

SUBCOMMITTEE ON STRATEGIC FORCES  
SENATE ARMED SERVICES COMMITTEE

STATEMENT OF  
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BEFORE THE SUBCOMMITTEE ON STRATEGIC FORCES  
SENATE ARMED SERVICES COMMITTEE

ON SPACE POSTURE

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Mister Chairman, Ranking Member Vitter, and distinguished Members of the

Subcommittee, I am honored to be here once again to appear before you as United States Strategic Command's (USSTRATCOM) Commander of the Joint Functional Component Command for Space (CDR JFCC SPACE) and 14<sup>th</sup> Air Force.

It's an honor for me to represent the Soldiers, Sailors, Airmen, and Marines of JFCC SPACE who operate and protect some of our nation's most critical systems for global communications, navigation, strategic warning, and situational awareness. These men and women are a tireless and innovative joint force, working hard to ensure critical space capabilities are available 24 hours a day, 365 days a year, for our global forces. We operate in an increasingly congested and contested environment and ensuring access to all our DoD space capabilities for worldwide users is an absolute priority.

Today I will focus my discussion on the space operational environment and how it's changed over the last year. I'll describe our priorities of Warfighter Support, Command and Control, Integration, and Readiness and then close with a look at new challenges we see in the months and years to come.

**Framing the Overall Environment**

Space continues to be the ultimate 'high ground' from which to operate. Every military operation utilizes space capabilities in some way. Whether it's the Global Positioning System (GPS), overhead imagery, secure communications, or meteorological reports, ground and air commanders rely upon space capabilities constantly. However, space is becoming an increasingly congested and contested environment. As of 1 February 2010, the operators at the

Joint Space Operations Center (JSpOC) track approximately 21,500 objects on orbit. That is an increase of 1,700 from just last year. There are nearly 10,000 pieces of debris, 3,700 dead satellites and rocket pieces, and 6,800 unknown objects orbiting the Earth. Included in these objects are over 1,100 active satellites owned by more than 60 different countries and corporations. As the environment continues to grow in its complexity, our need for real-time space situational awareness (SSA) is becoming more obvious. Our ground sensors are critical elements of our Space Surveillance Network (SSN) dedicated to watching the skies and keeping track of all space objects. Across the globe, we have dedicated radar and optical sensors. These sensors track thousands of objects every day and automatically upload their observations to a computer database. These sensors cannot cover all of the sky all the time, so to enhance coverage, we have more collateral and contributing sensors. These sensors are used for space tracking when not supporting in their primary mission. All orbital observations come together in the JSpOC at Vandenberg AFB, CA, for analysis and computational predictions.

Sensors and computers cannot discriminate between active satellites and debris among the thousands of objects on orbit. That's where our most crucial component of JFCC SPACE comes in – its people. There are more than 29,000 military, civilians, and contractors conducting operations day to day for both JFCC SPACE and 14<sup>th</sup> Air Force. Our missions demand a continuous 24 – 7 focus. Members of JFCC SPACE and 14<sup>th</sup> Air Force live and work in places such as Greenland, Diego Garcia, Kwajalein Atoll, Guam, and Alaska. Such commitment takes the dedication of a Total Force. JFCC SPACE is built of a cadre of Marines, Sailors, Soldiers, and Airmen. Of the 7,500 military men and women, more than 1,100 are Air National Guard, Air Force Reserves, and Individual Mobilization Augmentees from all services. Of these, a

relatively small number of people, only about 300, at the JSpOC are the single Department of Defense (DoD) focal point for monitoring all space activity.

The JSpOC maintains our SSA, provides command and control of assigned forces, and supports all theater forces with space capabilities as needed. SSA is the cornerstone of JSpOC activities. The SSN central mission system is maintained and analyzed at the JSpOC by a collection of military and civilian analysts. These individuals keep track of what satellites are active, predict when pieces of debris or satellites will re-enter the atmosphere, recommend when a payload can be safely launched, and prevent potential satellite collisions. Over the last year, we have grown our JSpOC capabilities to not only monitor and protect DoD satellites, but monitor and conduct collision assessments for all commercial and foreign active satellites as well. After the COSMOS/IRIDIUM collision of 2009, we began increasing our personnel and computing power to allow for collision screening for all active satellites. I am proud to report that we achieved that goal ahead of schedule and now screen for collisions daily and report potential conjunctions to satellite owner/operators through USSTRATCOM's SSA Sharing Program. To date, we have reported hundreds of potential conjunctions, with more than 50 resulting in the owner maneuvering a satellite.

While SSA is the cornerstone of our capability, our #1 priority is supporting our deployed U.S. and coalition forces. We've provided more than 20,000 GPS accuracy predictions in the last year, supporting resupply air drops and personnel recovery actions. Space capabilities have aided in the recovery of 128 servicemen since 2003. We've covered more than 12 air and ground missions with tailored coverage by overhead sensors watching for hostile or insurgent activity within a specific area of concern.

The criticality of space effects to the warfighter will continue to be vital to our Nation's success in on-going operations. We must protect our space assets against intentional and unintentional acts in order to preserve our essential space capabilities to ensure USSTRATCOM's ability to execute and integrate operations across all lines of operations and provide real-time, actionable data to our joint warfighters, the Combatant Commanders.

### **JFCC SPACE Priorities**

To set a clear and unambiguous vision, we established four priorities for JFCC SPACE in late 2008: Warfighter Support, Command and Control, Integration, and Readiness. These priorities set the vector for all our efforts.

### **Warfighter Support**

Warfighter Support is our core focus and key factor in determining manpower requirements, technology needs, and operational processes. From launch through operational employment to re-entry disposal, our space capabilities are built around warfighter needs. Launch capabilities remain the foundation of our space program. Over the last year, we've seen a total of 27 successful launches from both Eastern and Western Ranges. Although our launch safety record is exemplary, we are transforming our launch operations to modernize our range safety equipment and streamline our range footprints. Sixty percent of the Western Range systems are being replaced or upgraded over the next 2 years and the Eastern Range command system will receive upgrades during the next fiscal year.

JFCC SPACE directly supports warfighter requests through the JSpOC. Recent direct support for deployed forces includes GPS accuracy, overhead infrared, and Military Satellite

Communications (MILSATCOM) support. GPS is the most widely used space capability on the planet. Our forces use GPS for everything from urban foot patrols to Predator flights. We receive requests for GPS accuracy predictions daily through the JSpOC. On average, we send 400 GPS accuracy predictions to forward-deployed forces each week. To enhance coverage to all GPS users, we are repositioning three of our GPS satellites to assist users in terrain-challenged ground environments. The first of our new GPS IIF satellites will launch this Spring and add new capabilities for civilian and military users. GPS IIF will bring a civilian safety-of-life signal and provide a more robust signal availability for military users. To ensure warfighters understand the full capabilities and vulnerabilities of the GPS system, the Joint Navigation Warfare Center (JNWC), a component of JFCC SPACE, maintains an active outreach program with the Combatant Commands (COCOMs), Services, and Agencies. The JNWC ensures that Navigation Warfare (NAVWAR) considerations are included across the spectrum of operations, to include COCOM planning, exercises, disaster response, to full conflict.

Overhead Persistent non-Imaging Infrared (OPIR) capabilities have grown beyond providing strategic ballistic missile warning only. Today's OPIR can provide battlefield commanders a wider range of situational awareness of the ground and air environments. We have provided support to ground troops during base exfiltrations to ensure demolition activities were successful. Overwatch of high-priority missions can ensure threats in the area are detected and reported before they cause a problem for the aircraft or ground commander. Consequently, OPIR's traditional mission of ballistic missile detection and warning has seen remarkable increases in integration with intelligence systems. Launch information from multiple agencies flowed into the JSpOC, where operators had direct contact with higher headquarters. However,

this operational picture is manually created by JSpOC operators. We need a system that automatically provides this to our operators and leaders.

Technology advancements in overhead detection continue to advance and we are constantly finding new ways to provide better technical intelligence to the ground commanders. The Space-Based Infra-red System (SBIRS) in its Highly Elliptical Orbit (HEO) gives significant coverage over the northern hemisphere for infrared detection and technical intelligence gathering. We can now detect and report, in near real-time, natural and man-made infrared events. The quality of data provided by SBIRS HEO is a key part in our operators' ability to characterize launches and predict threatened areas within minutes. SBIRS Geosynchronous (GEO) satellites will give us the ability to stare and collect for days and weeks worldwide. We will be able to characterize events that paint a picture for national leadership of new foreign technology development and proliferation information. We will be able to expand our warfighter support beyond the ballistic missile threat to include enemy air defenses, surface to air missiles, and even personnel recovery actions.

Information technologies have truly revolutionized our capability to operate globally. From combat operations to humanitarian assistance, we use MILSATCOM every day. Secure communications allows survivable, joint communications for diplomatic travels through orders dissemination such as Nuclear Force Command and Control. Our Integrated Tactical Warning and Attack Assessment (ITW/AA) dissemination relies heavily on our MILSTAR constellation that is exceeding design life expectations. The new Wideband Global SATCOM (WGS) is performing superbly and is an outstanding replacement to our aging Defense Satellite Communications System (DSCS) fleet. Our WGS system will have over 10 times the capacity of our DSCS system and provides enhanced information security. WGS gives us automatic

Digital Network/automatic Secure Voice Communications, Secret Internet Protocol Router Network and Joint Worldwide Intelligence Communication System access from space. It can also carry Defense Message System, Defense Switched Network, Diplomatic Telecommunication Service Communications, and real-time Unmanned Aerial Vehicle (UAV) video for ground mobile forces. WGS-1 and WGS-2 will be joined by WGS-3 in Spring 2010 after operational checkout and acceptance.

Our priority of warfighter support stretches into the theater itself. For each theater's Director of Space Forces (DS4), we maintain a close and dedicated relationship to ensure they have the most relevant information and current operational view of our space capabilities. Quarterly DS4 conferences bring all theater DS4s together to share tactics and insight, as well as allow them to identify new requirements in front of the JFCC SPACE staff firsthand. Our SILENT SENTRY capability has developed into a premier interference detection tool for satellite communications. The SILENT SENTRY team monitors all friendly SATCOM for unintentional interference or hostile denial attempts. Additionally, JFCC SPACE maintains in-theater capabilities for counter space activities directly supporting forces in harm's way. Requested support from ground troops flows through the theater Air and Space Operations Center to the JSPOC and execution can occur within minutes of a request.

JFCC SPACE is forging ahead in our efforts to provide new, operationally responsive space effects to the warfighter. We are actively engaged with Air Force Space Command and US Strategic Command in developing the concepts and command relationships that may allow us to transition experimental capabilities to operational use. For example, TACSAT-3 is an experimental, hyperspectral imagery satellite that has shown great promise in areas such as which can be used to support ground troops. At the same time, we are supporting DoD's



Operationally Responsive Space concept development with the goal of providing rapid replenishment of space capabilities on the order of days to weeks, not months to years, using deploy-on-need assets. We are working with our Service partners to finalize and field the command and control architecture for Operationally Responsive Space-1, a purpose-built, small spacecraft that will supply urgently-needed imagery to USCENTCOM and other theater operators.

### **Command and Control**

JSpOC Mission System (JMS) is planned to replace our aging mission systems with a command and control information technology system consisting of infrastructure and mission applications. It will be a service-oriented architecture with the capability of user-defined applications. It will be much more than just a positional catalog. We envision a single, theater-integrated system with intelligence feeds, communications status, integrated missile warning, and status of forces all displayed on one operational picture. We expect it to automate much of what we do by hand today. Instead of the human analysis required in determining that a conjunction may occur, the system will automatically receive updates from sensors and alert operators to potential conjunctions. The operator will only need to confirm the conjunction and alert the owner of the satellite. JMS will be delivered in multiple releases, with Release 0 consisting of the initial Service-Oriented-Architecture infrastructure, due this summer.

SSA has seen the greatest advance in operational utility in its history over the past year. We have increased daily conjunction screening at the JSpOC from 110 primary satellites to over 1,000. With that increase, we have seen conjunction warning notifications increase from five to up to 35 per day and our interaction with commercial and foreign space agencies has increased

likewise. Information sharing with commercial and foreign entities is now a formalized process within JFCC SPACE. We currently have data-sharing agreements with 16 commercial and foreign partners. However, we still suffer from an aged and limited sensor network to gather our most basic resource, orbital observations. Observations from the SSN are the foundational base of all SSA. Many of our SSN sensors operate on a one-object-at-a-time system and none of them are networked with one another. The CONUS-based space fence can detect and observe multiple objects at one time and contributes more to our network than any other sensor. Additionally, we have considerable gaps in coverage in the southern hemisphere. Objects can be un-observed for a significant period of time while over areas such as Antarctica, Australia, Africa, and South America. Placement of a space fence in the southern hemisphere will improve our coverage considerably. The Space-Based Surveillance System (SBSS) will provide additional sensing capabilities. This sensor will operate from space, free of boundaries, borders, or atmospheric effects to distort or obscure viewing. The first SBSS satellite is scheduled to launch this Summer and will be operated by the 1<sup>st</sup> Space Operations Squadron in Colorado. SBSS will revolutionize how we observe satellites. With a potential capability to track objects much smaller in size, we will detect more objects in orbit, re-enforcing the need for a replacement SSA analysis system such as JMS.

### **Integration**

As space becomes even more critical to global operations and the access to space expands, it will be more critical than ever to work closely with friends, allies, the commercial space sector, and perhaps all space faring nations. Integration amongst all space agencies within the United States Government is essential to safe and effective operations. We continue to

improve our linkages with intelligence community partners and build long-lasting, permanent relationships between our organizations. We continue to strengthen an already strong relationship with the National Reconnaissance Office through sharing facilities and permanent liaison positions and partnering during exercises and real-world events. We are working to create a wider relationship between the space and intelligence communities through a data sharing and collaborative information systems. The Joint Exploitation Fusion Cell will fully integrate multiple intelligence sources into one database for operators. This will allow for efficient integration of intelligence data into our assessments and verification of operational successes.

Coalition and commercial integration have taken significant leaps forward over the last year. Cross-Atlantic visits to and from the United Kingdom and France have forged significant relationships and continue the dialog to improve coalition space operations. Australia, Germany, and Japan have all sent delegations to tour the JSPOC and witnessed how we accomplish our missions. Our experiences in coalition exercises have taught us valuable lessons; most notably that threats can come from multiple venues, so it is prudent to act together with our allied and commercial partners. Schriever 5 Wargame impressed upon U.S., Allied, and commercial partners on the importance of relationships with threats in this type of integrated global domain. We will continue to develop partnership processes in Schriever 10 this year. Since the COSMOS/IRIDIUM collision, commercial space operators have realized how much capability JFCC SPACE has to offer protection for their systems. Likewise, commercial users in space maintain some of the most accurate positional information of their own systems. It benefits both sides to share relevant information.

JFCC Network Warfare (NW) is tasked with operating and defending DoD networks under the command and control of U.S. Strategic Command. Cyber and space are inherently linked as effective force multipliers and share similarities in the non-kinetic warfare environment. Our staffs have established continuous linkages as we operate common and complementary capabilities supporting each other as well as global joint forces. We fully recognize the benefits and are sharing tactics, intelligence, and procedures. In many scenarios, capabilities JFCC SPACE lacks, cyber forces can fulfill, and vice versa. Our intelligence, plans, and operations divisions share information and processes to determine where capabilities overlap and they diverge. We have begun collaborative work on new tactics that will deliver new capabilities to theater commanders and will continue to develop linkages between the two components.

Integration across domains, borders, and industries requires a significant investment by those involved. Critical to effective integration are systems and facilities. Today the JSpOC performs its operational mission using a converted missile assembly building. Over 50 years old and designed for an entirely different purpose, the building presents significant challenges towards meeting our integrated space operations mission. Successful integration with U.S. and coalition forces, as well as commercial partners will depend upon facilities designed specifically for space command and control.

## **Readiness**

“Perfection is our Standard.” This is our motto within JFCC SPACE and 14<sup>th</sup> Air Force. The readiness of our forces is a key priority. Without adequate and ready forces, we will fall short of achieving our goals as a joint force. Readiness includes health of the force, training,

preparedness, and compliance. Our forces must be healthy and able to fight, trained for the fight, equipped to fight, and compliant with the law of armed conflict and other legal and policy constraints. Within JFCC SPACE and 14<sup>th</sup> Air Force, readiness issues exist in training and personnel numbers. Our Operational Readiness Inspections and Unit Compliance Inspections are the tools we use to evaluate unit readiness and compliance levels. Within the last two years, all 14<sup>th</sup> Air Force wings have been found compliant and ready, but are still lacking in resources and training to commit to a full-time, warfighting posture for extended periods. Every new satellite system brings new mission requirements. Acquisition of new missions, while continuing to maintain legacy missions, places more and more requirements on our personnel and hardware systems. Continued modernization of our systems and efficient use of our personnel are absolutely essential to the success of our future operations.

### **Challenges**

We will face operational challenges in the space domain as capabilities expand and more nations utilize space systems. Improvement in data management will become increasingly important with the increase in the amount of observations from SBSS. Any future sensors will create even more additional data sources that we will have to integrate into our mission systems. We will continue to be challenged by the acquisition speed of new command and control systems and space capabilities. Off-the-shelf technologies have caught, if not surpassed, some of our own technology. We must acquire new systems, as General Kehler has put, “At the speed of the need”. As long as forces are dispersed across the globe, we will have challenges with integrating with the joint warfighter. Multiple information systems across multiple theaters hurt efficiency and delay generation of desired effects for forces. Common information systems and a complete,

integrated operational picture will allow commanders in direct and supporting roles to share common battlespace awareness. Advances in space technologies will not slow or end. Our operational environment will continue to grow in complexity as more nations, corporations, and even individuals place smaller and more capable satellites on orbit. Satellites will continue to get smaller and more capable. Our sensor network and mission systems are challenged to keep pace with the expanding orbital environment. Finally, as we venture into discussions with cyber forces, mission requirements will grow and our environment will expand to include the virtual as well. In our fixed-personnel and resource-restrained reality, we will have to find ways to operate more efficiently and effectively.

## **Conclusion**

Space operations and needs will continue to rapidly evolve. We must continue to search out ways to better support our forces around the globe, especially those in harm's way. We will continue to coordinate with other government agencies to enhance overall support, ensuring the right effect is delivered at the right place at the right time. We will strive to strengthen our relationships with allied space partners, ensuring our global capabilities remain available for those requiring them. Perfection is our standard, and you can be proud of your Soldiers, Sailors, Marines, and Airmen that I am honored to lead. I thank the Committee for your continued support as we work to preserve our critical space capabilities for our Nation.