SUBCOMMITTEE ON STRATEGIC FORCES
SENATE ARMED SERVICES COMMITTEE

STATEMENT OF

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JOINT FUNCTIONAL COMPONENT COMMAND FOR SPACE

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Mister Chairman, Ranking Member Vitter, and distinguished Members of the Subcommittee, I am honored to be here today for my first opportunity to appear before you as United States Strategic Command's (USSTRATCOM) Commander of the Joint Functional Component Command for Space (CDR JFCC SPACE).

It's a distinct privilege to address you on our space posture, and to represent the men and women of JFCC SPACE who employ space capabilities around the globe every day. These Soldiers, Sailors, Airmen, and Marines are a dedicated and innovative joint force, working hard to ensure efficient and effective space operations. Their professionalism ensures our joint forces can exploit space-based capabilities to the maximum extent.

Today I will focus my discussion on employment of space capabilities, the events shaping our future planning, and identify some of the challenges we face as we work to operate effectively and safely in an increasingly complex and congested space environment.

EMPLOYMENT OF SPACE CAPABILITIES

USSTRATCOM provides space effects to Department of Defense (DoD) global users that are critical to military operations. CDR JFCC SPACE is designated by CDRUSSTRATCOM as the single point of contact for military space operations. As such, I am tasked to provide tailored, responsive, local, and global space effects to the various Combatant Commanders. My USSTRATCOM-delegated authorities include Global Space Coordinating Authority, which makes me the primary interface with supported joint commanders for operational-level planning and execution to provide space effects in support of those Combatant Commanders' objectives. CDR JFCC SPACE also is assigned Operational Control (OPCON) and Tactical Control (TACON) authorities for designated worldwide space forces. These authorities provide

USSTRATCOM a single, globally focused component commander to enhance functional integration of space capabilities for the joint warfighter and for the Nation.

Every significant military operation uses space capabilities in some way — space capabilities are truly integral to military operations in the 21st century. The criticality of space effects to the warfighter is readily apparent in on-going operations in Afghanistan where Global Positioning System (GPS) services provide foundational data, enabling us to track the location of U.S. and coalition forces. But it is not just Blue Force Tracking; for the military users, there are multiple examples of space-based successes.

For example, precision accuracy of the GPS-guided Excalibur artillery rounds have enabled the U.S. Army to strike top al-Qaida operatives in close proximity to our infantrymen, without exposing soldiers to undue risk. On 27 March 2009, following an enemy ambush against a coalition unit, a B-1B Lancer used GPS-guided 500 lb bombs to destroy a series of enemy fighting positions and a fortified heavy machine gun position near Tarin Kowt, Afghanistan. On 26 April 2009, four F/A-18 Super Hornets flown from the deck of the Eisenhower Carrier Strike Group delivered four 500 lb GPS-guided JDAMs onto enemy fortified compounds and machine gun fighting positions, ending a fire fight with coalition forces. Clearly, the GPS constellation enables our forces worldwide to maneuver into a militarily advantageous position and then, through various GPS-aided munitions, exploit that tactical advantage to create effects ranging from tactical to strategic.

Our MILSATCOM capabilities provide ample, readily accessible bandwidth, delivering joint warfighters secure military communication, and enabling the free-flow of battlespace characterization data and critical intelligence. The recent introduction of Wideband Global SATCOM operations boosted Area of Responsibility communications tenfold for 140,000

warfighters. Wideband satellites allowed theater commanders to rely on real time, high-capacity broadcast video feeds from Predators to enhance their execution of tactical battlespace management, and to providecombat support information for deployed forces.

Our space-based missile warning systems were absolutely essential to providing tracking and assessment of the latest Taepo-Dong 2 (TD-2) missile launch from North Korea. Multiple space-based missile warning systems provided initial launch detection, enabling rapid threat/non-threat characterization, and confirming the event as a space launch. Clearly, space-based assets provide critical data to produce effects for successful military operations across a multitude of engagements. Strong communication links, operational relationships, and reach back to the Joint Space Operations Center (JSpOC) ensure USSTRATCOM is able to provide users the effects they need.

Space capabilities are no longer just the province of large nations. Access to space and space products becomes cheaper and more widely available every year. The commercialization of space has allowed many developing nations and non-state actors to acquire space-based capabilities, such as imagery and satellite communications, that were previously the exclusive purview of superpowers. With more space players, space is more crowded than ever. In 1980 only 10 countries were operating satellites in space. Today, 9 countries operate spaceports, more than 50 countries own or have partial ownership in satellites and citizens of 39 nations have traveled in space. In 1980 we were tracking approximately 4,700 objects in space; 280 of those objects were active payloads/spacecraft, while another 2,600 were debris. As of 1 May 2009 we are tracking approximately 19,900 objects; 1,300 active payloads and 8,700 pieces of debris. In 29 years, space traffic has quadrupled. We have already seen one catastrophic collision in space with the Iridium/COSMOS conjunction, and as the number of objects in space increase, so

do the chances of another collision. Clearly, managing this environment and our assets is a key focus of our efforts.

KEY EVENTS OF 2008/2009

Although we have made progress in improving our space situational awareness (SSA), February's unfortunate collision between an active Iridium communications satellite and an inactive Russian satellite, and last month's test of another North Korean TD-2 missile, continue to tangibly demonstrate the complexity of the environment, the challenge of emerging space faring nations, and the demands on our space systems. To date we have cataloged over 940 pieces of debris that resulted from the Iridium/COSMOS collision and there are likely thousands of smaller pieces our sensors can't track. Only 18 items of debris have reentered so far, with the remainder expected to be in orbit for decades. This debris will slowly decay due to natural forces, but it will remain a hazard to manned and unmanned spaceflight in low Earth orbit, and to satellites transiting that region, for several years.

We've derived many lessons from the TD-2 missile event, chief among them the requirement to integrate and fuse many sources of space, ground and intelligence data, in many disparate systems and security channels. This is a lesson we identified during the 2007 Chinese anti-satellite (ASAT) test, and experienced again during the 2008 NRO satellite intercept, and although we have implemented tactics, techniques, and procedures to mitigate potential delays in information flow, the challenge of collecting, integrating and fusing this data still exists. It again took the significant efforts of many to manually assemble information and then pass it to senior decision makers. While we were very successful once again due to outstanding cooperation between the intelligence and operations communities, we clearly need improved processing and

analytic systems that can continually compile and automatically fuse SSA, intelligence and other all-source information in real-time to keep us abreast of space events. Our lessons learned from the TD-2 test will continue to guide future improvements and our developmental efforts for the JSpOC to ensure USSTRATCOM is able to provide users the effects they need.

However, collisions and space traffic growth are not the only challenges or threats to our space assets. The January 2007 Chinese test of an ASAT demonstrated the kinetic kill capability of space assets and this capability will continue to be a threat in the future. Even more ubiquitous is the capacity to jam satellite communications links; this is within the capability of many nations, as well as non-state actors. Space-related ground sites can be damaged by direct attack. Several nations are working on high-energy lasers that could damage or destroy our satellites. With the exception of the high-energy laser, all of these threats to our space systems exist today. Our Nation's growing dependence on space-based capabilities, coupled with the increasing threats and operational risks we face, creates corresponding potential military and economic vulnerabilities. We must protect our space assets against intentional and unintentional acts in order to preserve our essential space capabilities, and accordingly, we must change our mindset from passive to active protection measures to ensure USSTRATCOM's ability to execute and integrate operations across all lines of operations.

SPACE SITUATIONAL AWARENESS

Space situational awareness is more than understanding the space environment, tracking objects, and conducting conjunction assessments. We need to be able to discriminate between natural and man-made threats. We need to understand the location, status and purpose of these objects, their capabilities, and their owners' intent. This comprehensive knowledge enables

decision makers to rapidly and effectively select courses of action to ensure our sustained freedom of action and safety in what is clearly a contested space environment.

The U.S. space surveillance architecture currently detects and tracks thousands of objects, but critical gaps remain in our ability to fully track and characterize all on-orbit objects, analyze and predict conjunctions, and protect not just military satellites, but also the commercial and civil satellites that are critical to national security. The Space Surveillance Network provides acceptable coverage in the northern hemisphere, but we have a significant coverage gap in the southern hemisphere. By filling this gap we increase the JSpOC's ability to rapidly detect, track, and characterize new payloads and maintain awareness of maneuvering spacecraft.

Our sensor network is currently able to track objects as small as 10 centimeters across. We do this well for low Earth orbits; however, our ability decreases as we track objects in the more distant geosynchronous orbit. We need to improve our capability to track and assess smaller objects in all orbits if we are to keep pace with the potential threats from emerging small satellite technologies, and to gain better awareness of the hazards posed by small space debris.

We must sustain the momentum gained through investments such as the Space Fence and Space-base Space Surveillance system and strive to close SSA gaps, bringing us ever closer to combining an operational picture of space with command and control systems, and moving us from "watching and reacting" to "knowing and predicting" in the space domain.

INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE (ISR)

Obtaining intelligence of other nations' intentions in space is a particularly challenging issue. Our intelligence community is working towards building the necessary foresight to improve our ability to anticipate what others may do in space, whether to use the space

environment to benefit their military operations, terrorist attempts, or to deny the U.S. space-provided services which we have grown dependent on.

Improved analytic systems and connectivity will help us fuse operations and intelligence data. Backing that up must be a cadre of space intelligence experts, both within the Intelligence Community (IC) and within the JSpOC, who can readily focus and apply information to support our command and control activities, and ultimately provide necessary support to the warfighter. The DoD, IC, and National Air and Space Intelligence Center are working together to improve systems and develop our intelligence experts. These efforts are a tremendous start, but must remain a priority in order to provide near real time, actionable intelligence to the warfighter.

Furthermore, we have barely begun to scratch the surface in terms of the potential data to be exploited from current and future space systems. Air Force Space Command (AFSPC) has recognized this need and formed a Battlespace Awareness and Technical Intelligence Capability Team to develop the exploitation and dissemination systems, processes and architecture that will allow us to more fully integrate AFSPC sensor capabilities with those of the rest of the Air Force, our sister Services, and the IC, to provide multi-source intelligence from DoD space-based sources to support joint warfighters and national decision-makers. We fully endorse these efforts and are partnering closely with AFSPC to prepare ourselves for the key role JFCC SPACE will play in commanding and tasking these assets.

SPACE AND CYBERSPACE INTEGRATION

Emerging threats may originate anywhere, at anytime, and increasingly take advantage of space and cyberspace domains. Global effects, speed of attack, availability of information, and

the ability to strike from remote locations are common attributes across both domains. As such, our adversaries have unprecedented, immediate access to information utilizing minimal resources. Space and cyberspace are truly contested domains, and our nation's critical information is more vulnerable than ever and must be protected.

Space and cyberspace capabilities continue to shape the world's approach to warfare. They are embedded in an increasingly, diverse arsenal of modern weaponry, and are threaded throughout warfighting networks. When integrated, space and cyberspace operations will become an even more powerful force multiplier. We must take actions to integrate space and cyberspace operations to protect the United States' freedom of action and information.

We will continue to face many challenges in space and cyberspace. To ensure their integration, we must take the same operational mentality we have of the space environment and apply this mindset to cyberspace.

COMMAND AND CONTROL

JFCC SPACE commands and controls worldwide space forces to ensure space-based effects meet warfighter needs. To ensure we can continue to effectively support the warfighter and senior decision makers, we require more automated, net-centric capabilities to command and control space forces, and networked sensors and information systems that seamlessly share information to more effectively leverage our current resources. This will give us the ability to rapidly react via real-time dataflow to the JSpOC for processing and analysis, and then real-time flow of the refined product back to the user.

We are aggressively pursuing command and control capabilities to consolidate intelligence information, predict adversary threats to U.S. space systems, improve our ability to

monitor assigned and attached force status, and predict impacts to operational users due to system outages. Together, these capabilities provide a predictive knowledge of the space operating environment and impacts to operations, as well as enable a broader set of options to proactively posture U.S. space forces to mitigate threats.

The U.S. must continue to lead the community of space-faring nations and encourage responsible behavior in all facets of space operations. The JSpOC is the focal point for ensuring safe, effective operation of our space forces and those of our partners. We need to gather real-time, quality data, have the ability to exploit that data rapidly and accurately, and then export decision-quality information across a range of customers from the intelligence community to deployed forces to produce effects for the warfighter in an integrated, holistic way.

Finally, we must continue to focus on capability requirements of the joint warfighter. Matching future users' requirements with technological advances will allow USSTRATCOM to provide the most advanced and reliable space effects in response to the growing demands of the Nation's warfighters.

CONCLUSION

The nature of space operations is rapidly evolving, as is the United States' and coalition partners' dependence on space. While we continue to exploit current space-based capabilities to the maximum extent, we still need increased efforts to close intelligence and SSA gaps, and increased efforts to enhance our command and control capabilities, ensuring USSTRATCOM's ability to continually provide the right effect, to the right user, at the right time anywhere on the globe. Working in collaboration with other departments and agencies in the U.S. Government, the Department of Defense must continue to build the relationships, processes, and capabilities

within the global space community that allow us to operate effectively together to meet our national security objectives. I am truly honored to lead such a talented group of men and women. Perfection is our standard and you can be proud of your Soldiers, Sailors, Airmen and Marines that expertly tackle the challenges we face every day. I thank the Subcommittee for your continued strong support as we work to preserve our vital space capabilities for our Nation.