2012 WINTER

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SPACE MISSILE DEFENSE

A PROFESSIONAL JOURNAL

# SPACE PROS

## Key Players 'Always in the Title Game'

GERMANY . JAPAN . SOUTH KOREA . QATAR

# AFGHANISTAN

# A Story of Chutney

## Oranges, Pineapples, and Honey

A story of chutney? As is my habit–and much to the chagrin of the staff that puts each edition of the Army Space Journal together–I write my column last just before the magazine heads off to the printer. So if you wonder why my information is sometimes more recent than included in other parts of the publication, it is because some of our writers routinely run a little (or a lot) late. In any case, my habit requires the graphics editor to include phony text as a placeholder as we go through the editing process to move things along. Usually a staff member provides article and headline text that is meaningless and easily replaced once I complete my task.

Actually, although I know very little about chutney, the headline is eerily spot-on-the-mark. Typically in the magazine business, headlines are written after the article to summarize what is being attempted in the article. So, while it may be the chicken-or-egg thing, the article normally comes first then the headline. This time, though, the staff will be surprised when they see I have let the phony headline stand. There is certainly a kick to the word chutney. More importantly, it is a food concoction going back hundreds of years, with a variety of old ingredients and new that blend together for a tart taste of opposites–a surprising blend of distinct spices, sweets, and foods to pack a pretty good, mouth-puckering punch.

So here is my attempt at a column on chutney, and it starts with the old.

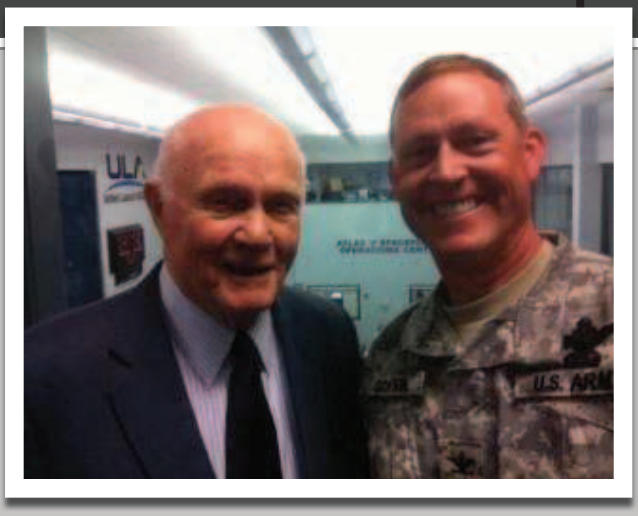
I recently bought a fragile bound copy of the Army Navy Journal covering the last eight months of the Civil War and first four months of aftermath. Something about the feel, smell, and look of the old newsprint which actually existed during the Civil War triggers my curiosity. The fact that my eyes were reading "breaking news" from a military professional journal, with reporting on battlefield events as they unfolded, makes it even more exciting. I would consider the Army Navy Journal an early predecessor to the ASJ and all professional journals in the military. William Church started the weekly national publication in August 1863, publishing out of New York with regular battle updates and analysis for the Union Army.

In my bound copy of the Army Navy Journal's second year product, the editor writes editorials in the form of "Notes to Subscribers" and other essays. Three things have caught my eye through that year's scan. First, Church expresses his pride to be a part of collaboration in the profession of arms as the publication begins the second year of service to readers. Second, he highlights the continued need for a professional military not only as the nation heals from internal war but during peacetime into the future. Third, he discusses the integral role of a professional journal focused on issues surrounding the military profession of arms in the transition to and continuation of that peacetime military.

As I carefully turned the old smelly and yellow-stained pages, I couldn't help but feel an odd freshness or reality in the content presented long ago. The writers, now long dead, were responding to very critical issues impacting the military and the nation. Sometimes, it is easy to take that for granted.

I guess this is where the parallel with my analogy using food–chutney–comes to focus. Without sounding silly, I can imagine 17th and 18th century workers using stone mills, primitive by today's standards, painstakingly grinding and mixing special spice recipes to uniquely match the palates of the time. Just as those tastes of yesterday become real today once they touch the tongue, these hallmark ideas about a professional military resonate today when they become more than words in a history book.

So the thought continues with the new. And the new, of course, comes with the nation's current situation as we draw down from our most recent wars and look to future stability. The defense strategy announced



Retired astronaut John Glenn (left), the first American to orbit the Earth, joins COL Timothy Coffin, deputy commanding general for operations at U.S. Army Space and Missile Defense Command/Army Forces Strategic Command, at Cape Canaveral, Fla., a few days before the 50th anniversary of Glenn's Mercury flight.

by the President, Secretary of Defense, and Joint Chiefs of Staff Chairman earlier this year opened the national discussion on the topic. There are so many ways that today's communication environment is much more dynamic and different from 150 years ago. Yet the three points I picked up from the antique paper remain: 1) Pride in collaboration or partnership, 2) continued necessity of a profession of arms, and 3) communication helps mature the profession.

We will focus our next edition on the topic of the new defense strategy in terms of decisive force, but for now, consider what our historic and modern-day Army has provided to the nation–and, more importantly, what that means for our future. That is the point of this column and this edition's cover theme, Space Pros: Key Players "Always in the Title Game."

I have no idea if this column feels forced by the headline writer or if it clearly makes the point. Maybe connecting fresh fruit with the current world situation seems a little contrived. Maybe it fits better to tie aged spices to the touch of old newsprint, but still there may be a tough stretch to mixing a food concoction with serious national security concerns and our current condition.

So let me make one final attempt at making things work. It comes by way of Facebook. COL Tim Coffin, our deputy commanding general for operations, posted a picture of John Glenn and him mugging for the camera a few days before the 50th anniversary of Glenn orbiting the Earth (Feb. 20, 1962). Think of what the broad Space community has brought to the nation in the past. Think of the opportunities in the future.

How's that for chutney?

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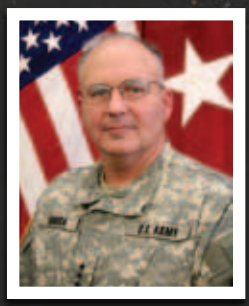

LTG Richard P. Formica
Commanding General
USASMDC/ARSTRAT

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Leadership Updates

# 2011 Achieven /2012 PRIORIT

In this issue of the Army Space Journal, I will share with you an excerpt from a recent speech that I gave at the Air, Space, and Missile Defense Association annual membership luncheon in Huntsville, Ala. It provides U.S. Army Space and Missile Defense Command/Army Forces Strategic Command accomplishments from 2011 and the priorities we are setting for the command in the year ahead.

Last year I introduced our organizational vision and three core tasks. That speech set the themes for the command for the year. I'd like to do the same thing this year by highlighting key activities in 2011 and sharing our priorities for 2012.

In 2011 we streamlined the command by creating a Deputy position, merging two organizations to become the Technical Center, and realigning the Contracting and Acquisition Management Office under Army Contracting Command. We synchronized USASMDC/ARSTRAT with the Joint Functional Component Command for Integrated Missile Defense (JFCC IMD), sustained close, collaborative relationships with the Missile Defense Agency, and sought opportunities to nest our activities with the Army enterprise and improve relationships with our stakeholders.

Our first core task is providing trained and ready Space and Missile Defense forces and capabilities in service to Warfighters and the nation, our operations function (capabilities we provide today). We deployed 12 Space support and commercial imagery teams to the U.S. Central Command theater, with more than 70 teams deployed since the beginning of combat operations in Afghanistan and Iraq. USASMDC/ARSTRAT supplied Space and Missile Defense capabilities to 15 combatant commander, Warfighter, and mission rehearsal exercises.

## Space and Missile Defense capabilities are critical

to the Army as a decisive force and the Army's ability to execute unified land operations. If the Army wants to be able to shoot, move, and communicate–it needs Space.

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We formally activated the AN/TPY-2 Forward Based Mode Radar Missile Defense detachment in Japan and activated and deployed a detachment to Turkey, as part of the Phased Adaptive Approach. The Friendly Force Tracking mission management center submitted data to joint, interagency, and coalition forces around the world, supporting command and control and situational awareness, and tracked half a million locations a day. We provided geospatial intelligence and tailored satellite imagery products to U.S. Africa Command in support of Operation Unified Protector in Libya and U.S. Pacific Command in support of Operation Tomodachi in Japan. The California-based Wideband Satellite Communications Operations Center relocated to a new location in Hawaii

The command's second core task is to build future Space and Missile Defense forces–our capability development function (capabilities we provide tomorrow). We provided Space and Missile Defense input to inform and influence the Army 2020 Task Force, Army Capstone Concept, Army Operating Concept, Warfighting Functional Concepts, and Profession of Arms campaign. USASMDC/ARSTRAT led the Army's effort to draft an Army Space Operations White Paper, which will lay the foundation for determining future Space capabilities for the Army.

The High Altitude Test Bed Aerostat supported the Army's Network Integration Evaluation and helped mature the Army's tactical network. We expanded our efforts in ballistic Missile Defense training and embarked on a task to integrate Space knowledge into Army leader and Soldier development courses. We worked with the Missile Defense Agency (MDA) and the Army to continue the integration of the AN/TPY-2 FBM radars and command and control systems and deliver this important capability as part of the Ballistic Missile Defense System. We provided modeling and simulation, studies, and analysis in support of U.S. Strategic Command (STRATCOM), MDA, Army Cyber Command, and other agencies.

The third core task is researching, testing, and integrating Space, Missile Defense, cyber, directed energy, and related technologies–our materiel development function (capabilities we provide the day after tomorrow). We successfully orbited the Army's first nanosatellite, the Space and Missile Defense Command-Operational Nanosatellite Effect. The High Energy Laser Technology Demonstrator program completed fabrication and integration in early 2011 and finished low-power testing in December. The Long Endurance Multi-Intelligence Vehicle (LEMV) program completed fabrication and inflation in June and is progressing toward a first flight in early 2012, followed by deployment. We successfully conducted the first flight of the Advanced Hypersonic Weapon, thanks to the great teamwork of USASMDC/ARSTRAT, U.S. Army Aviation and Missile Research, Development, and Engineering Center, and Sandia National Laboratories.

We established a distributed operations capability at the new Reagan Test Site Operations Center-Huntsville, achieving full operational capability for Space operations and initial operational capability for test operations. The U.S. Army Kwajalein Atoll was named as one of six Net Zero Energy installations Army-wide with complete energy independence.

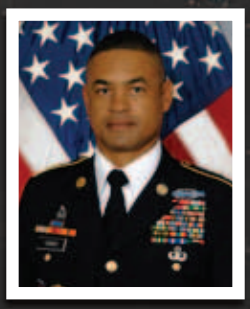
In summary, 2011 was a busy and productive year for USASMDC/ARSTRAT. In 2012 we'll continue to provide Space and Missile Defense forces and capabilities to STRATCOM, the geographic combatant commanders, and the Army.

You are well aware of the fiscal challenges we face. These will lead to force reductions and program changes, and will mean a different future for all of us. The recently published strategic defense guidance, "Priorities for the 21st Century," reminds us that we need to ensure we can operate in anti-access/area denial scenarios. We must have cross-domain synergy, with assurances that our forces can operate effectively in Space and cyberspace. And as the STRATCOM commander emphasized recently, we must be able to fight in domains without geographic boundaries.

Space and Missile Defense capabilities are critical to the Army as a decisive force and the Army's ability to execute unified land operations. If the Army wants to be able to shoot, move, and communicate–it needs Space. If the nation wants to be protected from rogue nations' ability to launch ballistic missiles–it needs Missile Defense. If joint forces want to fight in domains without geographic boundaries–they will need Space and Missile Defense. I believe exploiting the potential of Space and Missile Defense capabilities becomes even more important in an era where conflicts may take place in domains without boundaries and where forward presence may be reduced.

So while no one can speak of a growth industry these days, and no one will be immune from efficiency drills, I am confident that the Space and Missile Defense capabilities that USASMDC/ARSTRAT and JFCC IMD provide are more

Achievements Page 16 >>



CSM Larry S. Turner
Command Sergeant Major
USASMDC/ARSTRAT

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# The Role of a Professio

Throughout the year 2011, the Army has placed considerable emphasis upon the Profession of Arms and has gone to great lengths to educate its Soldiers and Civilian workforce about what it means to be a professional and a member of the Profession of Arms. Here at U.S. Army Space and Missile Defense Command/Army Forces Strategic Command, we've gone a step further and also have placed emphasis upon the importance of being Space and Missile Defense Warriors/Professionals.

As Space and Missile Defense Warriors/Professionals, our Soldiers and Civilians must strive to exceed the exacting requirements of operating and maintaining Space and Missile Defense systems around the world. This means deploying as members of Army Space Support Teams and Commercial Imagery Teams to support Operations New Dawn and Enduring Freedom. It also means working 12-hour shifts as crewmembers supporting Space or Missile Defense operations.

To become a Space or Missile Defense Warrior/Professional, you must master highly specialized skills. The requirements vary depending upon the mission you're supporting, but one thing is certain. To be successful, you must successfully master and daily demonstrate proficiency in performing highly technical and unique skills. This holds true whether you're responsible for managing the communications payloads of Wideband Global SATCOM and Defense Satellite Communications System satellites, supporting combatant commanders as a Wideband SATCOM System Expert or as a member of a Regional SATCOM Support Center, constantly monitoring heat signatures for missile launches as a

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**To be successful,** you must successfully master and daily demonstrate proficiency in performing highly technical and unique skills.

crewmember at a Joint Tactical Ground Station, or serving as a crew member controlling our ground-based interceptors.

Our missions are fast-paced, often requiring us to make split-second decisions, to respond immediately. It doesn't matter if we are responding to a missile event or correcting an anomaly on a communications satellite payload. When presented with an event, we must respond based upon our training. We won't have the luxury of trying to figure out what's going on and how to respond, we won't have the time to ask, "Am I prepared, did I train enough, did I practice enough, to do my job right?" We will rely on our training and respond.

That's what professionals do. They train until things become habit. Professionals also work to develop error-free processes. We achieve "zero defects" by constantly working to refine the process so things can't go wrong when training is over and the event is real.

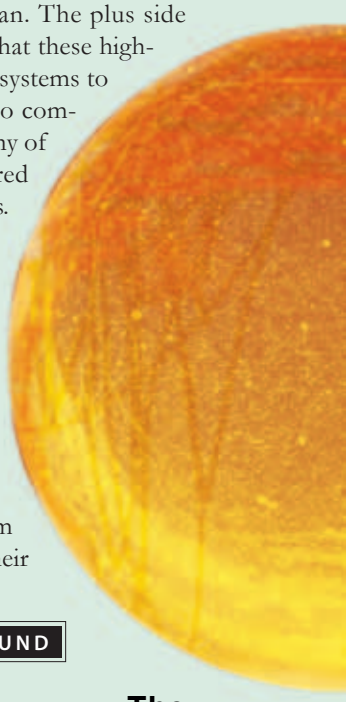
In the Profession of Arms, 236 years of experience has taught us that we improve through training and exercises. In the split-second world of Space and Missile Defense, this fact is doubly true. To meet mission requirements, we must train to an extremely high standard, and once we've achieved it, we must exercise constantly in order to maintain proficiency– to reach the point where we are Space and Missile Defense Warriors/Professionals.

Just to keep things interesting, you're also expected to exceed the high standards required of you as members of the Profession of Arms. Our Soldiers and Civilians must maintain the tactical knowledge and expertise required by the Profession of Arms as well as the technical knowledge and expertise required in their current positions. Our Soldiers in particular must maintain the highest level of technical knowledge and capability, while also maintaining the ability to deploy and fight. They must remain current on warrior tasks and battle drills (e.g., marksmanship training, physical fitness, and professional military education).

We currently have more than 850 Soldiers and Civilians supporting Ballistic Missile defense and Space operations who are United States-based, forward-stationed, or deployed. We recently deployed the next Army Space Support Team and Commercial Imagery Team into the U.S. Central Command area of operations, and have deployed 70 teams since the start of operations in Iraq and Afghanistan. The plus side of deploying our Soldiers and Civilians is that these highly trained teams use their skills and various systems to deliver Army and joint Space capabilities to commanders. The minus side is the fact that many of our Soldiers and their Families have endured multiple deployments over the past ten years.

I'm happy to report that our Soldiers and their Families continue to be resilient. They understand and accept the need to place service to country before self. I strongly feel that these Soldiers and their Families are living symbols of not only the Profession of Arms, but of what it means to be Space and Missile Defense Warriors/Professionals. I continue to be awed by their commitment to duty and the professionalism displayed not only by the Soldiers but by their Families as well. Hooah!

SECURE THE HIGH GROUND



**The Sun Never Sets on USASMDC/ ARSTRAT**

Dr. Steven L. Messervy
Deputy to the Commander
USASMDC/ARSTRAT

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# Civ Professio

## Critical to Our Mission Success

This will be my last article for the Army Space Journal as the Deputy to the Commander for U.S. Army Space and Missile Defense Command/Army Forces Strategic Command. I want to use this space to publicly thank the men and women I've served with at USASMDC/ARSTRAT. The dedicated Soldiers and Civilians are top-notch professionals committed to delivering the best Space and Missile Defense capabilities to the nation and the Warfighter. During my tenure here, I witnessed a number of examples across the three functional areas of our command–operations, capability development, and materiel development–where the members of USASMDC/ARSTRAT were handed a challenging opportunity, and each time they worked and persevered until the best solution was developed.

Inside USASMDC/ARSTRAT, our Civilian professionals provide significant contributions to the command, the Army, and the Department of Defense. When I became the Deputy, I engaged other areas of the command and gained a better appreciation for how our uniquely organized command executes its three core tasks. I also learned more about the dedicated Soldiers and Civilian professionals involved in every aspect of our mission. This column will focus on the Civilian contribution as part of the Army team.

Our command's mission success depends on our operational and technically proficient team of experts. This level of expertise and professionalism is exactly what the Army Chief of Staff describes as being a member of the Profession of Arms, held to a code of ethics and trust placed upon us by the public. There is no doubt that the men and women of this command are members of the Profession of Arms; their efforts prove that

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**Civilian professionals provide significant contributions** to the command, the Army, and the Department of Defense.

every day. Notably, the commanding generals of USASMDC/ARSTRAT and Army Materiel Command agreed that Civilians should be included in the Army Chief of Staff's Profession of Arms study because the Civilian expertise is vital to the mission success of the Army. As a follow-on effort to the study, Army Materiel Command and USASMDC/ARSTRAT initiated an effort at Redstone Arsenal, Ala., home to the largest Civilian workforce population in the Army, to make Redstone a Civilian Center of Excellence. The vision is to ensure there is recognition of the talent of the Civilian workforce, along with a means to recruit, develop, and retain those essential capabilities for the Army.

Our operational forces depend heavily on their Civilian colleagues to plan, train, and exercise the command's Space and Missile Defense brigades. Civilians work to ensure our forces are trained and ready to provide Space and Missile Defense capabilities to the combatant commands and to the Warfighter. In 2012 our operations planning and exercise team includes Civilians who will support numerous planning conferences to prepare for the command's participation in more than ten Tier I combatant command or mission rehearsal exercises. Our Civilians also serve as force multipliers to enhance Space and Missile Defense knowledge with the exercise planners across combatant command staffs.

Civilians provide significant operational support to the Warfighter through the Friendly Force Tracking Mission Management Center, Geospatial Intelligence Division, and Satellite Communications Division, just to name a few. Each of these areas run either around the clock or on extended/surge operations, with Civilians at the helm. Additionally, I would be remiss if I didn't acknowledge the talent of the G-6 information technology professionals who keep our networks running, our information protected, and ensure our leaders stay connected to the global 24/7/365 operations of our command. All of these capabilities are largely provided by Civilian professionals.

Also within the operations function of the command, Civilian professionals manage the Army Space Professional Development Office. This small team develops the policies, procedures, and metrics for the Army Space Cadre and executes the proponency life cycle management functions of the Army Functional Area 40 Space Operations officers, ensuring the Army has trained personnel to meet national security Space needs.

As part of our capability development function, in 2011 we began the final stages of deployment efforts for two of the Missile Defense AN/TPY-2 Forward Based Mode radars. These deployments to Turkey and U.S. Central Command are on an accelerated schedule in support of the U.S. Phased Adaptive Approach for Missile Defense. Thanks to the Missile Defense Agency, who took on the lion's share of the challenge to field a development system, these radars will be ready sooner than originally planned. That meant a "catch-up" challenge for the Army. USASMDC/ARSTRAT, as the proponent for global Missile Defense, has the responsibility to ensure these systems are deployed in a consistent

Civilians Page 17 >>

COL Timothy R. Coffin
Deputy Commander for Operations
USASMDC/ARSTRAT

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# A Year Root in History

The year 2011 had parallels in groundbreaking events 100 years ago for military communication and 50 years ago for Space exploration. A century ago in the United States, radio communication took place for the first time between an airplane and Army units on the ground. Turning to events in the Space realm, in 1961 Soviet cosmonauts and American astronauts took humanity's initial journeys beyond the Earth: Yuri Gagarin, Alan B. Shepard, Virgil "Gus" Grissom, and German Titov.

While these pioneers of Space have now departed, I had the opportunity last month to watch the countdown in the launch control room for the Atlas rocket carrying the first Mobile User Objective System (MUOS) to Space. Next to me stood astronaut, Marine, and Senator John Glenn, just one day shy of the 50th anniversary of being the first American to orbit the Earth. As we discussed the differences between 50 years ago and today it was clear we still live in an age of opportunity with many firsts yet to be achieved.

The historic happenings of 1911 and 1961 are linked to notable firsts in U.S. Army Space and Missile Defense Command/Army Forces Strategic Command. Let's take a look at some USASMDC/ARSTRAT accomplishments and contributions last year–and how several of them are related to other events in history.

First, progress in military communication. In 2011 our command had two noteworthy events demonstrating the power of modern-day communications. In January the Army's newest satellite, the SMDC-ONE nanosatellite, completed its mission after a 35-day flight. SMDC-ONE was the first Army satellite launched in 50 years. It demonstrated the possibility of transmitting data between unattended ground sensors and small receiving stations, an important step in creating more powerful communication links between tactical forces. The next month a ribbon-cutting ceremony in Wahiawa, Hawaii, for the first-ever Wideband Satellite Communications

# Expertise, knowledge, & dedication

## of all members of USASMDC/ARSTRAT made 2011 a tremendous period of progress and service.

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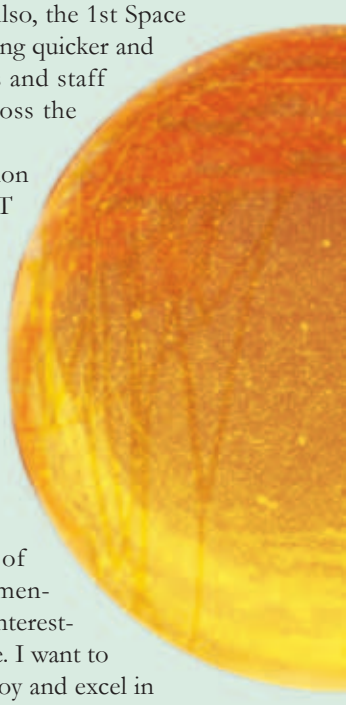
Operations Center heralded the latest enhancement of Space-based communication for the U.S. military. The state-of-the-art center and its planned counterparts in Maryland, Germany, and Japan are the payload managers for satellite communication systems that deliver billions of bytes of information in a second.

Next, advances in Space exploration. Five decades after the original Space pioneers launched into the cosmos, their peers in the U.S. Army are accomplished members of the USASMDC/ARSTRAT astronaut detachment at the Johnson Space Center, Houston, Texas. In 2011 LTC Mark Vande Hei became a full-fledged Army and NASA astronaut after completing a multiyear program of rigorous training. COL Doug Wheelock, the Army's senior astronaut just one year after being the Army's first commander of the International Space Station, flew sensor missions in Afghanistan with a Defense Advanced Research Projects Agency payload in support of U.S. troops on the ground. Additionally, in November the command flight-tested an atmospheric vehicle, the Advanced Hypersonic Weapon, proving that not only does the Army do rocket science–but that we do it well. We can rightfully take pride in that successful event where other agencies previously struggled, bringing to mind the events leading up to the Army's achievement in launching the first American satellite, Explorer I, in 1958.

Back on Earth last year, USASMDC/ARSTRAT showed our flag in support of many humanitarian and military operations. The Army's satellite communications (SATCOM) and Space-based geospatial intelligence assets played big roles when a tsunami and tornadoes rocked the command's world. We pulled together on behalf of neighbors and strangers alike when disasters struck Japan and the southeastern United States–including Huntsville, Ala., home to our senior leadership, research and development center, and many agency and industry partners. On a personal level, USASMDC/ARSTRAT employees contributed time, money, and resources to help people and communities in the disaster zones.

Within hours of the devastating Japanese earthquake and tsunami, the 53rd Signal Battalion's Regional Satellite Communications Support Center for the Pacific region, which manages Department of Defense SATCOM requirements, changed priorities in support of U.S. Pacific Command. The center increased SATCOM access for relief forces by more than 600 percent, while CPT Erol Munir from the Joint Tactical Ground Station detachment in Japan helped lead convoys with relief supplies. Our specialized geospatial intelligence center used satellite imagery and special exploitation techniques to assess damage to the Fukushima nuclear power plant and its continued impacts. Geospatial data also showed that the berthing area near the plant was clear of debris, allowing U.S. Navy vessels and equipment to enter the next day. In Alabama, following a wave of deadly tornadoes, geospatial specialists from the Future Warfare Center plotted damage paths in partnership with the Civil Air Patrol and state emergency agencies. This information helped authorities send aid to those locations where it was needed most.

Remembering that people are the Army's most important element, command leaders took part in grand-opening ceremonies for the new community activity center at Fort Greely, Alaska–a deployment site for the Ground-Based Midcourse Defense system. Family members, Soldiers, and Civilians of the 49th Missile Defense Battalion now have a bright, spacious place for high-tech bowling, club meetings, tasty meals, and all-around relaxation and entertainment. Also, the 1st Space Brigade moved to new headquarters, allowing quicker and easier collaboration between its battalions and staff elements. Their neighbor and partner across the street is the 100th Missile Defense Brigade.



The expertise, knowledge, and dedication of all members of USASMDC/ARSTRAT made 2011 a tremendous period of progress and service. As always, I am grateful that the people of the command safely and effectively completed many deployments and travels throughout the United States and the world. We said "come back soon" and "welcome home" multiple times as Soldiers and Civilians took on missions and exercises in Iraq, Afghanistan, Germany, and Australia, among other places.

Gen. C. Robert Kehler, commander of U.S. Strategic Command, recently made mention of a Chinese saying, "May you live in interesting times." It usually is interpreted as a curse. I want to turn it into a blessing. May each of you enjoy and excel in the interesting times in which we live.

SECURE THE HIGH GROUND

Larry Burger
Director
Future Warfare Center

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# A Vision for Future Succ

The United States has been the world leader in Space since the early 1960s. However, the nation cannot rest upon the accomplishments of the past 50 years to ensure success in the future. A forward - leaning vision for Space and Missile Defense capabilities is an important element of the Army and the nation's future success. The Future Warfare Center within U.S. Army Space and Missile Defense Command/Army Forces Strategic Command has a big role in ensuring America develops Space capabilities to deter threats against and defend U.S. national interests. Without a cadre of capable and dedicated Space professionals, this simply will not happen.

The Future Warfare Center presents Space and Missile Defense doctrine and education designed to enhance the Army's combat effectiveness by conducting Army Space operations and integrating Space into Army operations. As the American military moves toward the Joint Force of 2020 envisioned by the President and Secretary of Defense and defined in the January 2012 document "Sustaining U.S. Global Leadership for 21st Century Defense," USASMDC/ARSTRAT will be instrumental in providing Space and Missile Defense capability for the nation.

As the "schoolhouse" for Army Space and Missile Defense, the Future Warfare Center's Directorate of Training and Doctrine (DOTD) instructs Soldiers and Civilians. The Army's Officer Education System, Warrant Officer Education System, Noncommissioned Officer Education System, and Civilian Education System all have focused programs that incorporate leader development. A similar focus is a core component in all DOTD education and training courses. Institutional training and education provide initial skills and subsequent functional and professional education. These steps teach key competencies, instill Army Values, and teach officers, Soldiers, and Civilians to be competent and confident leaders to meet the Army's need to

# Concepts for Tomorrow

## in Space & Missile Defense were the focal point of the Future Warfare Center in 2011.

develop adaptive, critical thinking Soldiers and leaders capable of meeting the challenges of operational adaptability in an era of persistent conflict.

One example of DOTD contributions is the Space Operations Officer Qualification Course (SOOQC). Guided by the concepts of the Army Learning Model 2015, the DOTD cadre trains Functional Area 40 Space Operations officers and Soldiers to refine their abilities to explain the relevance of Space to operations both in written and oral communications. The SOOQC has specific graded blocks of instruction on the development of staff skills, and a staff package that uses the USASMDC/ARSTRAT document templates to stress the use of approved formats. The students complete a five- to ten-page research paper on Space topics chosen and evaluated to enhance technical writing and how well the students explain their topic in Warfighter terminology. Lastly, the SOOQC cadre conducts "elevator brief" sessions where a student is required in 60 to 90 seconds to explain a Space topic or problem to a non-Space senior leader (the Army Chief of Staff or G-3, for example). The term "elevator brief" was derived from the instance of an opportunity to get leadership's attention and succinctly brief them while confined in an elevator ride of short duration. Success is measured in terms of

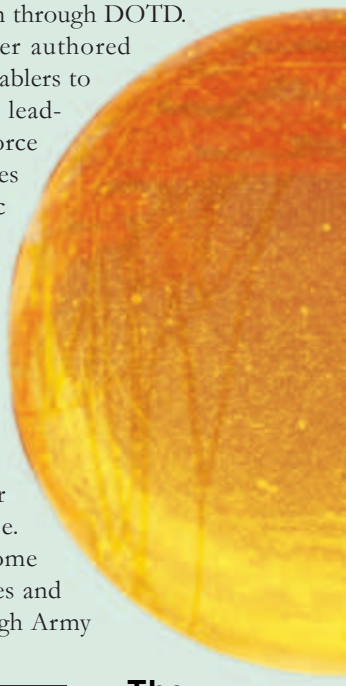
- Mastering the technical aspects of Space-based capabilities
- Mastering the critical role Space-based capabilities play in enabling the Warfighter
- Mastering the critical role Space-based capabilities play in the current land component mission or operation
- Analyzing and articulating in Warfighter's terms the "so what" or importance and impact of the critical Space-based capability

This is an important aspect presented in all DOTD courses, from the Space and Missile Defense fundamental course to equipment-specific Initial Qualification Training courses to advanced courses such as the SOOQC.

Upon the completion of 11 weeks of technical focused learning and now possessing that skill set, FA40 students in SOOQC are thrust into the three-day end of course Command Post Exercise where they demonstrate the leadership skills emphasized in the prior ten weeks in balance with their technical acumen. The exercise is structured utilizing current U.S. Central Command campaign and operational plans. A battle staff is formed from retired general officers with Space, staff, and operational backgrounds, senior Army FA40s, and other services' Space professionals. Students role play various positions in Space echelons (division or corps Space Support Element, director of Space forces staff, Army Space Support Team, etc.) and are subjected to a gamut of challenging scenarios and vignettes.

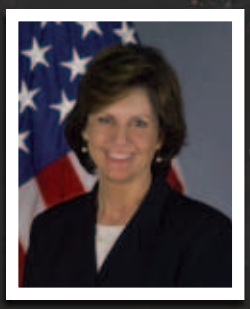
The Space Officer Operations Qualification Course is a prominent part of the Future Warfare Center Directorate of Training and Doctrine's lengthy educational catalog. In 2011 more than 3,200 military and Civilian students completed Army Space and Missile Defense education through DOTD. On the doctrine side last year, the center authored operational analyses that have been key enablers to USASMDC/ARSTRAT, Army, and joint leaders as they made decisions to shape the force in the near and far term. Examples of studies impacting key decisions include the Ballistic Missile Defense Planning Order, Missile Defense Agency Business Case Analysis Air Breathing Threat Study, Tactical Space Protection Study, and the Tactical Satellite 3 Joint Military Utility Analysis.

The Future Warfare Center in 2011 was the focal point for the command's capability development function–putting together what needs to be in place for "tomorrow" in Space and Missile Defense. We look forward to 2012 and years to come after that in meeting the coming challenges and needs of America's national security through Army Space and Missile Defense.



SECURE THE HIGH GROUND

**The Sun Never Sets on USASMDC/ ARSTRAT**



Debra G. Wymer
Director
Technical Center

the Leading Edge.
Leadership Updates

# Technical Expertise & Dedicatio

The Technical Center (TC) is responsible for U.S. Army Space and Missile Defense Command/Army Forces Strategic Command's third core task: researching, testing, and integrating Space, Missile Defense, cyber, directed energy, and related technologies (day-after-tomorrow). This is our command's materiel development function.

One of the TC's focus areas for materiel development is in the area of nanosatellites. Since the successful spaceflight of the first SMDC-ONE satellite a year ago, the TC's Space and Cyberspace Directorate-Responsive Space Division has been busy readying the remaining nine SMDC-ONE communications nanosatellites for flight as well as planning and developing new satellites to support the ground component Warfighter. SMDC-ONE was the first U.S. Army-developed satellite in 50 years and exceeded expectations as it provided communications relay and unattended ground sensor data exfiltration.

In 2011 the Army submitted three Responsive Space Division demonstration satellite programs to the Department of Defense Space Experiments Review Board (SERB) for spacelift: Kestrel Eye, a low-cost imaging satellite; SNaP-3, a low-cost, advanced communications satellite configuration; and Operationally Responsive Space Enabler Satellite (ORSES). ORSES is a joint program with the Operationally Responsive Space Office featuring an SMDC-ONE satellite bus with an advanced Software Defined Radio and Type-1 encryption module. Of the 63 candidate proposals submitted to the SERB, the three USASMDC/ARSTRAT programs were all ranked in the top seven on the 2011 SERB Priority List.

The Technical Center also has several materiel development initiatives in high-energy lasers, primarily supporting the Missile Defense/Counter Rockets, Artillery, and Mortar mission area. The Army, in cooperation with the High Energy Laser Joint Technology Office, was the first to generate more than 100 kilowatts of power from a solidstate laser (SSL). This laboratory laser is the cornerstone of the Solid State Laser Test Bed, which

# Supporting Warfighters,

## with relevant Space & Missile Defense related technology to enhance the mission and save lives.

on

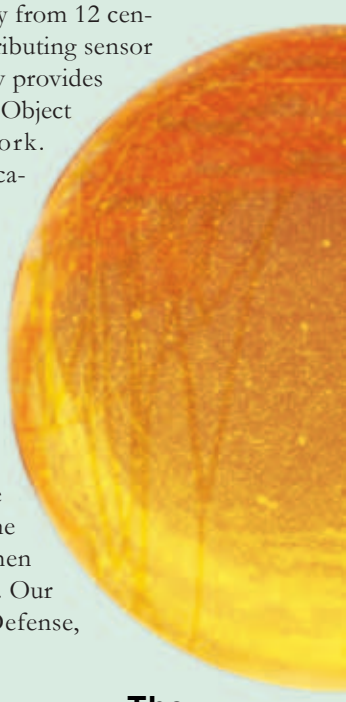
is leveraging existing assets to characterize high-power laser beam propagation and conduct both static and dynamic lethality engagments against a variety of targets. The joint Robust Electric Laser Initiative (RELI) is developing the next generation SSL that will be compact, efficient, and rugged for mobile use. The High Energy Laser Technology Demonstrator (HELTD) is in the midst of acquisition and tracking testing against rocket, artillery, and mortar targets at White Sands Missile Range, N.M. The HELTD has a prototype beam control system and a user interface to its functioning battle management, command, control, and communications system. The High Energy Laser Mobile Demonstrator effort will integrate SSL Test Bed experimental data, RELI lasers, the HELTD platform, and other technology products under development into progressively more powerful weapon-capable demonstrations for counter-rocket, artillery, and mortar; counter-unmanned aerial systems; and counter-sensors applications.

The Advanced Hypersonic Weapon (AHW) is a technology demonstration program in support of the Department of Defense's Conventional Prompt Global Strike Program. The Technical Center served as the program manager for the Office of the Secretary of Defense and U.S. Strategic Command. The payload delivery vehicle for the AHW is the Hypersonic Glide Body (HGB). The HGB encompasses a number of new technologies with wide applicability across the entire spectrum of conventional Prompt Global Strike. The focus of the first flight test of the HGB was on thermal protection systems, internal thermal management, advanced navigation, guidance, and control concepts, and data collection. The development of the HGB was a collaborative effort between Sandia National Laboratories, the U.S. Army Aviation and Missile Research Development and Engineering Center, and the Technical Center. The first flight of the AHW took place Nov. 17, 2011. The AHW was launched from the Pacific Missile Range Facility in Kauai, Hawaii, and flew to the Reagan Test Site at U.S. Army Kwajalein Atoll, Republic of the Marshall Islands. Initial review of the collected data suggests that the AHW met all of its test objectives.

The Reagan Test Site (RTS) is managed by the USASMDC/ARSTRAT Technical Center. It also achieved several milestones in 2011. In September RTS Space Operations declared full operational capability in Huntsville, Ala. After several years of planning, and an execution timeline that spanned the last two years, RTS is now conducting 100 percent of its tasked U.S. Strategic Command Space Situational Awareness support missions from the RTS Operations Center-Huntsville. Successfully bridging a geographical gap of more than 7,300 miles and 18 time zones, all four Kiernan Reentry Measurement Site sensors (ALTAIR, TRADEX, ALCOR, and MMW) located on the island of Roi-Namur in the Marshall Islands are now fully commanded and controlled for RTS Space Operations from Huntsville via two diverse fiber optic paths.

Another significant accomplishment was the upgrade of the Millimeter Wave (MMW) radar. MMW was upgraded from 2 GHz to 4 GHz, making it the highest resolution imaging radar in the world. This improvement increased RTS's imaging resolution capability from 12 centimeters down to six centimeters. As a contributing sensor in the Space Surveillance Network, RTS now provides the highest resolution radar images for Space Object Identification of any asset in the network. Combined with its unique geographic location, this makes MMW a true national asset.

As we move into a new year, 2012 holds lots of promise for the command's materiel development efforts. The Long-Endurance Multi-Intelligence Vehicle will conduct its demonstration, we will continue our advancements in small satellite work to be prepared for a launch and technology demonstration, and we will move forward for next steps with the AHW program. These are just some of the highlights that reflect the technical expertise and dedication of the men and women supporting the Technical Center. Our goal is to provide relevant Space, Missile Defense, directed energy, and related technology that supports Warfighters, enhances their mission success, and ultimately save lives.



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SECURE THE HIGH GROUND

From Achievements
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relevant than ever. We have a great team providing those capabilities today, tomorrow, and the day after tomorrow.

## Priorities for 2012.

We must remain focused on accomplishing our three core tasks while being disciplined stewards of the nation's resources. It's what we do. We must ensure our command's activities are nested with STRATCOM and Department of the Army campaign plans. We will synchronize our USASMDC/ARSTRAT and JFCC IMD campaign support plans with the STRATCOM and Army campaign plans, and subsequently align our command priorities with theirs.

In our operations function, we will continue to provide Space and Missile Defense forces and capabilities in support of the combatant commands and Warfighters. On any given day, we have approximately 850 operational forces supporting the Ballistic Missile Defense System and Space operations around the world: United States-based, forward-stationed, or deployed. That includes five Space support and commercial imagery teams currently deployed. We will deploy another eight teams in 2012 as part of the Army's nine-month deployment cycle.

We will provide Space and Missile Defense forces in support of 11 combatant command, Warfighter, and mission rehearsal exercises, including STRATCOM's Global Thunder and Global Lightning. These events provide an opportunity to train the way we plan to fight in all our mission areas and ensure we are prepared for crisis operations. Our satellite communications operations and planning support, Joint Tactical Ground Station in-theater missile warning, and Friendly Force Tracking will continue to provide critical capabilities to the geographic combatant commanders. We must maintain the level of support we provide today and look for ways to exploit more capability from those assets.

In 2012 we will complete a modernization project for our Fort Detrick, Md.-based Wideband Satellite Communications Operations Center, with modernization under way at two other sites at Fort Meade, Md., and Landstuhl, Germany. We will continue to work with MDA and the Army to deploy the next AN/TPY-2 FBM radar, as part of the Phased Adaptive Approach.

In our capability development function, we have several Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities efforts that are important to the Army in 2012. We will inform and influence the Total Army Analysis and the Army 2020 study by working closely with Headquarters Department of the Army and Training and Doctrine Command to integrate Space, high altitude, and Missile Defense capabilities in support of future Army operations. We will complete the Persistent Platform Capabilities Description Document. This will provide a basis for requirements for the Army regarding high altitude platforms.

We will, as directed by the Army Space Strategic Plan, complete the Space Operations White Paper and also provide recommendations based on our assessment of Space Knowledge Training for the Army. We will complete transition of the Ground-based Midcourse Defense Operators Course from MDA to the Army and teach more than 2,800 Space and Missile Defense Soldiers, Civilians, and joint service members. And we will continue to provide studies and analysis support to help inform Army and joint operational and program decisions.

In our materiel development function, we have several milestones in 2012 for key efforts. They start with preparing for the deployment of the LEMV to theater; first flight of our low-cost ballistic missile target alternative, the Economical Target-1, in February; and the initial high-power demonstration of the High Energy Laser Mobile Demonstrator with a 10 kW laser. We also will progress toward nanosatellite demonstrations, including the National Reconnaissance Office-sponsored Operationally Unique Technologies Satellite launch this summer; provide innovative technology in support of the Joint Improvised Explosive Device Defeat Organization; and sustain Space tracking operations and test support at the U.S. Army Kwajalein Atoll/Reagan Test Site, as we develop an Army strategy for long-term sustainment of this strategic asset.

## Epilogue

Publishing this foundational speech in the Army Space Journal provides our readers information about what occurred in 2011 and the direction USASMDC/ARSTRAT is heading for 2012. I am very proud of the great team of Soldiers, Civilians, and contractors who accomplish our mission, in concert with our partners in industry, academia, allies, and other federal agencies.

**SECURE THE HIGH GROUND**

From Civilians
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fashion, resources are planned and provided, and forces and equipment are trained and ready to operate when needed. Civilians were at the heart of this effort, working to resolve challenges that popped up every day, such as force structure, resources, training, environment, life support, and host nation sensitivities. Their subject-matter expertise and organizational knowledge helped Soldier and Civilian leaders work through the challenges and ensure the radar and operators were trained and ready to meet the President's schedule for the deployment.

In our materiel development function, we have a team of Civilians and Soldiers hard at work to bring another high visibility program to bear–the Long Endurance Multi-Intelligence Vehicle. This first-of-its-kind hybrid airship has been on an accelerated prototype development schedule, and we are planning for a first flight in early 2012, followed by range testing in the spring. This effort is one of USASMDC/ARSTRAT's priorities for 2012, and the entire command is contributing resources to support the Department of Defense's battlefield requirements for persistent surveillance. Led by our Technology Center, the team leans hard on its Civilian expertise to provide operational, technical, and analytical support to ensure the vehicle is able to meet Warfighter requirements and enable mission success on the battlefield.

Additionally, our Civilians, working with several organizations outside the command, apply their technical, engineering, and management skills on programs such as the Advanced Hypersonic Weapon, whose first flight in November 2011 exceeded all test expectations. Our counter-improvised explosive device work continues to help save lives on the battlefield. These new technologies will help our commanders maintain a decisive edge on the battlefield.

In summary, the work of our Civilians in USASMDC/ARSTRAT is critical to our mission success and an integral part of the Profession of Arms. What we do may not be well known by Soldiers on the battlefield, and may be seen as part of that reach-back capability they know is there, but the Soldier's mission is enabled by what we do every day–deliver Space and Missile Defense capabilities to the Nation and to the Warfighter. It has been my honor to serve with you for the past three years.

SECURE THE HIGH GROUND

Dr. Steven L. Messervy talks about the Swiss army knives he was about to present to his father and four sons at his retirement ceremony. *Photo by Carrie E. David*

# On to the Next Mission

Dr. Steven L. Messervy officially retired in February 2012 as the Deputy to the Commander of the U.S. Army Space and Missile Defense Command/Army Forces Strategic Command. Dr. Messervy has more than 30 years experience in the research, development, and acquisition business. He also was a colonel in the U.S. Army Reserve, completing group and brigade command tours.

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