature of the desired effects. For example, a gap in situational awareness could lead to an assumption that there is a lack of intelligence, surveillance and reconnaissance, when in reality it could be the inability to communicate beyond-line-of-sight. The Army must continue to inform its proponency through continued coordination with U.S. Training and Doctrine Command and by forging and strengthening relationships with the Army Asymmetric Warfare Group and the Future Force Integration Division and others. With respects to research and development and science and technology, the Army Space community must ensure its science and technology activities line up with the problem sets and priorities established in the Army science and technology master plan, and that they are consistent with its core competencies.

Reassess Army cultural perspectives on Space roles and missions

Within the U.S. Department of Defense, the Army is arguably the largest user of U.S. Space capabilities and is highly dependent on National Security Space capabilities. In fact, the Army's Space Operations Concepts Capability Plan states: "Commanders and future Modular Force organizations at each echelon will depend upon and leverage the power of Space in order to achieve the Army's seven key operational ideas."[2] The traditional and current Army approach to utilizing Space capabilities has been to exploit National Security Space and commercial Space assets in support of the expeditionary Land Force missions. In essence, Army tactical applications are being "piggybacked" on National Security Space assets and the Army works to develop unique means to maximize its utilization of on-orbit strategic capabilities such as Global Positioning System, Joint Tactical Ground Stations, Overhead Non-Imagining Infrared data, and Tactical Exploitation of National Capability systems.[3] Recent acquisitions of major National Security Space capabilities such as T-Sat have experienced cost and schedule difficulties and pending termination leaving significant capability gaps. It can be argued that the current Army Space strategy of leveraging others programs and capabilities has resulted in significant capability gaps and hence, a shift in Army Space strategy is needed. They cannot continue to rely on others to provide critical Space capabilities; the best way to address Army gaps is through indigenous Army solutions. We must change our culture to accept Space as an Army core competency in order to develop and field indigenous capabilities. Yet we cannot recast Army Space in the mold of the U.S. Air Force. Rather they have to find their niche and define a unique model for Army Space.

Pursue innovative approaches

As the Army moves toward the age of the small, the fast, and the many, it is time to start applying these precepts to Army Space.[4] Today, large, exquisite, and expensive Space programs provide the majority of Space capabilities. USASMDC/ARSTRAT must lead the effort to develop and use military Space capabilities to enable applications for tactical-level commanders and embrace these commanders as the new class of customers. Today's commander requires applications enabled by capabilities that are horizontally networked, accessible, flexible, interoperable, and joint down to the tactical level. Concepts such as dedicated nano-satellite constellations and air-based platforms linked into a network of disbursed nano-routers and hand-held devices could provide multiple paths beyond-line-of-sight communications that are rapidly deployable, cost-effective, and terrain independent. Increasing the speed of command, which proved so vital in recent combat operations, requires high transaction rates, increased information rates, and a tolerance of ambiguity based on unpredictable demand.[5] When Space is accessible to the tactical warfighters it can change the manner in which relationships occur and the way that organizations will act.

USASMDC/ARSTRAT must lead the development and advocacy for desired Army Space capabilities to satisfy warfighter needs. The Army leadership has demonstrated a perceptive appreciation of future national security needs and has taken encouraging steps to restructure transformation programs, but additional initiatives such as integrated tactically responsive Space are required. Army forces will play a major role in a wide range of missions during the era of persistent conflict.[6] To successfully conduct operations across the spectrum of conflict, anytime, anywhere, the Army must adopt a new comprehensive strategy for Army Space and a mindset that recognizes Space combat development as an Army core competency. The Army must ensure their forces have more than residual capabilities leftover from other Service or Agency efforts. The Army owes it to its Soldiers conducting combat operations worldwide, a cohesive near, mid, and long-term strategy to develop and deliver innovative Space capabilities ensuring their success, survival, and advantage over their adversaries.

Footnotes

[1] Williamson Murray and Allen R. Millet, Military Innovation in the Interwar Period, New York, NY: Cambridge University Press, 1998, 448.

[2] TRADOC Pamphlet 525-7-4-, Military Operations Army Space Operations Concept Capability Plan. Nov. 15, 2006, 10.

[3] Ibid, 9-10.

[4] Arthur K. Cebrowski and John W. Raymond, "Operationally Responsive Space: A New Defense Business Model," Parameters Vol. XXXV, No. 2, Summer 2005. 67-74.

[5] Ibid, 67-74.

[6] Briefing, Presidential Transition Paper on Army Force Generation, Nov. 7, 2008.

IN SEARCH OF GROUND TRUTH

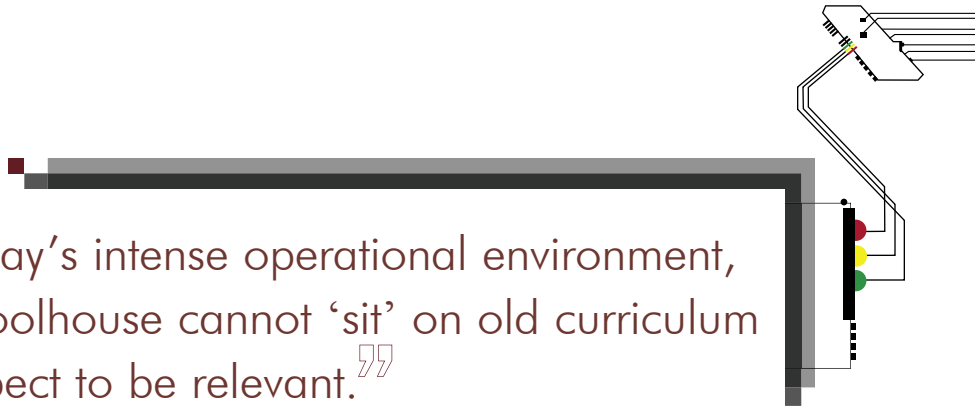
FOR ARMY SPACE OPERATIONS TRAINING

BY: DAVID BERGE, DARYL BREITBACH, LENNY GEHRKE
USASMDC/ARSTRAT DIRECTORATE OF COMBAT DEVELOPMENT
DEPARTMENT OF THE ARMY CIVILIAN SPACE TRAINERS

Members of the 1st Cavalry Space Support Element outside Division Headquarters, Camp Victory, Iraq. *Photo courtesy DCD*

It is 11 p.m., Monday, Feb. 16, as a team from the U.S. Army Space and Missile Defense Command boards a rotator flight at Baltimore/Washington International Airport bound for Kuwait City. Daryl Breitbach, and his Future Warfare Center Directorate of Combat Development Space instructor/course manager counterparts, Lenny Gehrke and Dave Berge, are beginning a twelve day odyssey which will encompass visits to Army Space professionals in Kuwait, Iraq, Bahrain and Qatar. Their purpose is simple, to gather lessons from the field which will help improve the Space related training conducted by U.S. Army Space and Missile Defense Command's Directorate of Combat Development. In today's intense operational environment the schoolhouse cannot "sit" on old curriculum and expect to be relevant. Field visits inject that critical component of ground truth to what should be taught and how we should train the way we fight.

Moving ahead to 1:30 a.m. on Wednesday, Feb. 18, Breitbach ponders the evening sky in a bus laden staging area adjacent to Kuwait International Airport. Joining several hundred Soldiers, they each uniquely enjoy the early morning hours as a mini dust storm blows fine grains of sand through their otherwise tranquil evening rest stop. Eventually, Breitbach and Berge make their way to Camp Arifjan, Kuwait, arriving just in time to miss breakfast at the DFAC (dining facility). However, the rest of the day proves to be a success as they meet with MAJ Phil Speth, Combined Forces Land Component Command/Army Central Command Space Support Element, and the Chief Army Central Command Trainer, COL Laura Singer, to discuss the integra-



"In today's intense operational environment, the schoolhouse cannot 'sit' on old curriculum and expect to be relevant."

tion of Space training into the RSOI (reception, staging, onward integration) process conducted at Camp Buerhing, Kuwait. The addition of this Space training will be a huge step in preparing Soldiers deploying into the "box" on how Space capabilities can support their tactical operations and save lives.

It is now 11 p.m. and time to board an aircraft again – though it is now Wednesday evening and the destination is Baghdad. Breitbach is tired, but excited at the opportunity that awaits him – spending four days with the Army Space community at Camp Victory, Iraq. The C-130 flight into Baghdad International Airport is uneventful and MAJ Neil MacCloud, Multi-National Corps-Iraq (MNC-I) Space, has patiently waited for the post midnight arrival. MacCloud and the rest of the XVIII Airborne Corps/MNC-I staff have been on the ground for thirteen months, sacrificing daily for the sake of the mission. They're tired and ready to go home, but still fully focused on getting the job done right. Later that morning Breitbach, Speth and Berge meet with LTC Matt Burrow (Chief of MNC-I Space Ops), and several of his staff members. It is evident early on that the MNC-I Space staff is a great model of how Space can be effectively integrated into a challenging counterinsurgency environment. Eventually, over the next few days Breitbach, Berge and crew meet with the three Division Space Support Elements in Iraq (10th Mountain, 25th Infantry Division, and 1st Cavalry), with the Army Space Support Team supporting MNC-I, other members of the 1st Space Brigade, and elements of the MNC-I staff that rely heavily upon Space assets in their daily operations. The time spent is fruitful, and several key training and doctrine related lessons can be derived from these "in the box" discussions. These include:

- FA40s must have a balance of in-depth understanding of complex Space capabilities, how the Army fights, combined with outstanding Army staff officer skills to be effective and relevant. Although having an effective reachback to key Space organizations is needed (Joint Space Operations Center, National Air and Space Intelligence Center, Army Forces Strategic Command Advanced Geospatial Intelligence node, etc), the FA40 must more importantly have the ability to quickly recognize potential Space issues, assess the impact on the operational mission, and than have the briefing skills to articulate the issue to the appropriate staffs. For example, MAJ Cecil Strickland (Army Space Support Team Chief supporting MNC-I) took immediate action to analyze the mission ramifications when the Iridium communications satellite collided with a Russian satellite in early February of this year. Strickland recognized the problem, conducted the analysis, and than shared the results (operational impacts) with the MNC-C staff.

- Space Support Elements (especially at Divisions) are fully engaged in technical operations whose impact for USASMDC DCD needs to remain a key element of FA40 training. Even though Space doctrine is still emerging in certain areas of these operations, the critical mission impacts that it has at the highest level of MNC-I and Multi-National Division commands make it imperative that this subject be covered in detail during the Space Operations Officer Qualification Course. The tougher question will be if and when the Army gets into a conventional warfight with a "peer Space adversary," whether the Space staff has the sufficient skill, time and resources to tackle both the technical operations and the probable myriad number of problem sets associated with our Force Enhancement (Intelligence, Surveillance and Reconnaissance; EM; Satellite Communication; Positioning, Navigation and Timing;

Members of the 10th Mountain Group Space Support Element staff, Camp Victory, Iraq. *Photo courtesy DCD*

Missile Warning) and Space Control (OSC, DSC, Space Situational Awareness) mission areas.

Concurrent to the Breitbach/Berge team visit to Baghdad, Gehrke began a solo mission focusing on the Commercial Exploitation Team in Bahrain. The work of the Team was well documented in the last edition of the Army Space Journal, but this visit helped the FWC-DCD staff in collecting that vital ground truth on the operational contributions of commercial imagery exploitation capabilities. When asking the imagery intelligence analyst community how much of their information they share with coalition forces, the answer is little to none due to classification levels of their products. If you can't share information with coalition forces, how can they become self sufficient in producing products themselves? The answer is, provide them unclassified products, and then train them on producing those products. This can be done by accessing commercially collected and exploited imagery. Not every picture taken needs an imagery analyst to provide finished intelligence in order for commanders and or coalition forces to identify activity and placements on the ground. A picture is worth a thousand words and it doesn't take a genius to identify their house from the imagery provided on Google Earth. The Commercial Exploitation Team may have the most simplistic of operations compared to an Army Space Support Team, but the number of products produced and the diversity of customers are impressive. Not only is their operations impressive, but the facilities are outstanding. Gehrke said his farewells in Bahrain and was off to Qatar to join forces with Berge and Breitbach, and to visit the Combined Air Operations Center.

Linking up with Gehrke, Berge and Breitbach's arrival in Qatar started the assessment of Space operations in the Combined Air Operations Center. Breitbach and Berge then proceeded to board another C-130 they hoped was bound for Qatar. However, the trip from Baghdad proved not to be a direct one as they made several stops at various U.S. Marine heavy locations in the western Iraqi desert. It was an interesting experience, and the closest they got to the Syrian border during their time in the Middle East. Eventually, by early evening the team arrived at Al Udeid Air Base, Qatar, and managed to get through Qatari customs – though Breitbach was delayed by Qatari officials for almost thirty minutes (who knows why?). The team thankfully then linked up with Gehrke and LTC Victoria Miralda, Deputy Director Space Forces, and MAJ Chris Crawford, 1st Space Brigade Forward Planner, friendly and familiar faces from USASMDC/ARSTRAT.

The primary focus in Qatar was to learn how the Combined Forces Air Component Command executes support to air and Space operations, primarily through the Director of Space Forces (DS4) shop, which conducts the Space coordination authority mission as outlined in JP 3-14.

Miralda was very busy (the Director Space Forces Chief was on mid tour leave), but she was gracious in taking care of the team during their visit. Miralda has been on station as the Deputy Director Space Forces since November 2008, and has the tough job of integrating and coordinating Space operations within the Central Command Area of Responsibility. In addition to her, other members of the Army Space community have recently been added to the Combined Forces Air Component Command staff. Most significantly, the 1st Space Brigade has initiated the deployment of an Army Space Coordination Element into the Battlefield Coordination Detachment. The Detachment is an approximate forty person Army staff which ensures Army mission requirements are integrated into the Combined Air Operations Center ATO, and are otherwise understood by the Air Force personnel assigned to the Combined Air Operations Center staff. The Army Space Coordination Element, led by Crawford, will further ensure that Army Space

From left to right, Dave Berge, Lenny Gehrke and Daryl Breitbach FA40 Space instructors/course managers with the Directorate of Combat Development traveled to Kuwait, Iraq, Bahrain and Qatar to gather lessons learned that will assist them in conducting Space related training. *Photo courtesy DCD*

issues are effectively addressed and integrated both in the Battlefield Coordination Detachment, as well as throughout the Combined Air Operations Center. While in Qatar we also had the opportunity to visit the Silent Sentry site (helps determine character and location of SATCOM interference), and the 1st Space battalion's Joint Tactical Ground Station element, where the staff not only gave us a great mission brief but took us to an outstanding on base eating facility. While visiting JTAGS, LTC Tom James (Commander, 1st Space Battalion) stopped by and generously shared his thoughts and philosophy regarding Space training. Some of our key training and doctrine takeaways from our time in Qatar included:

- The Director of Space Forces shop is doing an outstanding job working a myriad of very tough Space issues, almost all of which cannot be discussed in this open source publication. However, one of our key lessons for future doctrinal discussion are that Space "lanes" of responsibility are either not clear or being doctrinally executed. There has always been a strong argument to place an FA40 on the Battlefield Coordination Detachment staff, but would a full Army Space Coordination Element be better suited elsewhere. Placing an FA40 in the Detachment, making the Director of Space Forces shop theater integration officer an Army position, and maintaining a strong FA40 Lieutenant Colonel in the Deputy Director of Space Forces billet are all success lessons learned to support mission accomplishment.

- We need to continue to foster the integration of Air Force 13S and 13W expertise into Army operations. When the Air Force 13S/W and the Army FA40 put their collective expertise together you can often find a great mix of Space technical savvy and Army operational experience. This combination can work effectively from the Combatant Commander level down to the Army Division. In fact, the request the 82nd Airborne has to get a 13W assigned for its upcoming rotation is an excellent idea – one that has already worked well with the Army Space Support Team assigned to the Marines at Multi-National Force-West, covering the expansive Anbar province of Iraq. From a school house perspective, we will certainly continue to expand the integration of Air Force Space expertise into the classroom.

The return home began at 12:30 a.m., Feb. 26, getting on another rotator flight at Al Udeid Air Base. The team was fortunate to experience five countries on this single day. In addition to Qatar, they saw a magnificent sunrise over the Mediterranean Sea from the island of Cyprus. Later that morning the next stop was at the base of the beautiful Alps at Aviano, Italy. The third leg took the team through the great European staple for all Americans transiting through Germany – Ramstein, Air Base. Finally, the team wound up back at Baltimore/Washington airport – where the USO had arranged a great welcome for all the troops and airmen that were on the flight. Gehrke even looked the war hero part (bad limp) as he had incurred a nasty foot blister while walking unusually long distances through the desert wastes of Qatar.

It was an outstanding trip which provided regular USASMDC Department of the Army civilians an opportunity to gather key lessons from the field, and allow them to keep the proper focus on their daily job. Additionally, the trip was at minimal cost to USASMDC as the overseas rotator flight cost was already covered by Department of Defense, and most meals were eaten at the DFAC. One note about the DFAC, some of the best cuisine you will ever experience is the dining facility in Baghdad – it can't be beat!

CHALLENGES CONTINUED
>>FROM PAGE 39

There is some good news. There is some progress when it comes to MILSATCOM. Many of you are aware we launched the first Wideband Global SATCOM Satellite last year. We're getting ready to put the second one up. We had some very promising results from that first one, and I think as we look deeper into the future, as we continue to wrestle with TSAT, we may want to take a very hard look at WGS if it continues as it has very successfully, and just think about maybe adding some capability on that platform. Perhaps anti-jam spread spectrum, and perhaps expanding that constellation. Again we'll have to see how the TSAT program moves ahead. We will certainly need high-capacity communications as I've described, in the future, and protected communications down to our tactical formations.

In navigation we have GPS III coming around the corner. I think that's going to bring quite a bit more capability to the warfighter, so we're pleased to see what's coming there. It gives us some significant advantages in navigation warfare given that we'll have more competition in putting that on.

In terms of intelligence, surveillance and reconnaissance, one area I've asked our team to focus on with the Air Force, with all the stake holders in the intelligence, surveillance and reconnaissance community is the overhead non-imaging infrared. We see great promises in the sensors that are coming with the Space-based infrared system, so we've taken it upon ourselves with the help of some graybeards, to form a team to develop a CONOPS for the use of this very advanced capability that we think the Space-based Infrared System is going to deliver. There's a lot of inherent capability on that sensor if we can produce the software in the ground suites that are going to be advantageous to all commanders, whether you're ground, air or at sea. I think that we've got a lot of work there to do to capture that.

I mentioned theater missile warning … we want to get that communications network into an IP protocol so that we can pass that to all the disadvantaged users and not be reliant on one path.

In friendly force tracking, again we have to develop a number of protocols, standardized hardware and software if we're going to optimize the blue force tracking business on behalf of the COCOMs.

In terms of Operationally Responsive Space, we've stuck our finger into that one and we've taken a look at some very small satellites that we think we can build inside a year and can launch inside a year that can meet a communication need for a combatant commander. So, if our plan comes to fruition, we're hoping in this year, 2009, that we'd launch a small number of these nano-satellites and put them into Space as a demonstration for a combatant commander. Again it's in the communications realm that we'll be operating those. If successful, then we hope to go back to Operationally Responsive Space, to OSD in the executive agency if we can push that program along. Again, I look back at the charter of why the Operationally Responsive Space entity was stood up and it's directed to provide responsive Space to the Joint Task Force commander, the men and women who are out there fighting those wars.

Let me shift direction for a minute. The other name in my title is missile defense, so I'm obligated to talk a bit about that. And again, both these domains are very communication-centric, especially as you start to field a system in missile defense that is truly global, that places sensors, shooter, command and control literally around the globe in every combatant commander's backyard.

We've had some good success in 2008. You've probably read in the paper that the United States government is trying to expand and push missile defense into the European Theater, into both Poland and the Czech Republic. There have been some minor difficulties with Russian in negotiating our forward presence. I'm not sure where the new administration will take that. That's really not my business. My business is to establish the site in Poland and get that up and running once the administration tells us that we have a green light to go and do that. So we'll have to wait and see how that turns out over the next year and what decisions are made.

Last month, we had a successful test with a ground-based interceptor. Most people are mesmerized by the interceptor hitting the target. I get mesmerized by the integration of sensors that are spread around the globe by the communications paths that connect them, the reliability of those communications paths to provide the real-time transmission of all that data, because we are literally operating across ten or eleven time zones and trying to integrate all that sensor data simultaneously, and getting a clear picture of what's being fired at us. I'm happy to report that during the last test we integrated a number of the sensors at the same time. We have a forward-based sensor integrated, a ship-based sensor integrated, and an upgraded early warning radar, a deal we integrated along with radar out at Shemya, Alaska and it worked. We got it into the fire control. It was able to develop its weapons task plan computer solution and execute the intercept. So from our perspective, especially the combatant commanders, because very few of them talk to me about probability of kill, they're really talking, how do we make this work across multiple combatant commanders, multiple time zones, all with different battle rhythms? How do we put all of this together? And again, a lot of this goes back to communications. We're reliant on terrestrial networks; we're reliant on SATCOM networks to get all this business done. It's only going to get more sophisticated and a little bit thicker as we deploy more of these sensors and shooters into other forward areas.

> "The systems I work in, the domains I work in with Space, Missile Defense, we're very communications dependent, and we're dependent on a global scale."

As we develop more sophisticated regional systems, the Army is developing a system called the Terminal High Altitude Area Defense system, and the Navy has the Aegis Ballistic Missile Defense System. These systems have capabilities now to cover more than your neighborhood, so they could roll into U.S. Central Command but actually protect U.S. European Command. In the deeper future they could roll into European Command and protect the United States. The communications and the command and control to do all that is going to have to be pretty sophisticated to make this happen so we can optimize the use of all of these sensors and all of these shooters spread around the globe. There is still so much work to be done there.

As we operate globally, it does require a new concept. It requires a new way of thinking and really the cyber business has helped us in Missile Defense tremendously. I think that the combatant commanders over the past couple of years have realized, as all the briefers have come up and talked about it, that when we have a vulnerability in one area that we share that vulnerability. People have seen that in spades. In the missile defense business, they're starting to realize that it is interconnected and that now our adversaries will be launching missiles from one theater crossing over another theater potentially impacting on a third theater. So, we're trying to build a layered defense where the sensors and shooters act in unison and we optimize so we're not wasting our limited supply of interceptors. So, we're truly trying to tie together a global and a regional system into an integrated system across the entire globe.

We're working with the combatant commanders, and every time we go into a room with them, they all agree so much on everything; it makes my job really easy that they see it our way each and every time. Not really, because it is a new way of thinking, but frankly I think the cyber has opened some doors for us and people are realizing it.

There's always an argument about the need for ballistic missile defense. How much should the U.S. invest? I don't know the math off the top of my head, but if you look at the Missile Defense Agency budget of roughly $8 billion a year – another $2 billion across the services making it $10 billion, – I don't know what that computes to, two percent of the annual Department of Defense budget. Well, that's the debate. Does the country need to invest two percent, one percent, no percent, or five percent? I'm not sure, but what I can describe is, is it a problem out there? Is it growing? I think it is.

When we look at Iran and just North Korea alone, we can see some trends. According to the Jerusalem post, they say that Iran has tripled its long-range rocket arsenal in 2008. It says that Iran possessed 30 Shihab-3 missiles in the beginning of 2008 and currently the country claims to have over 100 long-range missiles. While the ability of the Islamic Republic to strike any point in Israel has long been known, "this latest buildup potentially points to an Iranian intent to launch or protract a counterstrike against those who seek to destroy its nuclear program," and that's a quote from the Jerusalem Post.

The former president of Taiwan stated earlier last year that China has some 1,328 missiles aimed at Taiwan. That's a bit excessive if you ask me. He also stated in that article that China is developing a maneuvering reentry vehicle, and in my view that's a proliferation concern if that technology gets out, it's a significant challenge for the United States.

The systems I work in, the domains I work in with Space, Missile Defense, we're very communications dependent, and we're dependent on a global scale. The information in the missile defense business and the Space business has to be passed in near real-time. We can't have large data latencies in the business that we're doing, so just like everybody else; our dependency seems to just keep growing. We get concerned about the cyber threats, and I think there was some recent discussion about nations that are really focused on what we're doing in ballistic missile defense. I would suspect there are other nations that have said publicly that they look at our networking and our cyber capability looking for vulnerabilities, so, many of our systems are tied to that network. Our goal at USASMDC/ARSTRAT is to ensure that we deliver the warfighter what they need, whether we're talking down at the tactical level in Afghanistan or Iraq, or we're talking about protecting the United States or our allies against long-range missiles. With that I'll conclude and take your questions.

The Air Force is kind of linking the Space and cyber missions. I think the Navy has them under one commander. What is the Army's view of that for future potential reorganizations?

I think the Army is going to see it the same way. I think it's going to be a unified effort. I have to report to U.S. Strategic Command on behalf of the Army. The deputies for cyber report through me for any work I do with U.S. Strategic Command, and that's the Intelligence and Security Command as well as our Network Operations Command. We're going to go the path the Joint world is taking and pushing us in that direction. I think they're inextricably linked and we can't really pull them apart.

DEVELOPING A PROCESS

Providing a Lessons Learned Storage Facility and a Collaborative Problem-Solving Environment for USASMDC/ARSTRAT

BY: CHRIS G. BAKER

EDITOR'S NOTE: THIS ARTICLE WAS WRITTEN IN COLLABORATION WITH DR. DONALD KIINGNER, PROF., UCCS, COLORADO SPRINGS, COLO.

As we focus our attention on governance development and security issues, and we look at one particular country or region; we find Knowledge Management is at the core of modern day effective governance. Thus Knowledge Management impacts governmental agencies and their relationships with each other.

The current situation: U.S. Army Space and Missile Defense Command/Army Forces Strategic Command (USASMDC/ARSTRAT), like most governmental organizations, has an information management challenge. What needs to be done is the development of a Knowledge Management system that can store historical information for the future reference of its members. The After Action Review Lessons Learned Program is a realistic solution that will actually answer this need and go a few steps further. This program is outlined in this paper and is currently being implemented by the organization.

What is Knowledge Management? According to http://www.datajar.com, "Knowledge Management is the process responsible for gathering, analyzing, storing and sharing knowledge and information within an organization." The primary purpose of Knowledge Management is to improve organizational and individual efficiency by reducing the need to rediscover knowledge.

How do we take tacit knowledge and explicit knowledge from individuals of an organization and make it easily available to other members of the organization? More so, how do we get those members of the organization to use the documented Lessons Learned of the organization on a reoccurring and frequent basis?

The challenge is, once we build it, how do we get people to use it?

- Earn "buy in" from members of the organization by:
  - Gaining confidence of members of the organization that the information in the program is relevant, credible and current.
  - Demonstrating to the majority of the people of the organization the ease of use of this new technology.
- Ensure the need of the leadership is met by the design and functionality of the program.
- Pass the "tipping point" (Gladwell, 2003) where most members of the organization see the real value in the use of this product and then incorporate it into then daily activities.

History and Background

USASMDC/ARSTRAT is an organization that participates in military exercises on a recurring basis. These exercises are conducted literally all over the world in many different environments and are expensive to plan and execute. The information gained by these experiences needs to be captured and held available for dialog by members of the command (Patterson, Oct '08). If this information is captured in a significantly improved process, the political and social implications are huge. USASMDC/ARSTRAT has a personal military turnover rate of about 33 percent each year. The leadership of the organization has found that there needs to be a formal documentation process that captures Observations, After Action Reviews and Lessons Learned

> "This program provides the ability to share information outside and inside the formal boundaries of an organization."

from the organization's exercise experiences in order to keep this information from leaving with the individual. The original design of After Action Lessons Learned Program was to capture this information in a searchable database. The program goes several steps beyond that by providing a collaborative environment for problem solving. It also provides a searchable database that extends throughout Department of Defense and other important governmental organizations such as the Department of State and the Department of Agriculture. In the future, the program will strive to provide reach back to the terabyte of information located with the Center for Army Lessons Learned, other wise known as CALL.

Developmental Issues

Because of the nature of USASMDC/ARSTRAT subject areas, After Action Lessons Learned Program must reside in a classified, secure domain. This is accomplished by designing and using the program in SIPR – the Secret Internet Protocol Router – environment. The program must also be able to link into its higher headquarters in order to post shared observations, After Action Review findings and Lessons Learned in an environment that can be referenced and discussed by adjacent, higher and lower levels of the organization. The Joint Lessons Learned Information System application is the resident application inside the After Action Lessons Learned Program. It is designed to be the application that will be shared with all Department of Defense, Department of State and Department of Agriculture.

Effective Knowledge Management

Effective Knowledge Management is critical to this organization specifically. If we can use Joint Lessons Learned Information Systems to communicate After Action Reviews and Lessons Learned with our higher headquarters, other four star headquarters and perhaps expand that information sharing with the Department of State, we could demonstrate better information sharing between government organizations.

External Consequences

External consequences are consequences that affect other nations' sovereignty, governance capacity and national security. Most, if not all the military exercises USASMDC/ARSTRAT participates in are conducted with close friends of the United States. This Knowledge Management system is designed to be used in collaboration with our country's friends and close allies. Thus the After Action Lessons Learned Program could improve our efficiency and our ability to share information in collaboration with other countries. Appropriate information sharing is a critical attribute of multinational operations (Friedman, 2006, pg 283).

Possible Solutions

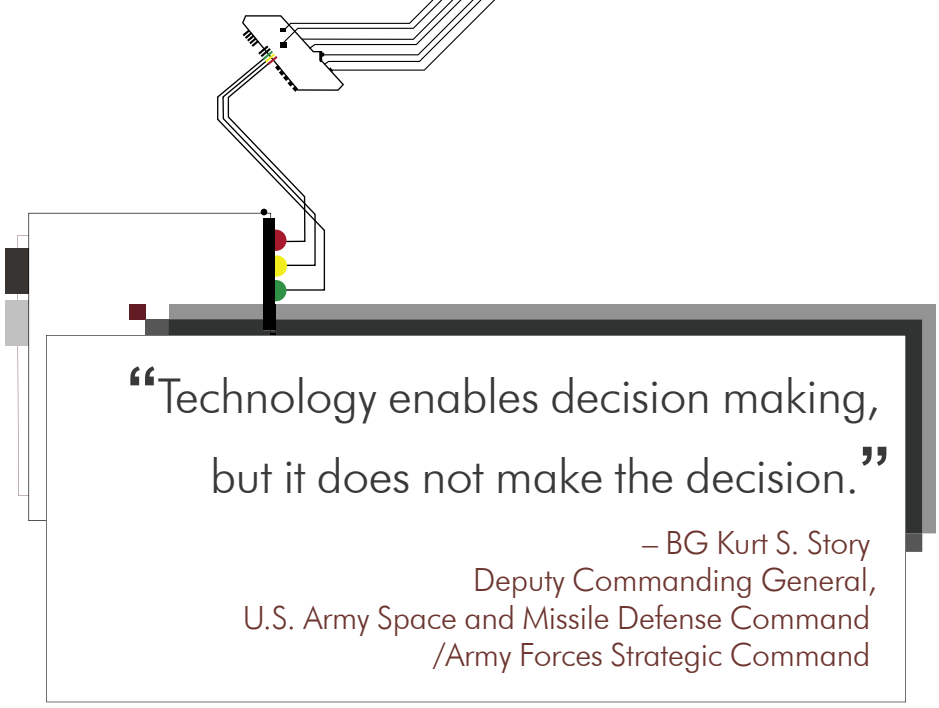
If USASMDC/ARSTRAT can organize a process to capture our Observations, After Action Reviews and Lessons Learned, then we will stand firmly on the shoulders of the information gained. This will bring the organization to the next level of tacit knowledge understanding and functionality.

Feasibility

Yes we can. The current political, social, economic and environmental constraints actually provide a fertile environment for this program to grow. The challenge is making the program self sustainable within the organization itself. This involves creating a functional, efficient program and then getting "buy in" for a majority of the members of the command. This is crossing the "tipping point" in which a majority of the members of the organization see and use this program as functionally beneficial to themselves and the organization as a whole. This is the beginning of the program's self sustainability. It will be the king pin of bringing this program into the organization. Change comes slowly to organizations. Sometimes there is great resistance to change especially when it involves new technology and new ways of looking at information. But in truth, this program is affordable, (it will cost our organization no money). The technology is available at no cost to our organization. Politically, our higher headquarters is already participating in Joint Lesson Learned Information Systems. If, on a larger scale, we in Department of Defense can show better collaboration and information sharing across the board and even with the Department of State, then the program will make a tremendous positive impact.

Overcoming Implementation Barriers

As described in the previous paragraph, implementation of this program is the biggest challenge. This is a new technology. It involves new rules of information management. It is a new way of looking at information. This program provides the ability to share information outside and inside the formal boundaries of an organization. If this program is proven functional, it could be used by other countries and perhaps the rest of the world



to establish greater appropriate information sharing between governmental organizations. If we can accurately share information with other countries, we may reduce global and governmental security risks.

Is it a program or a process? Webster defines the word "program" as "a plan or system under which action may be taken toward a goal." "Process," on the other hand, is defined as "a series of actions or operations conducing to an end; especially: a continuous operation or treatment especially in manufacture." The continuous action of this dynamic process is problem solving in a collaborative environment. Therefore, it is both a process and a program.

Part of Knowledge Management is taking tacit knowledge and changing it into explicit knowledge. That is, capturing what is undocumented knowledge that may be part of the organization culture or in a member's head and then documenting it into something like a database. Much of day to day problems are solved and stored in tacit knowledge of an individual and in the organization's unwritten culture. With approximately 33 percent of a military organization changing over every year, much of this tacit knowledge is at risk of being lost to USASMDC/ARSTRAT. The program's design is to capture this knowledge through a dynamic, collaborative documentation process.

With the Joint Lessons Learned Information System, (the resident technology application in the program) we can now easily document the tacit knowledge gained through the collaborative problem solving process with a secure blog. This makes information easily retrievable and thus then shared with other individuals of the organization. When we have individuals actively participating in the process, we will have brought the individual and the organization to a higher level of learning and functionality.

Solving or mitigating the problems of large organizations requires the collaborative processing power of many members of the organization. This can be done through an organized six step process:

Step 1

Defining the problem is not as easy as it sounds. First the symptom(s) of an observation needs to be acknowledged as the attributes of a potentially solvable problem.

Step 2

Once the major symptoms of the problem are observed, they must be organized in a way that causes the real problem to be identified. The problem is now identified and defined.

Step 3

Next, possible courses of action can identified in a collaborative environment. The Department of Defense calls this the After Action Review (TC 25-25, Sept '93, pg 1.). The review is composed of subject matter experts who discuss and validate the definition of the problem and then come up with viable courses of action. Specifically, the program uses the same After Action Review format outlined by the National Training Center Observer Controller Handbook and in accordance with Training Circular 20-25.

Step 4

Each of these courses of action are then tested inside the environment in which the problem was first found. The courses of action that pass the test are now considered to be validated.

Step 5

The program is designed not only to document this problem solving process, but also to serve as a repository for sharing Lessons Learned.

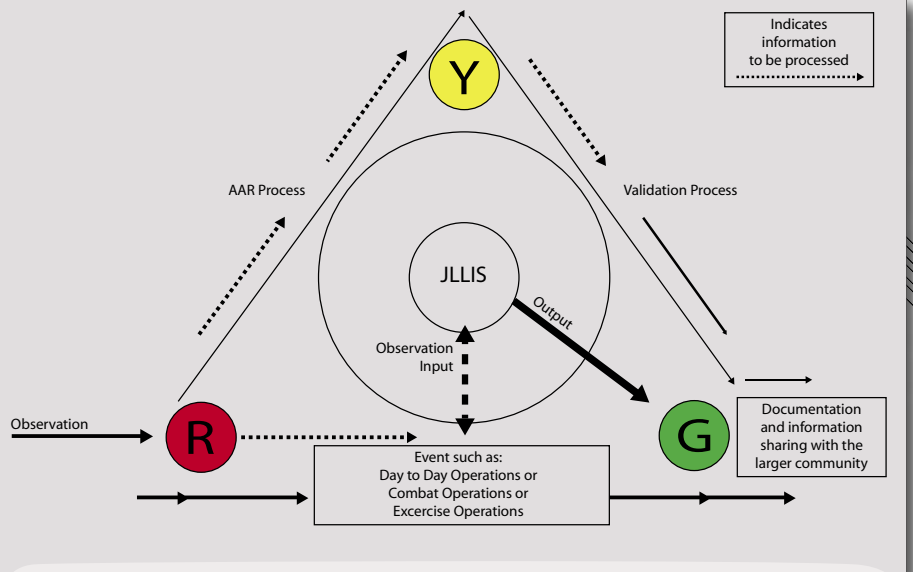
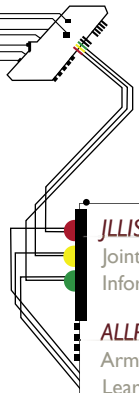


Figure 1 ALLP (depicted above) is a program that captures the problem solving process as it occurs.



JLLIS
Joint Lessons Learned Information System

ALLP
Army Lessons Learned Program

AAR
After Action Report

ALLP aides in the problem solving process through a collaborative, secure dialog in the form of a blog in the JLLIS application. JLLIS has the capacity to hold this information in a secure environment indefinitely.

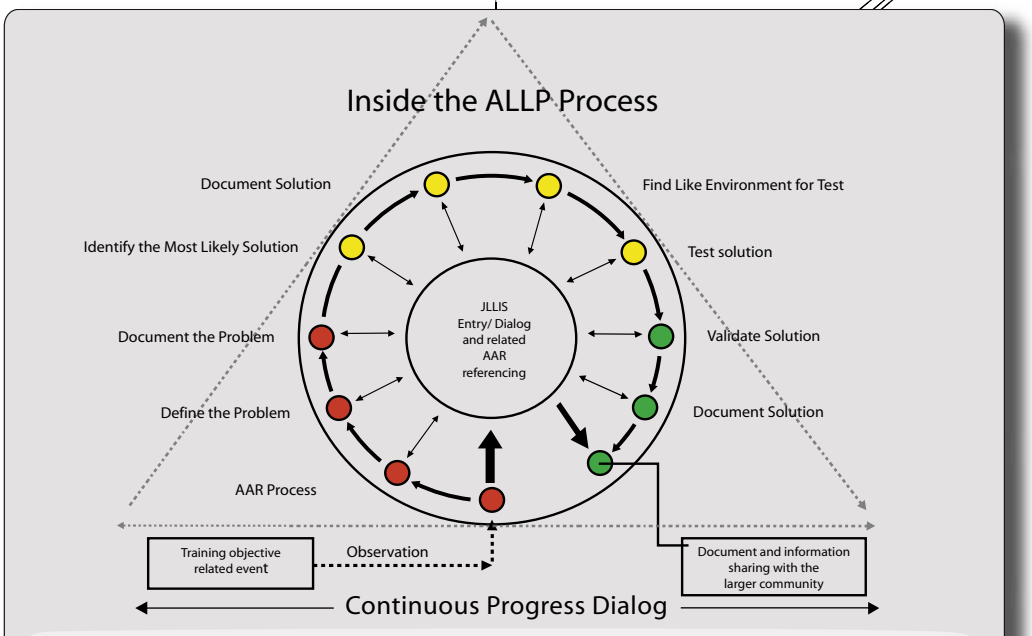


Figure 2 A closer look at the continuous learning and assessment of Army Lessons Learned Program imbedded with JLLIS.

JLLIS is the Joint Lessons Learned Information System application that provides such an environment. Its beauty is its simplicity. At its most basic form, it has a contextual search engine and a collaborative blog under each observation entered. This system resides in the classified Department of Defense environment called Secret Internet Protocol Router.

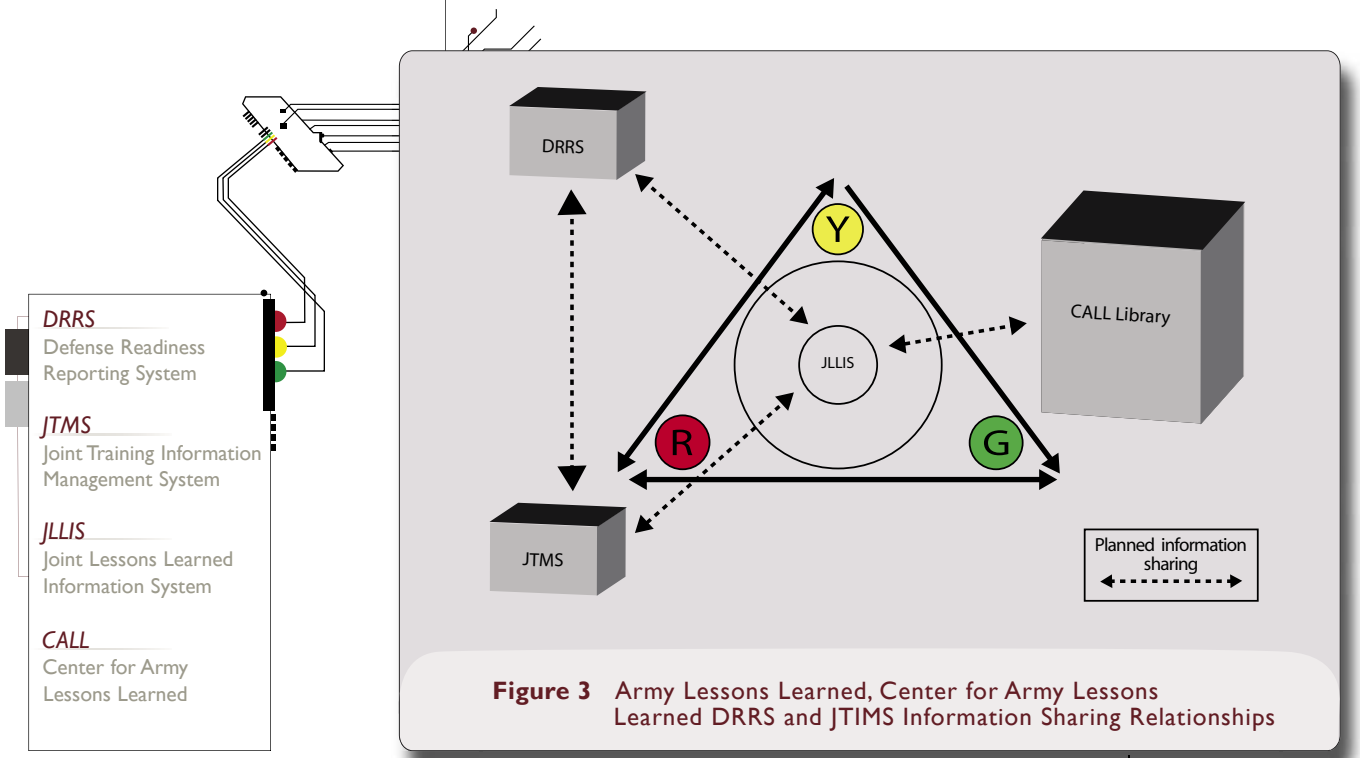


Figure 3 Army Lessons Learned, Center for Army Lessons Learned DRRS and JTIMS Information Sharing Relationships

With all of its benefits, JLLIS is only an application. As BG Kurt Story stated in the Summer Issue of the Army Space Journal, "Technology enables decision making, but it does not make the decision."

Step 6

Reference this problem/solution documentation when similar problems are found. This referenced information allows members to draw solutions from the documented Lessons Learned.Joint Lessons Learned Information System is as relevant as the information entered into it. Thus, a process tailored to the unit needs must be incorporated for its use. After Action Lessons Learned Program is the process that tailors Joint Lessons Learned Information System to the needs of USASMDC/ARSTRAT.

Conclusion

This paper provides a glimpse of how After Action Lessons Learned Program uses a collaborative, real time, secure environment to capture and document the problem solving process in the spirit of building the Knowledge Management of USASMDC/ARSTRAT. In the future, it will be used in collaboration with the Defense Readiness Reporting System and the Joint Information Management System to both improve unit assessment and unit training planning. The program is a collaborative Knowledge Management system that can be used at the organization and individual level. It introduces a process and a technological application to form a tool that documents and builds collaborative solutions from tacit and explicit knowledge. In the future it will link the Center for Army Lessons Learned as a library to take advantage of the terabyte of information that resides in at the center. There will also be a link with the Joint Doctrine Education Information System. Embedded in After Action Lessons Learned Program is a process and a technological application to facilitate current observations in a collaborative environment to define the problem definition, build the After Action Review process and capture the documenting of Lessons Learned in an easily searchable database.

After Action Lessons Learned Program is a program and a process that provides the right Knowledge Management for USASMDC/ARSTRAT of which Joint Lessons Learned Information System is the resident technical application. The program's future is to draw together the terabyte of information available from the Center of Army Lessons Learned and also incorporates information sharing between itself, Joint Information Management System and Defense Readiness Reporting System. The program coordinates After Action Reviews as outlined in the National Training Center's Observation Controller Handbook and in accordance with Army Training Circular 20-25.

KEY CONCEPTS

After Action Lessons Learned Program
A knowledge management tool that incorporates a problem solving process with a technological application called Joint Lessons Learned Information System.

After Action Review
An After Action Review is a process by which subject matter experts examine an observation taken during a military exercise, combat or day to day operations. These people attempt to isolate the observation into what the problem is and then com up with courses of action to correct the problem and its symptoms.

Course of Action Validation Process
Courses of Action that are evaluated in the same environment the problem or symptom of the problem was observed.

Defense Readiness and Reporting System
The Defense Readiness and Reporting System is a technology application used throughout Department of Defense to asses and report unit readiness.

Explicit Knowledge
Knowledge that has been or can be articulated, codified and shared in certain media. It can be readily transmitted to others. Most common forms of explicit knowledge are manuals and documents.

Joint Lessons Learned Information System
Joint Lessons Learned Information System is a technology application that resides in a secure environment (SIPR). Joint Lessons Learned Information System incorporates a database with a contextual search engine, a blog and an ability to hold information in a specific format indefinitely. Joint Lessons Learned Information System is in the Initial Operational Capability phase. This technology is being designed for use with Department of Defense assets, Department of State and Department of Agriculture

Joint Training Information System
A technology application resident in Secret Internet Protocol Router that is used throughout Department of Defense to plan and deconflict large scale military exercises.

Knowledge
"Categorized or sorted data with sorting carried out based on some implicit or explicit relationships." (Klingner and Sabet 2005, pg 200.)

Knowledge Management
Knowledge Management is the creation, capture, and use of records, databases, and other information-including uncategorized perceptions – to achieve organizational objectives. (Klingner and Sabet 2005, pg 201.)

Lessons Learned
Lessons Learned is the documented product of the problem-solving process in which an observation is seen in the light of a symptom of a solvable problem. The symptom is traced back to its cause and this cause is clearly defined and documented as a problem. The problem is then taken through the After Action Review process where possible courses of action are assigned to solve the problem.

Observation
An anomaly during an exercise, combat or day to day operations in which things do not go as planned in a negative or positive way, the cause of which are optimally investigated, documented and later planned for.

Tacit Knowledge
Knowledge which is only known by an individual and that is difficult to communicate to the rest of an organization.

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Figures for publication

Figure 1

After Action Lessons Learned Program is a program that captures the problem solving inside the After Action Lessons Learned Program Process

Figure 2

A closer look at the continuous learning and assessment of After Action Lessons Learned Program imbedded with Joint Lessons Learned Information System.

Figure 3

The Joint Lessons Learned Information System application also resides on Network Internet Protocol Router and Focal Point.

About the Author

Chris G. Baker is the Exercise Integration Officer for USASMDC/ARSTRAT. He is a U.S. Army contractor and works in the G3 Training and Readiness Division. He is a retired Army Aviation Officer with more than 24 years of Active Duty service. He has more than five years experience as lead planner for exercises in Europe, Asia and Africa. His last assignment before retiring from active duty was with NORAD/USNORTHCOM J5 Plans.

TIP OF THE SPHERE

FA40 Proponent/ Army Space Cadre News

BY MIKE CONNOLLY

FA40

Initially commissioned as an Air Defense Officer, Mike Connolly served the majority of his 26 year career as an Army Aviator prior to being selected as a Functional Area 40 during the first Career Field Designation Board. His assignments as an FA40 included Chief of Staff, Cheyenne Mountain Operations Center; Director Command and Control Systems (J6) Cheyenne Mountain Operations Center; Command Director, Cheyenne Mountain Operations Center; Executive Assistant to the Commander, U.S. Strategic Command; Deputy, J36 (Current Operations), U.S. Space Command; Chief, Joint Space Support Team, U.S. Space Command; Chief, Standards and Evaluations Cheyenne Mountain Operations Center; and Mission Director, Cheyenne Mountain Operations Center. He is a graduate of the U.S. Army War College as well as East Tennessee State University.

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"It's My Branch!"

Although it was U.S. Army Space and Missile Defense Command/ Army Forces Strategic Command's Deputy Commanding General for Operations, BG Kurt S. Story who said "It's my branch," I too share that sentiment that Functional Area 40 is my branch. However, more important than the two of us thinking it, we must take the appropriate actions so that every Active Duty, U.S. Army Reserve, National Guard and Retired FA40 feels the same way. The results of the first Career Field Designation Board were released 10 years ago and although we have grown in numbers and billets, in many aspects we have not moved very far at all.
As the Army Space Cadre and FA40 Personnel Proponent Office look to the future, our focus is clearly on maturing the career field so that we not only provide Space professionals the tools and abilities to improve themselves, we solidify the core foundation of the Army's Space Cadre. There are two noteworthy initiatives that the Personnel Proponent Office is working that will significantly enhance an officer's professional and personal development opportunities.

As some of you may remember, during last year's FA40 Space Operations Symposium, USASMDC/ARSTRAT Commanding General, LTG Kevin T. Campbell described operational and shaping positions. We have considered that concept and are taking the preliminary steps to offer PhD opportunities to select FA40 officers through our allocation of Advanced Civilian Schooling slots. The officers who are selected for this program will incur a six-year Active Duty Service Obligation leading to our ability to utilize their education for two consecutive three-year assignments. Through effective personnel management, once an officer completes a PhD program their assignments would allow them to focus on shaping future Space systems through academics, doctrine, research and development. Although the number of officers selected to complete a fully-funded degree will be few, the potential for their long-term impact to the FA40 community and Army Space will be tremendous.

Related to the PhD initiative is the creation of a FA40B career track. Currently, all non-astronaut Space Operations Officers are FA40As and are assigned to positions based on availability as much as anything else. By formally identifying positions that have a significant shaping aspect and require specific education and experience backgrounds, we will be able to establish a career track that allows officers to continually utilize their knowledge in a manner that provides long-term benefits to the future of Army Space requirements. These officers will all serve an initial assignment as a FA40A in order to fully understand the operational aspects of Space-based assets as well as to provide them with an understanding of how the warfighter uses Space and what their needs are. Upon completion of that initial FA40A assignment, officers may choose to compete for an Advanced Civilian Schooling slot and then follow a shaping career path. The selection of FA40B positions will be accomplished in such a manner that an officer selecting this track will have the same opportunities for advancement as an officer choosing to stay within the traditional operational career path or FA40A.
I hope that highlighting these two initiatives demonstrate the Army Space Cadre Office/FA40 Personnel Proponent Office's commitment to maturing the career field and providing you with the opportunity to grow both professionally and personally. However, to go back to the statement "It's my branch!" we can not claim to have all of the good ideas. Your thoughts and suggestions are as important as anyone else's, so let us know what you're thinking.

Army Space Cadre Update

Expansion of Skill Identifier 3Y, Space Activities

3Y is currently an officer-only Skill Identifier. A proposed revision/expansion of the Skill Identifier is currently out for staffing and coordination at Headquarters Department of Army G-1. The proposal requests the Skill Identifier be renamed to align it with the Space Enabler category of the Army Space Cadre and expanded so it can also be awarded to warrant officer and enlisted Space Enabler Soldiers as an Additional Skill Identifier. The warrant officer and enlisted Soldier Additional Skill Identifier will apply to people only and will not be used to identify Space Enabler positions. This revision and expansion will facilitate tracking of Soldiers with a Space background for statistical reporting to Congress as directed by the National Defense Authorization Act of 2008 and help Army Human Resources Command Career Managers identify Soldiers with previous experience for possible repetitive assignments to Army Space Cadre positions. Anticipated date of implementation is no later than Oct. 1, 2009. Once approved, Soldiers may request award based on established criteria utilizing a Department of Army Form 4187 with supporting documentation.

Army Space Cadre Billet Coding

Beginning with the approval of the 1st Data Call results in August 2007, and culminating with approval of the 2d Data Call results in January 2009, the Senior Army Space Council has approved 2,250 Space Enabler billets. The action to initiate the coding of these billets along with Space Professional billets, on source documents resides with Headquarters Department of Army G-3 Force Management. Staffing action is ongoing to submit a modification request to United States Army Force Management Support Agency to code these billets.

Civilian Space Cadre Identification

The Army Space Cadre Office is leading a joint effort to code civilian Space cadre personnel and billets across Department of Defense. We have submitted a joint request to create Space-unique codes within the Defense Civilian Personnel Data System for use by all services. The requested date for implementation of these codes is August 2009. In addition, we developed an Army Civilian Cadre identification questionnaire that will allow us to identify individuals with Space experience as well as duty positions requiring Space experience. Our intent is to refine this questionnaire by testing it within U.S. Army Space and Missile Defense Command/Army Forces Strategic Command by the end of May. Based on the results of the survey, we will expand the civilian cadre identification effort to other "targeted" organizations.

Army Space Cadre Tracking System

We have developed and are currently refining a database to capture information on Space Cadre members. We are working with Headquarters Department of Army G-1 and Human Resources Command to develop an automated method for populating our database with information on officers, warrant officers, enlisted, and Department of Army civilian cadre members. The approval of the 3Y Skill Identifier for all categories will allow us a query mechanism. We have implemented this database for the Space Professional category (FA40s) and are expanding to include all Space Cadre members as information becomes available. This database, which is copied on the Air Force system, allows us to query the "Space" population for such things as type of Space experience, number of people with certain Space training, etc. We expect to have the Tracking System fully functional by September 2009.

Air Force Space Badge Qualifications Listing

For clarification purposes we have compiled a qualification matrix that specifically outlines the criteria for award of the three levels of the Space Badge. Since implementation of the badge in September 2006 we have awarded over 700 badges to Soldiers in all components of the Army.

	Basic AFSB	Senior AFSB	Master AFSB
Education and Training	Any one of the following education or training courses: • Space Operations Officer Qualification Course (SOOQC) (11 weeks) • Satellite Systems/Network Coordinators Course (1C Course) (18 weeks) • Army Command and General Staff College Space Electives (2 courses – 9 weeks each) • Space 100 (7 weeks-Off, 3 1/2 weeks-Enl) • Space 200 (4 weeks) • Space Fundamentals Course (2 weeks) • Space Operations Course (2 weeks) • Other earlier National Space Security Institute or Air Force Space Command courses of similar nature with different names	Any one of the following training courses: • Space Operations Officer Qualification Course • 1C Course • Space 200	The following training course: • Space 300 (3 weeks)
Minimum Cumulative Months of Experience in an Army Space Cadre Approved and/ or Coded Billet	• AC, AGR or RC on AD = 12 months • RC, TPUs, traditional NG, or DIMA = 24 months	• AC, AGR or RC on AD = 48 months • RC, TPU, traditional NG, or DIMA = 60 months	• AC, AGR or RC on AD = 84 months • RC, TPU, traditional NG, or DIMA = 96 months

Training With Industry

Want to help put today's "Hot New Space Concepts" into operation. Why not try our Functional Area 40 (FA40) Training with Industry program? Every year, we place two FA40 officers in a corporate environment, allowing them to experience the latest technology development processes, industrial operations and organizational structures and cultures. Following their tenure at the industry, they are placed in a utilization assignment for three years.

This program was actually initiated in the 1970s in response to the Army's critical need for officers with state-of-the-art skills in industrial practices and procedures not available through military or civil education programs. Today, the FA40 community has two corporate sponsors; Johns Hopkins University – Applied Physics Laboratory in Laurel, Md., and Lockheed Martin, Information Systems and Global Services in Littleton, Colo.

MAJ Michael Belton is our current student at Johns Hopkins University. Belton is working projects supporting the Operationally Responsive Space office at Kirtland, Air Force Base, N.M., and the Joint Improvised Explosive Device Defeat Organization in the Washington, D.C. area. We are working to have him as the first FA40 on the Air Staff for a utilization tour.

At Lockheed Martin is MAJ Darin Eades. Eades has focused a lot of his attention on the Aerospace Data Facility – Colorado at Buckley Air Force Base, Colo., and with Signals Recon. He says "Working at the ADF-C has shown me many emerging (as well as existing) capabilities that will influence Army Space activities." His utilization tour will be as an Assistant Capabilities Manager, U.S. Training and Doctrine Command, Fort Gordon, Ga.

If you are interested, contact the FA40 Personnel Proponent Offices Project Manager, Jerry Pepin, 719-554-0457.

Promotions: Congratulations to the following FA40s

April 2009	March 2009	February 2009	January 2009
LTC William Beck	COL Gary Arnold	MAJ Donald Brooks	COL Benavides
LTC John Moberly	LTC Guy Burrow	MAJ Bryan Juntunen	LTC Merfalen
MAJ Elizabeth Helland	LTC Michael McKay	MAJ Cecil Strickland	MAJ Nunnery
MAJ John Stone	LTC Craig Roseberry	MAJ William Wright	
	LTC Richard Zellmann		
	MAJ Jason Favero		
	MAJ Charles Harmon		
	MAJ Yaqui Oselen		
	MAJ Anthony Tingle		

New to the FA40 Community

Congratulations and a warm welcome to our newest FA40s:

LTC Charles "Greg" Simpson (Call to Active Duty)
LTC Elizabeth Yarbrough (Call to Active Duty)
CPT Amy Sitze (Blue to Green)
CPT Stephen Cameron (Blue to Green)

Upcoming Promotion Boards

The FY09 Colonel, Army Competitive Category, promotion selection board is scheduled to convene on 7 July 2009 to consider eligible Lieutenant Colonels for promotion to Colonel. The zones of consideration for this board are

Above the Zone: LTCs with a Date of Rank of 30 September 2004 and earlier.

Promotion Zone: LTC with a Date of Rank of 1 October 2004 thru 30 September 2005.

Below the Zone: LTCs with a Date of Rank of 1 October 2005 thru 28 September 2006.

For more information about this board see MILPER Message 09-062. FA40s eligible for this board should update their records as soon as possible.

2009 Army Space Cadre Symposium

Mark your calendars! Our symposium is scheduled for 3-7 Aug in Colorado Springs. Scitor has graciously offered up their facility to host once again. Our host hotel is the Antlers Hilton in downtown Colorado Springs. This year, we expanded our scope to include both FA40 and enablers. We also partnered with the Army Space Journal (ASJ) on a theme of "Space: Best Job in the Army". Expect a synchronized release of the ASJ with the symposium. Register and get additional information as it's released on our AKO Web site. Link is https://www.us.army.mil/suite/page/343526. There is also a link for hotel registration on the page.

Want to brief or submit a topic? Give Jerry Pepin, 719-554-0457, or Greg Piper, 719-554-0455, a call.

Tip of the Sphere

Training Insights

BY LARRY MIZE

Larry Mize graduated from Xavier University with a Bachelor 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. He attended French language training at the Defense Language Institute and Subsequently served as the U.S. Navy Liaison Officer to the Commander French Forces Indian Ocean/French Foreign Legion/Commandos Marine in Djibouti. He attended Naval Postgraduate School and was awarded a Master of Science in Space Systems in 1986, subsequently serving at U.S. Space Command and U.S. Strategic Command. Mize is currently Chief of Space and Ground-based Midcourse Defense Education Training.

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ARMY SPACE

Train as the Army Fights!

The Future Warfare Center Directorate of Combat Development Training Division plans and executes its training mission with an annual training plan developed from capstone guidance in Army FM 7.0, "Training for Full Spectrum Operations," FM 3.0 "Operations," Headquarters U.S. Training and Doctrine Command and commanding general, U.S. Army Space and Missile Defense Command/Army Forces Strategic Command Annual Training Guidance, and the overall guiding doctrinal principle to Train as the Army Fights. Key to effective training is the application of multiple processes at its foundation:

- The application of U.S. Training and Doctrine Command Quality Assurance standards for Doctrine, Organization and Proponent Functions, Training, Materiel, Leader Development, Personnel, Facilities and Interfaces/Collaboration.
- The conduct of formal Critical Task Selection Boards chaired by Future Warfare Center – Directorate of Combat Development that set the courses' Tasks, Conditions and Standards and support the development of Terminal and Enabling Learning Objectives.
- The planning and programming inputs to the Headquarters Department of Army Training Program Element Group to secure a viable Program Objective Memorandum training budget to support facilities, trainers and training developers, etc.
- On hand and maintained Training Aids, Devices, Simulators, and Simulations.
- Integration of the current operational environment in which Army Space Forces fight.

This edition of the "Army Space Journal Tip of the Sphere Training Insights" focuses in on several training development programs that demonstrate the process of capturing Space and Ground-based Missile Defense operations in the current operational environment as a key input into effective institutional training.

JTAGS Initial Qualification Trainers Visit

U.S. Pacific Command and U.S. European Command Detachments

BY MICHAEL HERSH, GREG HATFIELD, CW3 JEFF SPRAGUE, MSG KWAIN STOVALL, SFC TODD AVER (JTAGS INITIAL QUALIFICATION TRAINING CADRE)

It is important to keep the subject matter taught at the Joint Tactical Ground Station Initial Qualification Training course as current as possible. To maintain the currency of the training, earlier this year JTAGS sites in Japan and Germany had visitors from the JTAGS Initial Qualification Training course developers. Directorate of Combat Development training developers visited the sites to get the most current operating environment information, from Senior Noncommissioned Officers, for updating the critical task list and course program of instruction. Now being developed are revisions to training materials, tests, and practical exercises based on the current operating environment. Incorporated into the development of an advanced JTAGS course will be information gathered from the sites visited. An idea obtained from one of the sites, grouping students by assigned site and providing site specific training, has been put into place with the course. We would like to thank all the Noncommissioned Officers and Officers we met with for their time and input.

The information from the surveys we send out, also let us keep up with the current operating environment. The surveys are another way the field has of communicating with the school, that the subjects we are training are the tasks performed at the sites. Information gathered from the surveys improves the Initial

Qualification Training course and helps us develop an advanced course. The results of the survey show that a majority agrees the tasks that are trained are being performed in the field and the Soldiers being sent to the field are trained to standard. Be on the look out for another survey coming your way in another month or two, and if you have comments, please include them. We would like to thank all the Soldiers that took the time to fill out the training surveys we sent out.

Another way we try to stay current is sending senior Initial Qualification Training instructors to the Senior Noncommissioned Officer Conference. One of improvements based on comments is to spend more training time on troubleshooting and communications. To implement this, the situational field exercise will now include eight hours on troubleshooting and four hours on communications.

Since JTAGS initial employment, in 1997, there have been various physical issues, extended life cycle requirements, and obsolescence issues that will affect future missile warning capabilities. To keep up with the current operating environment, there is a requirement to replace and upgrade the transitional needs of JTAGS operational units. The installation of commercial antennae at the Initial Qualification Training location is the first step, beyond proof-of-concept, in converting all currently fielded tactical antennae. This will allow for the immediate replenishment of depot-level tactical antennae, to support the transitional needs of all forward operational units. Additionally, there will still be a need for contingency operations, meaning that JTAGS forward sites will still be required to maintain TACSTAR Antennas and Antenna Interface Units, for backup, in the unfortunate case where a commercial antenna should become inoperable. Given the proven capabilities of the new antennae, this is not a foreseeable problem.

The new commercial antennae will exceed JTAGS current requirements, by giving operational units the ability to receive GEO Direct Downlink, for the onset of new satellite constellations. It will also allow operators to utilize the new in-shelter interfaces to the communications processor that is located in the communications rack, also controlled from the primary workstation.

The new commercial antennae have limited user-maintenance, in that it is designed with safety in mind. The physical requirements do not require personnel to climb on the dish, so there is no need for direct user interface with the antennae to reacquire a target. With regard to electrical hazards, there is none. Operator interface will be at a Front Panel Control via an external antenna enclosure rack, or from the Communications Processor in the shelter. Operators will never be exposed to voltages or live circuits, and signal levels will be monitored from the spectrum analyzer, located inside the JTAGS shelter. All control actuators are electrical and not hydraulic, like the current tactical antennae. Any application of lubricants will be the responsibility of Depot Support Personnel, and not the users. All preventive maintenance activities will be conducted and documented by JTAGS Depot Support Personnel only. There is absolutely no maintenance requirement for JTAGS Personnel, on the new commercial antennae.

The new commercial antennas are able to operate in sustained winds of 75 – 100 MPH.

There is an increase in the modes that these antennas have, with special emphasis on "Track Mode"

- Two Line Element track.
- Stow position, meaning that it can be put into a stow position from the shelter, rather than stowing it manually.
- There is a Store Position, or Safe Position, that can be utilized from the shelter, with regard to irregular weather conditions.
- Recall Position, for the antenna being pointed to a previous, saved position. The operators can select this from the communications processor.

Lastly, these antennae are "Receive Only," and there will be no "Transmit" requirements, which eliminates any associated radiation hazards.

DCD Trainers Onsite in Alaska and Colorado

Article written by the USASMDC FWC-DCD Collective Training Team: Michael Madsen, Chris Berisford, Mark James and Lindsey Lawton

A new Integrated Electronic Security System is being installed at Fort Greely, Alaska. This system is replacing the Electronic Security System and the Perimeter Surveillance System. The U.S. Army Space and Missile Defense Command Future Warfare Center – Directorate of Combat Development Collective Training Team had developed an interim Electronic Security System training support package to assist the 49th Missile Defense Battalion with its operator qualification and sustainment training until the new integrated system was projected to become operational. During the initial Integrated Electronic Security System Training Working Group meeting Jul. 22, 2008, the Missile Defense Agency and Sandia National Labs informed USASMDC G-3, 100th Missile Defense Brigade, and USASMDC FWC-DCD that a new operational software and radar technology were being installed and would be effective mid-October 2008. The new system is the enunciator that controls all electronic security devices on the Missile Defense Complex. The radar technologyprovides extended detection for the Missile Defense Complex.

Because of the installation of the new current operational systems, a new training program needed to be developed. Sandia National Labs and the USASMDC FWC-DCD Collective Training Team worked together to develop the training package, with the intent being a train-the-trainer program. Training was conducted at Fort Greely, Alaska, Sept. 29 – Oct. 3, 2008. Ten Soldiers of the 49th Missile Defense Battalion and one member of the contract security force were trained on the new system, as well as the radars. At the successful conclusion of training, a complete Training Support Package was left with the 49th Missile Defense Battalion so that they could continue to train additional Soldiers. Once the Integrated Electronic Security System way ahead is determined, the USASMDC FWC-DCD Collective Training Team will continue to work with Sandia National Labs in the development of additional training products for the new system.

Other USASMDC FWC-DCD Collective Training Team projects incorporating the current operational environment are Ground-based Missile Defense, Space, AN/TPY-2, and Core Mission Essential Task List collective training products. The Mission Training Plan and Crew Drills are being updated for both the 100th Missile Defense Brigade as well as the 49th Missile Defense Battalion due to system upgrades to the Ground-based Missile Defense Fire Control. Working closely with the 1st Space Brigade, USASMDC FWC-DCD just completed the Space Commercial Exploitation Team Mission Training Plan that was approved in June 2008. The Mission Training Plan for the Army Space Support Team is undergoing the final staffing and approval process. The Mission Training Plan and Crew Drills for AN/TPY-2 Sensor Management are in the initial phase of development. Assistance has been provided to USASMDC G-3, 1st Space Brigade, and the 100th Missile Defense Brigade in developing their Core Mission Essential Task List, which will eventually be inputted into the new Army Consolidated Online Database. The Space and Missile Defense brigades will be able to access this training database through the Digital Training Management System.

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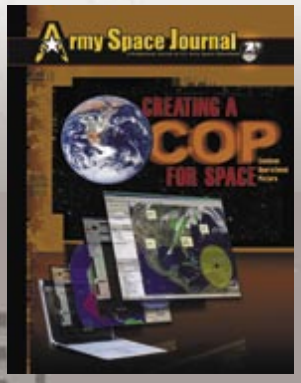
A Professional Journal on U.S. Army Space Operations



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Tip of the Sphere

Career Corner

BY ED ANDERSON

Commissioned as a Field Artillery Officer, MAJ Ed Anderson is currently serving as the FA40 Career Manager. His assignments have included Deputy Commander, Missile Warning Center, Cheyenne Mountain Operations Center; Chief, Missile Defense Integration, CMOC; and Space Control Planner, 1st Space Brigade. He is a graduate of the Interservice Space Intelligence Operations Course, Ground-based Missile Defense Operators Course, Space Operations Officer Qualification Course, and Space 300.

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Career Management

This is the first of what is planned to be a reoccurring column in the Army Space Journal. The goal is to disseminate Functional Area 40 career information.

From the Career Manager's Desk, FA40 is in good shape. With the increase of new officers primarily from Blue to Green, Call to Active Duty and the Captain Incentive Programs, our strength has increased from 166 to 210 in the last 18 months (CPT – LTC). We have our challenges though. Foremost is our shortage of LTCs. Combinations of factors have created this shortage, primarily an increase in authorizations and YG (year groups) assessed below requirements (older/smaller requirements). As larger YGs move into the zone of consideration for LTC, this situation will begin to resolve itself.

Another challenge is accessions of new FA40s. The Army has consistently accessed the functional areas below authorized strength. We emphasize alternate accession paths and individual functional designation requests to offset under-accession. You are our best recruiter. When talking with prospective officers, I consistently hear comments about your professionalism as an important reason for wanting to come into the career field. As you go about your day to day duties, keep an eye out for officers interested in FA40 (any service, Active, Reserve, National Guard). The only action required on your part is to get them in contact with the FA40 Assignment Officer. Filling our shortages allows us to grow and expand assignment opportunities and education.

As many of you are probably aware, FA40 is allocated Advanced Civil Schooling and Training with Industry seats each year. The number of officers applying for these opportunities has been declining. I encourage anyone interested in Advanced Civil Schooling or Training with Industry to contact me to discuss program details and timelines.

Important Notes

- To speed up the assignment process, the command selection board and Advanced Civilian Schooling/Training with Industry selection boards will be moved from the fall to the summer.
- This year's Senior Service College Selection Board requires officers to be in the rank of LTC with a minimum of 12 months time in grade no later than 30 days of covenanting date of the board.
- To provide more stability to Soldiers and Army Families, the Undersecretary of Defense (Personnel and Readiness) approved an increase in tour lengths for Korea. Details can be found in MILPER Msg 09-040.

Important Dates:

JUNE

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

JULY

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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

AUGUST

S	M	T	W	T	F	S
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2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

- Fiscal Year 2009 COL Board – Jul. 7, 2009.
- Command Selection Board, 1st Space Brigade – June 2009.
- Fiscal Year 2009 Advanced Civilian Schooling/Training with Industry Selection Board – July/August 2009.

"Storytelling is one of the most primary conditions of human learning and growth." – Opalanga Pugh

HAVE YOU HEARD? SPREAD THE WORD!

By DJ Montoya
1st Space Brigade

Opalanga receives a framed One Star Note and Coin from COL Michael Yowell, commander of the 100th Missile Defense Brigade (GMD), for her participation in this year's USASMDC/ARSTRAT Black History Month Observance.

PETERSON AIR FORCE BASE, Colo. – This year's Black History Month Observance at U.S. Army Space and Missile Defense Command/Army Force Strategic Command Operations was a collaborative effort between the command, Team Buckley and the Colorado National Guard. To that end, a program of "African-American" storytelling and dance was offered up to an audience in the training rooms of USASMDC/ARSTRAT's Building 3.

Opalanga D. Pugh, a widely known storyteller, kicked-off the program with her unique brand of personal development, a vehicle for education and a force for social change.

"Storytelling is one of the most primary conditions of human learning and growth," says Pugh.

"Some of our most basic lessons have come through stories and the power of the narrative. Story telling is group experience, everyone gets to play because we all have a story to tell," and to go along with that, Opalanga – as she is often called – enlisted the audience of military, civilians and contractors in a combination of song and narrative to relate the history of African culture with its eventual enslavement and migration to America.

At times Opalanga utilized two African native instruments, one which is called in some parts a kalimba, "or as we would refer to it here at Peterson, an African thumb piano." The other was a hollow ornate gourd.

She touched upon what she called "slavery to Space" with historic personages such as scientist George Washington Carver to Astronaut Mae C. Jemison to mention a few.

"You know how they say that necessity is the mother of invention, so it should be no surprise that there have actually been so many 'African-American' inventions."

Renowned storyteller Opalanga D. Pugh, plays a "kalimba" while weaving a tale of African life, slavery, and triumph before an audience at USASMDC/ARSTRAT Operations headquarters during a Black History Month Observance. *Photos by DJ Montoya*

RIGHT: Member of Oluwaseyi, an African folk dancer troupe, receive crystal vases after their performance. Left to right: Jataun Meadows, Angela Boyce and Lisa Watkins.

Opalanga never lost sight of the numerous contributions blacks have played in this country's military.

"The story of the relationships of blacks in the military has evolved over history. And the history of 'African-Americans' spans from the arrival of the first enslaved Africans during the colonial history of this country with the death of Crispus Attucks which set off the Revolutionary War."

"But there has been no war fought within or without the United States in which 'African-Americans' did not participate. From the Revolutionary War to the War of 1812, the Civil War, the Spanish-American War, the World Wars, the Korean War, the Vietnam War, the Gulf War and the current wars in Afghanistan and Iraq."

COL Todd Day, chief of G-3 Plans Division, echoed this with his remarks on this year's theme: The quest for Black Citizenship in America.

He read the exploits of one William Harvey Carney which embodied this quest. Carney, born Feb. 29, 1840 – died Dec. 8, 1908, was an American Civil War Soldier and the first African-American to earn the Medal of Honor, though he was not presented with the honor until nearly 37 years after his act of bravery.

Carney served with the 54th Massachusetts Volunteer Infantry as a sergeant and took part in the July 18, 1863, assault on Fort Wagner in Charleston, S.C. He received his medal for saving the American flag and planting it on the parapet and although wounded, holding it while the troops charged. But recognizing the Federal troops had to retreat under fire, and with covering fire by only one white Soldier of the 101st New York, Carney struggled back across the battlefield, and although wounded twice more, returned the flag to the Union lines.

"When asked about his heroic actions that made him the first Black Soldier to receive the Medal of Honor he simply said, 'I only did my duty,'" recounted Day.

The program concluded with a traditional West African dance performed by Oluwaseyi (God made that) an African folk dancer troupe consisting of Angela Boyce, Lisa Watkins and Jataun Meadows.

COL Michael Yowell, commander of the 100th Missile Defense Brigade (GMD) closed the ceremony by saying, "Americans have recognized Black History since 1926 on an annual basis, first as "Negro History Week" and later as "Black History Month."

"What you might not know is that Black History had barely begun to be studied – or even documented – when the tradition originated here in the United States. Although blacks have been in America at least as far back as colonial times, it was not until the 20th century that they gained a respectable presence in the history books."

"I invite you to make this observance more than just a ritual, something more than a ceremonial occasion that we get together on once a year. I'd like you to relate the conditions of the present to those of the past as Opalanga has taught us.

"This year in particular is a time for reflection and to call to action. Over the years we have held many celebrations to honor the contributions of 'African-Americans' to the rich history of our nation. These contributions include accomplishments that have enhanced the quality of life for everyone. However, as we have learned today too, we can no longer just celebrate the past, unless we also focus on the future. Once we understand why disparities exist, we can begin to wipe them out. We can't change history, but we can change the present to impact the future."

Missile Defense Supply Sergeant
SUPPORTING OTHERS DESPITE PERSONAL LOSS

By MAJ Laura Kenney,
100th Missile Defense Brigade
(GMD) Public Affairs Officer

COLORADO SPRINGS, Colo.—Her job as supply sergeant at the 100th Missile Defense Brigade (Ground-based Midcourse Defense) headquartered here was always more than just a paycheck for SSG Kristine Bombard. The military had been a way of life since she was 19, and the past five years serving in this unit had cemented the now thirty-year-old's feelings that the Army was, in many ways, her extended family.

Bombard is known throughout the unit as a gung-ho Soldier, with a cheerful, gregarious personality, firmly committed to her mission of taking care of the Soldier.

She runs her supply room like the proverbial tight ship, everything in its place; everything signed for; everything neat and organized. From her first day in the unit, where she began serving as a National Guard Soldier pulling a short six-month tour that turned into an Active Guard Tour, she fully entered into the life of the unit, volunteering for both the hard work and the fun times with equal vigor.

When Bombard announced her first pregnancy in mid 2006, the unit shared her joy. Literally, in many ways – attending a baby shower, chipping in for gifts, cuddling baby Eliana when mom brought her in for frequent visits. At a unit Hail and Farewell ceremony, Eliana (aka "Ellie Belly") was formally and happily hailed as a new member of the 100th MDB family. She smiled placidly when held up for introductions, an earmark of her sunny, peaceful nature.

At five months of age, Eliana came down with bacterial meningitis. Within 48 hours, she was dead.

The unit reacted as a family, mourned as a family, and attended the funeral en masse in Class As. Eliana's paternal grandfather,

ABOVE: Eva Kaye Bombard laughs it up recently, proving that life is, indeed, beautiful. RIGHT: The Bombard family, with first daughter Eliana smiling between mother Kristine and father Mike, before the baby's untimely death from meningitis. Photos courtesy Bombard family

a Protestant minister, preached a sermon full of grandfatherly grief and love and bedrock faith in eventual reunion.

Bombard and her husband Mike took time off to mourn, and were supported by both sets of parents. When she returned to work, fellow Soldiers were amazed at her quiet strength.

One Soldier who had been on leave during the baby's illness but had called back to check on her condition, didn't know how to approach Bombard when she returned.

"I'd never known anyone who had lost a baby, and as a mother myself, who had also held and loved Eliana, I knew it would be hard to face Kristine. I couldn't understand how she could be still standing, still doing her job, still being her wonderful self."

Bombard's answer when I (the Soldier who'd been on leave) finally got up the fortitude to ask?

"I'm looking at this as sort of a long business trip. I know beyond a shadow of a doubt that I'll see my daughter again. I have my faith, and I know she's being well taken care of and loved."

Bombard, in her grief, did not retreat. Instead, she reached out to others. Hearing of a mother in her former playgroup who had lost a baby to Sudden Infant Death Syndrome, Bombard attended the funeral and approached the mother, whom she had not known, afterwards.

"It turned out, the mother had prayed for someone to talk to who could understand what she was feeling. And that …was me."

A member of a local church, Bombard and her husband also helped a similarly bereaved couple from the congregation work through their initial sorrow at the loss of their eighteen-month-old child.

Today, the Bombards are again parents of a beautiful five-month-old baby girl. Her name is Eva, and she shares her middle name, Kaye, with her older sister.

I asked when the Bombards plan to tell Eva about Ellie, and the girls' mother said, beaming, "Oh, we've already told her. We show her pictures, and talk about her big sister…" At this, for the first time, her eyes filled.

"What's going to be the hardest is, watching all of Eva's firsts, and wondering what Ellie's would have been like, knowing that we won't see them. But they are very different children – Eliana was very peaceful and laid back, while Eva is very demanding; she wants what she wants when she wants it, and makes sure she gets it," Bombard said, ending with a smile.

Bombard just re-enlisted for six years. She loves her job and she loves the unit, both for its individual Soldiers and for its mission.

"When I first got here, I had no clue as to what the unit did; something about missiles was all I knew. Now I'm very aware of what missile defense is all about, and I couldn't be prouder that we are the ones keeping America safe. Every time I see an Army commercial, or someone comes up on the street to thank me for my service because I'm in uniform, I feel proud to be part of something so huge; defending our freedom."

And the individual Soldiers?

"They were there for me, every single one of them, when I needed them, and I am there for them."

ONE TEAM, ONE FIGHT

By MAJ Eric Little

MISAWA AIR BASE, Japan – Soldiers and Noncommissioned Officers from Delta Detachment, 1st Space Company here recently shared with Air Force and Navy brethren what the expression of "one team, one fight" really means. From Jan. 19-23, at the Misawa Air Base Martial Arts and Tumbling Center, SGT James Harris, a Level III Modern Army Combatives instructor from Delta Detachment taught and certified eighteen Airmen and Navy personnel in Modern Army Combatives.

The Army Combatives program is unique because in addition to teaching self-defense techniques and instilling confidence in the participants, it is a train the trainer course. While the students are taught how to perform certain techniques, they are also taught how to instruct the techniques. This method of instruction conditions the students to really listen, learn and apply what is being taught because at the end of the week they will be in a position to teach what they have learned.

This type of training was appealing to both Air Force and Navy personnel on Misawa Air Base and who better to train them than a Level III Modern Army Combatives instructor assigned to their base. Harris serves as a JTAGS operator on Misawa Air Base, providing theater missile warning to the U.S. and friends and allies in theater. For Harris, the return from the combatives program is immeasurable. Physical Fitness, strength, conditioning, coordination, self-defense, discipline are all part of the program. Because all personnel assigned to Delta Detachment are Level I trained, this was a huge opportunity to train and build the relationship with our sister services.

By weeks end, all eighteen Air Force and Navy personnel that volunteered for the course received a Level I instructor certificate and will be able to teach the same self defense techniques to their respective units. Additionally, a unique bond was established between Army, Air Force and Navy personnel that can only be gained from a little blood, sweat and maybe a few tears (from the Air Force). It was a quality training event that will undoubtedly occur again in the future.

SPC John-Paul Arlowe (wearing red gloves) gets ready to pummel his "opponent" during Delta Detachments Level III Modern Army Combatives training on Misawa Air Base, Japan. Photo by SSG Wallace Connell

Then, 1LT Erol Munir (facing the camera), passes the detachment guidon to 1st Space Company Commander, MAJ Eric Little as Munir relinquished command of Bravo Detachment, 1st Space Company during a ceremony at Camp As Sayliyah, Doha, Qatar, Feb. 9. CPT Corey Ruckdeschel (facing Munir) assumed command of the Detachment. Photo courtesy Bravo Detachment, 1st Space Company

BRAVO DETACHMENT GETS NEW COMMANDER

By SSG Jonas Moody

CAMP AS SAYLIYAH, DOHA, Qatar – During an early morning ceremony here, CPT. Corey Ruckdeschel assumed command of Bravo Detachment, 1st Space Company, JTAGS-Central Command, from the outgoing commander, 1LT Erol K. Munir, Feb. 9. In attendance were numerous members of the Space community, including 1st Space Brigade Commander, COL Jeffrey Farnsworth; Director of Space Forces for Central Command, Col. Jeff Yuen, USAF; and the Deputy Director of Space Forces for Central Command, LTC Victoria Miralda. Also on hand to share in the event of the day were 1st Space Battalion Commander, LTC Thomas James and his senior enlisted advisor, CSM James Ross, as well as the 1st Space Company Commander, MAJ Eric Little and Company 1SG Steven Adams.

Leading up to the official Change of Command, a short award ceremony was conducted where Yuen presented Munir, as well as the Detachment first sergeant, SFC Mario Russo, and WO1 James Parker, with tokens of thanks and appreciation for their outstanding service to the warfighters in the Central Command Area of Responsibility. As an additional accolade, Little and Adams presented the detachment with the company's "Best Crew streamer" for their unparalleled success in the 2008 Best Crew Competition.

The official change of command commenced with a time honored Army ritual, the passing of the detachment colors from the former to the new commander. Like the passing of the sword of the Noncommissioned Officer, the passing of the colors represents the awesome responsibility that the commander accepts for ensuring the health, welfare and the disposition of the Service members under his care.

In a farewell speech that expressed the true compassion that Munir bore for his Soldiers, he remarked, "They are the heart and soul of this detachment and I cannot give them enough credit. Over the last year I have watched them perform at a level beyond anyone's expectations … all while dealing with the stress of being away from their loved ones. Even as I sing their praises today most of them are unable to attend this ceremony because they are ever watchful, conducting wartime mission in this very room. I would like to thank every single one of them; those still here and those who have since redeployed to Germany and Colorado."

In welcoming his successor, Munir stated, "It is the cumulative efforts of those who I have just thanked that led to the stellar performance of JTAGS-CENTCOM over the last year, a year that saw a crew from JTAGS-CENTCOM win the Best Crew Competition, and set the standard for missile warning. I truly believe that because of them, Captain Ruckdeschel is taking charge of the best detachment in JTAGS."

Following Munir's remarks, Ruckdeschel addressed his new detachment, saying, "it is an honor to have the opportunity to work with and lead such an outstanding group of Space warriors."

Fulfilling one of his first responsibilities as the new detachment commander, Ruckdeschel administered the oath of reenlistment to SSG Benjamin L. Sharp of Delta Detachment, 1st Space Company, JTAGS-Japan. Sharp took a moment after his reenlistment to thank all those in attendance, as well as his colleagues from JTAGS-Japan who could not be there to share in the experience.

Munir will be returning to Colorado Springs to assume responsibility as the 1st Space Company Executive Officer, Munir will hold that position only briefly, until he goes forward again to assume command of Delta Detachment, JTAGS-Japan in the summer of 2009.

LTC Patrick Kerr, commander 53rd Signal Battalion (left), and Capt. Janet Stewart, commanding officer Naval Computer and Telecommunications Area Master Station Pacific, untie the maile lei following the ceremonial ground blessing chant at the Wideband Satellite Communication Operation Center in Wahiawa, Hawaii. A maile lei symbolizes good luck and prosperity. Photo by James Johnson

GROUND BLESSING CEREMONY

Held for Army Wideband Satellite Communication Operations Center

By SPC Kenneth Ehrhardt

PEARL HARBOR, Hawaii – Representatives from the Army, Navy and the project contractor, Watts Constructors, LLC, attended a special Hawaiian ground blessing on Feb. 20, for the Army's new Wideband Satellite Communication Operations Center (WSOC). The six-acre construction site is located at Naval Computer and Telecommunications Area Master Station Pacific, Wahiawa, Oahu.

"This is a unique Hawaiian ceremony and very much a tradition," said Lt. Cmdr. Kirk Lagerquist, resident officer in charge of construction Wahiawa at Naval Facilities Engineering Command Hawaii. "I look forward to being a part of this tradition and providing our customer with a safe, professional, and quality project," he said.

The ground blessing ceremony, performed by Rev. William Kaina, is important because the lands of Hawaii are considered sacred by its people. In most cases, contractors begin their projects with this traditional blessing to ensure that the construction site and workers are kept safe and the project is successful.

The ceremony concluded when LTC Patrick Kerr, commander, 53rd Signal Battalion, and CPT Janet Stewart, commanding officer, Naval Computer and Telecommunications Area Master Station Pacific, untied the maile lei after Kaina performed a Hawaiian chant.

"We are very excited about this project," said Kerr. "This facility is linked in with five other operational centers around the world providing communications support to the Department of Defense. [Naval Computer and Telecommunications Area Master Station Pacific, Wahiawa] is a great strategic location and we are excited about this project's teamwork and partnership … and are happy to be a part of this joint team," he said.

When completed, the new facility will provide 24-hour satellite control for communications of the Department of Defense military wideband satellite communications constellation, as well as commercial satellite communication (SATCOM) resources which the building will also contain.

Currently, the Army unit that controls Department of Defense satellite communication payloads execute their mission in California. However, the approximately 60-person unit will move to Hawaii once the building at the Naval Computer and Telecommunications Area Master Station Pacific location is completed and operational.

"We are very, very proud of being a part of your mission and our job is to do the very best we can, providing quality, price, and timing," said Denny Watts, president of Watts Constructors, LLC. "This is important so that when we turn it over to you, the end users, we can all walk away with a lot of pride about what we've done and a sense of accomplishment."

The WSOC project was awarded by Naval Facilities Engineering Command Pacific as a firm-fixed price, design-bid-build contract to Watts Constructors, LLC on Dec. 30, 2008 for $25.376 million. Naval Facilities Engineering Command Hawaii's resident officer in charge of construction Wahiawa is administering the contract.

Watts Constructors, LLC, will build a 28,244 square foot operation center that will enable the Army to provide 24-hour satellite communications. The project will also include Leadership in Energy and Environmental Design features that will achieve a silver rating.

The WSOC designed for the Hawaii site will become the prototype for four additional facilities at other locations including Fort Detrick, Md.; Landstuhl Heliport, Germany; Fort Meade, Md.; and Schriever Air Force Base, Colo. It will be site adaptable to all locations and all WSOCs will be similar in size.

"I'm pretty excited about this. I represent the end user," said Kerr. "I told Denny [Watts], 'Hey, I'm just waiting for you to hand me the key.'"

View of Germany. Arrows indicate theoretical vectors of attack via the Fulda Gap. Southern vector via town of Fulda, Northern via Bad Hersfeld, both are part of the Fulda Gap.

FULDA GAP

By SSG William Valentin

LANDSTUHL, Germany – Noncommissioned Officers and Officers of Charlie Company 53rd Signal Battalion conducted a joint NCO/Officer professional development session here. The purpose of the NCO/ODP was to introduce local military history about the United States Army 3rd Armored Division and the 8th Infantry Division, their standoff with the Soviet 8th Guard's Army, and the large scale planning for stopping an invasion during the Cold War.

The NCOs and Officers of Charlie Company started the day with a brunch at a local German Monastery. There they discussed the history behind the Fulda Gap, and the importance of Observation Point Alpha which now stands as a Cold War memorial. The Fulda Gap is a section of territory between the former East German border and Frankfurt, (West) Germany. Strategically the Fulda Gap was of immense importance during the Cold War. It was one of two obvious routes for any invader attacking West Germany. NATO (North Atlantic Treaty Organization) Forces and Warsaw Pact Forces stood on the edge of war at the Fulda Gap from roughly 1945 until 1991. Observation Point Alpha was one of four Observation Posts along the East/West German border. The importance of Observation Point Alpha was that it stood directly in the center of the NATO defense line. If there had been an attack during the Cold War, it was most likely that Observation Point Alpha would have been the first place Warsaw Pact Forces would have destroyed during their invasion.

After the discussion, the Charlie Company NCOs and Officers were taken to the Cold War memorial that stands at Observation Point Alpha. The moment the Soldiers stepped off the bus they could get a sense of the tension that U.S. Forces had felt at that Wall just 20 years ago. The visiting Soldiers began on the West Cold War memorial, also known as the NATO side of the Cold War standoff. They went to Observation Point Alpha and read about the extensive planning that military strategists had done. They also got to see what it was like to be a U.S. Soldier standing no further then 100 meters away from the enemy who was monitoring them as well, just ready for the first shot to be fired that could have been the launch of the Third World War. After learning about the life of U.S. Soldiers during the Cold War, and forging an "hour by hour defense against Soviet/East German Forces," Charlie Company NCOs and Officers went to the East Cold War memorial. There the NCOs and Officers learned what it was like to be an East German Soldier monitoring NATO Forces while just a hundred meters away stood the entire 3rd Armored Division and 8th Infantry Division.

The professional development session at the Fulda Gap was an event to be remembered by those in attendance. On the ride back, NCOs and Officers could not stop talking about what it must have been like to be a Cold War Soldier waiting at the brink of war.

Honors rendered to the flag by the new CSM for the 117th Space Battalion, Colorado Army National Guard, by CSM Dean R. Parsons during a change of Responsibility ceremony conducted at Patriot Park, Peterson Air Force Base, Colo., on March 8. Parsons takes over responsibility from outgoing CSM Timothy P. Ward. Photo by DJ Montoya

INCOMING CSM CHOOSES ACTIONS OVER WORDS

By SGT Michael Cost

COLORADO SPRINGS, Colo. – Under a sunny spring sky, the 117th Space Battalion took a step toward the future by conducting a change of responsibility from CSM Timothy P. Ward to CSM Dean R. Parsons on March 8 here.

Ward is not only leaving the battalion but the Army as well. After the passing of the unit colors between the commander and the incoming/outgoing command sergeant majors, Ward stood in front of his battalion for the last time and spoke.

"I love this country, the Army and the Soldiers in it," said Ward. "There is a lot I am going to miss about this ... eating cold MREs, the wind passing by as I hang out of an aircraft – but most of all I am going to miss the Soldiers."

Ward continued his speech, thanking his family for their support over the years and calling his wife his "Command Sergeant Mrs."

The incoming senior leader had his moment to speak to his new battalion as well.

"I believe that actions and deeds speak louder than words," said Parsons. "I look forward to my time with this battalion ... thank you," he said as he stepped away from the podium.

Both of these senior non-commissioned officers have extensive backgrounds, in many ways similar to one another. Both served in the Special Forces and spent some time stationed at Fort Bragg, N.C. Both have been on exercises throughout the Pacific region of the world. Parsons, who was initially in the Marine Corps, served in embassies all across the globe to include many countries in Africa before joining the Army and volunteering his time with Special Forces.

With one command sergeant major leaving and another one stepping in, there is no questioning the realization of the fact; in the position of command sergeant major, there are many challenges and obstacles to overcome. Any NCO will confirm it; the decisions made in those situations earn the respect of Soldiers.

Acting and not just relying on words is a definite way to capture not only a Soldier's attention but his/ her respect as well. Ward has seen his old battalion being called up on more than 15 different mobilizations. Parsons is stepping into some pretty big shoes, but with his action-over-words leadership mentality, the challenge should be one he can conquer.

Alpha Company Soldiers from Fort Detrick, Md., take a group photo with two retired Senior Noncommissioned Officers who live in the Armed Forces Retirement Home in Washington, D.C. Photo by SGT David Bowen

1SG Phillip Rivera presents a coin to the two retired Senior Noncommissioned Officers who provided a tour of the Armed Forces Retirement Home in Washington, D.C. Photo by SPC Kenneth Ehrhardt

IN THE WARRIOR'S FOOTSTEPS

By SPC Kenneth Ehrhardt

FORT DETRICK, Md. – Alpha Company, 53rd Signal Battalion Soldiers recently visited the Armed Forces Retirement Home in Washington, D.C., giving the retirees a chance to meet the young men and women who have followed in their footsteps. It was an encouraging time for the residents at the Armed Forces Retirement Home. It gave retired Soldiers time to recall their past experiences in the military, and share their life experiences with today's Soldiers.

The visit opened with a riding tour around the retirement campus. There is also a walk-around tour as well, but due to inclement weather, the group went on the riding tour. On this trip, they were able to see the many activities the retirees enjoy on a day to day basis from fishing to auto crafts and golf.

Once the young Soldiers made their way into the home, they were graciously greeted by many of the home's residents. After a brief introduction, the young Soldiers were shown around the facilities and introduced to various retired Soldiers. The home had everything including a dining facility, medical facility, dental clinic, pharmacy, social lounge and a PX/BX.

Guiding the expedition were a retired sergeant major and sergeant first class who showed the visitors the many indoor activities and their own living accommodation. Some of the 53rd Soldiers noted that retired sergeants major still keep their personal area way above the military standard. The visitors even had a chance to play pool with the home's own pool shark which didn't turn out to well for Alpha Company.

When asked if they enjoyed their time at the home, most replies were of pure jubilation at the fact that they were treated like royalty. A life of leisure awaits all enlisted members who serve in the military, all branches alike if you qualify.

From spending time with the retired Soldiers, the young bucks from 53rd learned a lot. During their lunch hour, they were all afforded the opportunity to mingle with the general population. One retired petty officer third class passed on the three life rules he learned in life and lives by:

- Don't judge a book by its cover.
- Be cool when you meet someone new.
- Don't judge a book by its cover.

Over all, the trip was a success. Alpha Company 53rd had a great turnout from all ranks from specialist to the first sergeant. The residents of the Armed Forced Retirement Home were grateful for the visit and asked to thank all Soldiers for their service in this article.

BACKGROUND:
A little general knowledge about how the home is run:
All forfeited pay from Article 15s goes to the home and funds just about everything. None of the taxpayer's money goes into the home. This is truly a home for the Soldiers funded by Soldiers. Also if all Soldiers take a look at their Leave Earnings Statements, they will realize that they give fifty cents a month, under the allotment to Armed Forces Retirement Homes.

Right: SGT Martin Santistevan from HHC, 1st Space Brigade, brings forth the Red Candle during the Lighting of the NCO Spirits portion of the 2009 1st Space Brigade NCO Induction Ceremony conducted at the Peterson Air Force Base Auditorium on Feb. 5.

NCO Induction continued //

The ceremony, made even more pertinent with 2009 being designated by the Secretary of the Army Peter Geren "The Year of the Noncommissioned Officer," began with a brief history of the NCO Corps. Soldiers from the 1st Space Brigade showcased the various NCO ranks beginning with sergeant, then proceeding to staff sergeant, platoon sergeant, and ending with first sergeant. Three brigade NCOs read the Noncommissioned Officer Creed, while three others performed the Lighting of the NCO Spirits on stage.

Those inducted into the NCO Corps during the ceremony were: SGT Joshua Anderson, SGT Dianalou Boone, SGT Matthew Dawkins, and SGT Kristi Phifer, all from Headquarters and Headquarters Company, 1st Space Brigade; SGT Juan Caballero, SGT Matthew Caple, SGT Christopher Kaufmann, SGT. Michael Landry, and SGT Christian Riley, all from the 53rd Signal Battalion; SGT Matthew Olevano, and SGT Matthew Vickers, both from HHC, 1st Space Battalion; SGT Carmelo Harmon, 4th Space Company, 1st Space Battalion; SGT Brandon LaForce, and SGT Clayton Ratliff, both from U.S. Army Space and Missile Defense Command; and SGT Stephen Urbany Jr. from U.S. Northern Command.

The Charge of the Noncommissioned Officer was then given to the inductees by 1st Space Brigade CSM Kevin B. McGovern, host for the ceremony. Afterward, brigade members came forth to perform "A Soldier's Request" and "The First Sergeants' Request" involving the new inductees. The ceremony ended with Boone, the youngest of the new inductees, performing the "Lighting of the Eternal Flame" on stage.

During his opening remarks, McGovern addressed the assembly by saying, "What a great event."

"This has already touched my heart. If you are sitting out there and something hasn't been stirred inside you, I think you are in the wrong place."

McGovern stated, "Let's not forget, even though we are celebrating here the passing of 15 Noncommissioned Officers … into the Noncommissioned Officers Corps we have many Soldiers, many NCOs, many officers, many civilians and contractors who are deployed throughout this world in direct combat as we sit here in a free nation."

Guest speaker for the event, CSM Ralph C. Borja, U.S. Army Space and Missile Defense Command/Army Forces Strategic Command, imparted some words of wisdom covering over 29 years of experience to the new inductees.

"When the civilian community comes to me and says 'what makes you so successful being a sergeant major in our Army?' I tell them 'Number One – it is the way you were brought up in the family life. Different family traits, different ethnic backgrounds and most importantly, be yourself!' "

Borja told the inductees, "First and foremost, don't be there to impress anyone. Get the orders from your commander, your first sergeant, from your platoon sergeant and execute them to the best of your ability. And do it right the first time."

Secondly he stated, "Be pro active."

"Be aggressive in what you do. In today's Army you are professionals. You don't have to yell, scream and holler in order to get things done. Take pride in what you do. In this year of the Noncommissioned Officer, Command Sergeant Major McGovern and your officers are going to tell you to get out there and tell the American public what the role of a Noncommissioned Officer is including our duties and our responsibilities. We are the 'wingman' of your commanders. You will never let them down.

"And lastly here, take your job seriously. You are professional, you are dedicated, you are motivated, but at the same time I want you to go out and have fun as well. With that I wish you all best in your career. I see future command sergeant majors, first sergeants and platoon sergeants here."

"Execute to the best of your ability"

SGT Dianalou R. Boone from HHC, 1st Space Brigade, performs the closing portion of the 1st Space Brigade NCO Induction Ceremony with the lighting of the Eternal Flame. This honor goes to the youngest inductee.

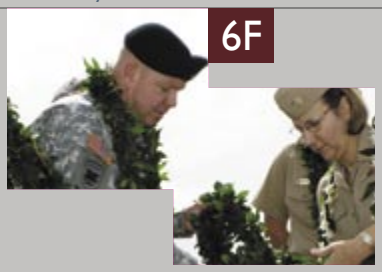
LEFT TO RIGHT SGT Christopher Kaufmann, SGT Brandon LaForce, SGT Michael Landry, and SGT Matthew Olevano all receive the Charge of the Noncommissioned Officer from 1st Space Brigade CSM Kevin McGovern as part of the 2009 1st Space Brigade NCO Induction Ceremony conducted at the Peterson Air Force Base Auditorium on Feb. 5.

1st Space Brigade's newest NCOs

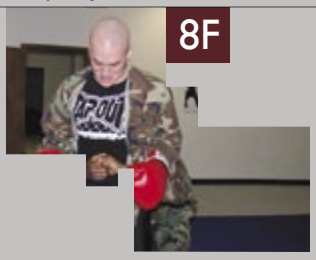
USASMDC FEATURES

Incoming CSM Chooses Actions Over Words
By SGT Michael Cost
4F

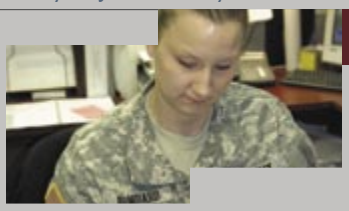
Ground Blessing Ceremony
Held for Army Wideband Satellite Communication Operations Center
By SPC Kenneth Ehrhardt
6F



One Team, One Fight
By MAJ Eric Little
8F



Missile Defense Supply Sergeant
Supporting Others Despite Personal Loss
By MAJ Laura Kenney
10F



BELOW: 1SG William Edwards, HHC, 53rd Signal Battalion, performs his portion of the traditional 'wetting down the stripes' of the newly inducted NCOs with a combination of wine, salt, honey and lemon during the 1st Space Brigade NCO Induction Ceremony.

SPACE SOLDIERS
INDUCTED INTO NCO CORPS

By DJ Montoya, 1st Space Brigade

Photos by Roberta McDonald, USAF Photographer

PETERSON AIR FORCE BASE, Colo. – The ranks of 15 newly promoted sergeants, from the U.S. Army's only Space and Missile Defense Command and 1st Space Brigade, were ceremoniously dipped into a substance intended to resemble liquid rocket propellant. The curious act, which is equated to the traditional "wetting down of the stripes," a part of the induction into the ranks of the time-honored Noncommissioned Officers Corps, was performed during an induction ceremony at the Base Auditorium on Peterson Air Force Base, Feb. 5.

According to 1SG Steven Adams from the 1st Space Company, 1st Space Battalion, this unique liquid is meant to "energize and motivate these new NCOs and keep our Soldiers and the satellites they utilize on target and on station."

Flipside

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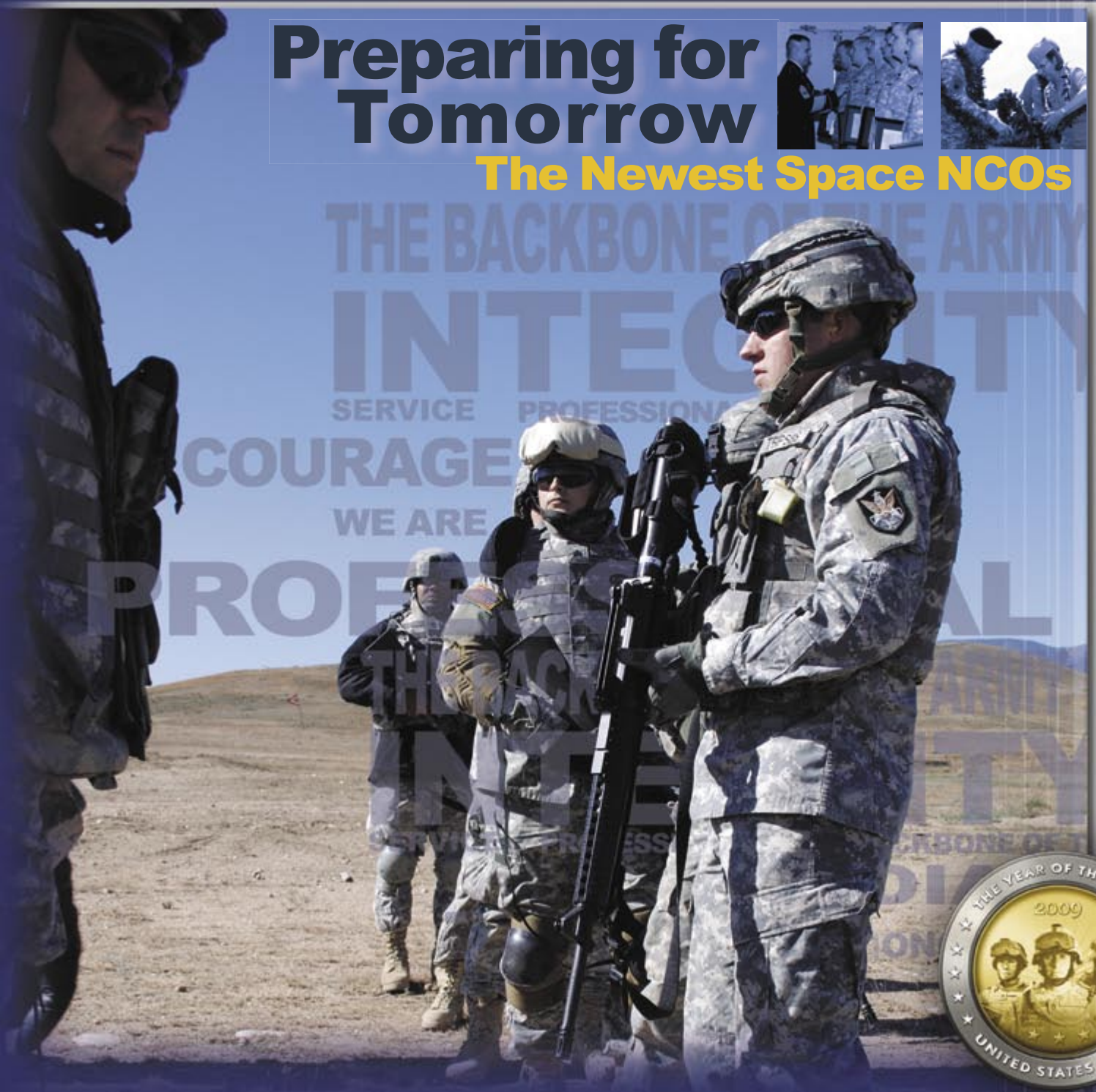
USASMDC FEATURES

Preparing for Tomorrow

The Newest Space NCOs