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SENATE ARMED SERVICES COMMITTEE
STRATEGIC FORCES SUBCOMMITTEE

DEPARTMENT OF THE AIR FORCE
PRESENTATION TO THE SENATE ARMED SERVICES COMMITTEE
STRATEGIC FORCES SUBCOMMITTEE
UNITED STATES SENATE

ON

MARCH 10, 2010

**SUBJECT: Military Space Programs in Review of the Defense Authorization Request for
Fiscal Year 2011 and the Future Years Defense Program**

**STATEMENT OF: General C. Robert Kehler
Commander, Air Force Space Command**

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Introduction

Mister Chairman, Senator Vitter, and distinguished members of the subcommittee, it is an honor to appear before you today as an Airman and as the Commander of Air Force Space Command (AFSPC).

I am proud to lead and represent over 46,000 Active Duty, Air National Guard (ANG) and Air Force Reserve Command (ARC) Airmen, government civilians, and contractors who deliver space and cyberspace capabilities to United States Strategic Command (USSTRATCOM), Joint Force Commanders, and myriad other users every minute of every day. The men and women of AFSPC accomplish their mission from “deployed in place” locations across all 50 states, three territories and Washington DC, while simultaneously serving from forward and deployed locations around the globe.

We have completed an exciting and historic transitional year in AFSPC. In May 2009, we became the Air Force’s (AF) lead Major Command (MAJCOM) for cyberspace, and in August, we established a new Numbered Air Force, 24th Air Force, as the AF cyberspace operational component to USSTRATCOM. In response to direction from the Secretary of Defense, 24th Air Force has been designated Air Force Cyber (AFCYBER) to become the AF Component to US Cyber Command, when approved. As we assumed responsibility for cyberspace, we transferred responsibility for the Nation’s Intercontinental Ballistic Missile (ICBM) force to the new Air Force Global Strike Command (AFGSC) in December. The Air Force’s top priority of reinvigorating our nuclear enterprise remains the number one goal of AFSPC.

Space and cyberspace capabilities shape the American approach to warfare, are embedded in an ever-more effective arsenal of modern weaponry, and are threaded throughout

the fabric of Joint operations. Our integrated space and cyberspace capabilities provide access, persistence and awareness. Through networks, we put the power of a large force in the hands of smaller forces that operate on a distributed battlespace, across all domains and sometimes across different continents. Space and cyberspace capabilities also enable vital civil and commercial activities, including financial transactions, the electrical grid, mass transit operations, personal navigation, cellular communications, emergency services and better farming and fishing operations.

At AFSPC, everything we do begins and ends with the Joint Force Commanders' needs, and our measure of merit is how well we contribute to Joint operations. Our mission is to provide an integrated constellation of space and cyberspace capabilities at the speed of need, and our vision is to be the leading source of those capabilities in the years to come.

The Way Forward

Joint Force Commanders today increasingly rely on space and cyberspace capabilities to enable vital effects across the spectrum of operational needs: irregular warfare, near peer competition, global assessment, and crisis management. Whether conducting combat operations or humanitarian relief efforts, they are facing security challenges that are diverse and dispersed, and an operational environment that is uncertain, contested, and changing. Emerging threats can be fleeting, anonymous, and distributed globally; they may strike anywhere at any time, increasingly taking advantage of the space and cyberspace domains.

In response, AFSPC is pursuing five primary goals: reliable and safe nuclear forces; assured combat power for the Joint fight; professionalism and expertise; modernization and sustainment; and better acquisition.

AFSPC Goal: Guarantee a Safe, Credible, Ready Nuclear Deterrent Force with Perfection as the Standard

The Air Force moved aggressively to reinvigorate the nuclear enterprise by consolidating all strategic nuclear forces under the AFGSC Commander, by aligning all nuclear weapons sustainment and support under the Air Force Nuclear Weapons Center, and by working to expand our nuclear experience and expertise. The transfer of 20th Air Force's three nuclear capable missile wings to AFGSC marked a new chapter in the long, proud history of our nuclear deterrent force. We remain committed to ensuring a safe, credible, ready deterrent force with perfection as the standard. AFSPC will continue to provide personnel, logistics, operations and fiscal support to AFGSC through FY10.

AFSPC Goal: Deliver Assured Combat Power to the Joint Fight

AFSPC delivers combat power that allows Joint forces to navigate with accuracy, see with clarity, communicate with certainty, strike with precision, and operate with assurance. To do this, our Airmen acquire, launch, operate, and protect US and allied spacecraft, keep watch on adversary activity, and assure the cyberspace mission. As Joint Force Commanders rely on AFSPC-provided capabilities, the Air Force has requested approximately \$11 billion in the Space Virtual Major Force Program, through the FY11 PB to field and sustain leading-edge space capabilities. In addition, approximately \$3 billion will transfer to AFSPC in FY11 to grow cyberspace professionals and provide integrated cyberspace capabilities to Joint Force Commanders.

Overseas Contingency Operations (OCO)

In 2009, we forward-deployed more than 2,500 AFSPC Airmen to various locations around the globe in support of combat operations. Approximately 2,100 deployed to the United

States Central Command (USCENTCOM) Area of Responsibility (AOR) in support of Operations ENDURING FREEDOM, IRAQI FREEDOM and Joint Task Force-Horn of Africa. During these operations, 45 AFSPC Airmen were awarded Bronze Stars and two received Combat Action Medals.

Our humanitarian operations are also continuing. AFSPC is supporting disaster relief efforts during Operation UNIFIED RESPONSE in Haiti. Precise GPS position and timing data, satellite communications, and real-time weather services, for example, help the Joint and multi-national disaster relief team with command and control, search, rescue, and mobility operations, and they distribute sharable situational awareness. Airmen from the 689th Combat Communications Wing, Robins AFB GA, established critical network and communications infrastructure supporting thousands of humanitarian aid flights. In addition, Airmen of the 67th Network Warfare Wing from Lackland AFB TX are integrating the mission critical networks of US Government agencies in support of relief efforts.

The FY11 budget request will allow us to continue this legacy of service by enhancing the protection of our space systems and cyberspace networks; improving Space Situational Awareness (SSA); assuring availability of launch; preparing to exploit new Overhead Persistent Infrared (OPIR) capabilities; increasing GPS navigational accuracy, availability, and signal security; modernizing military satellite communications (MILSATCOM); and enhancing our cyberspace posture and operations.

Space Protection

In its first full year of existence, the Space Protection Program (SPP) delivered a comprehensive compilation of space system capabilities and interdependencies to our Nation's key operations centers. This history-making "first" moved us closer to our goal of integrated

space system protection for military, intelligence, civil, commercial, and allied space systems vital to our national security. Through SPP, we have developed a future vision to assure our space capabilities and are evaluating the architecture's effectiveness through the Schriever War Game Series. On the strategic policy front, SPP personnel delivered the first Space Protection Strategy, supported the Quadrennial Defense Review (QDR), and are contributing to the development of the new National Space Policy and Space Posture Review (SPR).

Space Situational Awareness

In concert with the SPP initiative, we continued to improve our SSA capability as the space domain becomes an increasingly contested, congested and competitive environment. The collision between an Iridium communications satellite and a Russian Cosmos communications satellite a year ago highlights the critical need for improved SSA. To posture our Nation for the future, AFSPC is filling critical SSA gaps with complementary programs to enhance our capability to detect, track, and identify smaller objects from low Earth orbit out to the geosynchronous belt. Modernizing and sustaining existing sensors greatly contribute to SSA capability. Complementary systems like the Space Based Space Surveillance system, Space Fence and the Space Surveillance Telescope (in cooperation with DARPA), will give us additional capacity to search and track more on-orbit objects, improve our ability to predict potential collisions, provide safety of flight, and rapidly track and catalogue new foreign space launches.

Additionally, we are making sure that the USSTRATCOM Commander will have better C2 and SSA capabilities by combining three programs for the Joint Space Operations Center (JSpOC): Integrated Space Situational Awareness (ISSA), Rapid Attack Identification and

Reporting System (RAIDRS) and Space C2. The effort, named “JSpOC Mission System (JMS),” is under development using a streamlined requirements and acquisition approach.

Along with implementing capability solutions, we refined our tactics, techniques and procedures to reduce the possibility of future collisions. Through JSpOC SSA efforts, our ability to predict collisions increased one-hundred fold to include all active satellites, and now we conduct over 1,000 assessments per day. As a result, there have already been 56 instances where owner-operators maneuvered their satellites to avoid possible collisions.

In addition, on 22 December 2009, we transferred the Commercial and Foreign Entities (CFE) pilot program to USSTRATCOM, with operational responsibility continuing at the JSpOC. Not only do we provide conjunction analysis for capabilities critical to national security and homeland defense, but also we expanded our services to provide positional data to over 40,000 users and a number of partner nations.

Launch and Range Enterprise Transformation (LET)

It is our job to deliver assured space and cyberspace capabilities, and we can only do that if we have assured access to space. We now mark a full decade of successful national security space launches and over seven years of successful Evolved Expendable Launch Vehicle (EELV) launches. We must maintain that perfect record: launch failures are too expensive, in money and lost capability. LET is our effort to make sure that success will continue, and it involves four major efforts: 1) transforming launch services acquisition, 2) upgrading range capability, 3) fully leveraging ARC and the ANG, 4) improving business practices to better support commercial providers.

As part of the launch services acquisition effort, we continue to look for ways to make EELV more cost-effective by working with the NRO and NASA for block buy opportunities.

We are also defining “new entrant” criteria as part of our overall approach to space launch. And we cannot neglect technology development; we are preparing a new reusable first stage demonstration and are pursuing technology for a new reusable rocket engine.

Launch services will also be affected by the recent announcement cancelling NASA’s Constellation program. Our initial steps will ensure that the industrial base interdependencies between EELV and other launch systems are considered to support a viable national launch industrial base.

The effort to upgrade range capability has been long in coming; our range infrastructure has been increasingly unsustainable and, unless addressed, will impose costly delays on national security, civil, and commercial launches alike. Our national space launch and weapon system test and evaluation capabilities demand a flexible range architecture. To address these demands, we are divesting redundant instrumentation while modernizing and increasing the reliability and availability of essential range assets. In addition, our future range design incorporates a telemetry-based architecture with an integrated GPS metric tracking capability.

Position, Navigation and Timing (PNT)

The Global Positioning System (GPS) continues to provide highly accurate position and timing signals that enable highly precise Joint combat operations worldwide. GPS is also a free utility serving as an enabler for economic transactions and influencing the global economy by more than \$110 billion annually. We at AFSPC, the Air Force, and the Department of Defense do recognize and embrace our special responsibility to maintain GPS as the “gold standard” for space-based PNT.

We continue to modernize the system and are developing and fielding a more robust, taskable, third-generation GPS satellite which will provide improved operational capabilities to

military and civil users. In 2009, we launched the last two GPS Block IIR-M satellites, and for 2010 we continue preparations to launch, deploy, and operate the first GPS Block IIF satellites. For civil users, these new Block IIF satellites will broadcast the first operational signals in the L5 frequency band, which is protected by internationally recognized spectrum rules to ensure robust service quality for safety-of-life applications, such as aircraft all-weather approach and landing. In addition, we are building the first increment of eight GPS III satellites and a new Next Generation Control Segment (OCX). Together, GPS III and OCX will improve user collaboration, incorporate an effects-based approach to operations, and establish a net-centric architecture accelerating the mission application of position and timing information.

Recognizing the Joint team's constant demand for enhanced GPS capabilities in geographically challenging areas where terrain can degrade GPS signal coverage, we partnered with USSTRATCOM and developed a plan called "Expandable 24." This approach not only benefits military operations in places like Afghanistan, but all GPS users around the world, by taking advantage of the largest on-orbit GPS constellation in history. Over the next two years, we will gradually reposition GPS satellites to increase the number of satellites in view, thereby improving availability and accuracy worldwide.

We continue to develop Military GPS User Equipment (MGUE) to exploit the features of our new GPS satellites and control segment features. A key aspect of MGUE is the development of a common GPS module facilitating easy integration of GPS solutions into multiple platforms. Overall, our GPS enterprise efforts maintain the highest service performance levels to the civil community while transforming and modernizing GPS into a robust, taskable system tailored to meet unique military needs in today's operational environments.

Satellite Communications (SATCOM)

The Joint Force Commanders rely on military and commercial SATCOM (especially in austere environments) to communicate securely and receive data, imagery, and full motion video from Remotely Piloted Aircraft. Those services will depend heavily on our Wideband Global SATCOM (WGS) system. Mission operations began last August with the second WGS (WGS-2) satellite, positioned over the Southwest Asia AOR, and it is now delivering ten times the capability that we had with the legacy Defense Satellite Communications System (DSCS). Last December we launched the third WGS (WGS-3) which is being positioned over the EUCOM and AFRICOM AORs.

The demand for wideband MILSATCOM capability never slows, and so we have requested \$595 million to continue production of WGS-4 & 5 and procurement of WGS-7. And later this year we expect to accept and launch the first Advanced Extremely High Frequency (AEHF) satellite, a new system that will increase the protected communications data rate more than five-fold and provide more coverage opportunities than Milstar. The end result will be enhanced national command and control satellite networks for the President, Secretary of Defense and Combatant Commanders. Meanwhile, we are evaluating the right strategies to evolve future MILSATCOM capabilities to support COCOM requirements.

Overhead Persistent Infrared (OPIR)

Only from space can we be assured of comprehensive missile warning and missile defense information. The first two Space Based Infrared System (SBIRS) Highly Elliptical Orbit-1 (HEO-1) and HEO-2 payloads provide our Nation with comprehensive missile warning and missile defense data. This critical information in the hands of warfighters, particularly in contested areas and where no other assets are available, is invaluable. Furthermore, Congress

added \$13.8 million in FY10 for exploitation initiatives providing Joint Force Commanders with advanced Battlespace Awareness and Technical Intelligence.

While the Joint Force Commanders benefit from the advanced SBIRS HEO detection and data exploitation efforts, we requested \$530 million for the SBIRS Geosynchronous Earth Orbit (GEO) development program. As part of our OPIR portfolio, the SBIRS GEO payload will provide enhanced detection and data processing capabilities to the warfighter and the Intelligence Community. Recognizing a significant achievement, the first SBIRS GEO (GEO-1) space vehicle successfully completed Thermal Vacuum (TVAC) testing and is undergoing subsequent flight hardware replacement and software qualification. We look forward to final launch readiness and delivery to meet GEO-1 launch in 2011.

Space Control

As we enter the 19th year of continuous combat operations in the Persian Gulf, AFSPC continues to provide sustained defensive counterspace capability to USCENTCOM. We are in our sixth year of continuous presence in theater with SILENT SENTRY which provides critical electromagnetic interference detection and geolocation tools and highlights the need for a global capability.

As part of evolving our support to the Joint fight, we are developing and fielding a follow-on system, RAIDRS Block 10 (RB-10). RB-10 is integrated as part of JMS and will provide transportable ground systems located around the world. In addition, the RB-10 capability will route SATCOM interference detection and geolocation data to the JSpOC thereby helping us protect military communication channels.

Operationally Responsive Space (ORS)

The ORS program is exploring ways in which the urgent needs of Joint Force Commanders might usefully be addressed, and AFSPC works with the ORS office on projects involving communications, SSA, surveillance and reconnaissance. For example, TacSat-3 was launched on 19 May 2009, as an experimental system designed to demonstrate the military utility of a small satellite, taskable by a tactical user in the field to search and collect specific hyper spectral images and downlink the results directly to deployed ground units. We are assessing the utility of transitioning TacSat-3 to a residual DoD-operated reconnaissance system upon completion of its experimental period in May 2010.

Later this year another ORS satellite, the ORS-1, should begin providing multi-spectral imagery of regions selected by ground force commanders. Existing ground systems will process and distribute the resulting images, and this development should also help inform a multi-mission modular approach that might prove useful in the future.

Space Weather - National Polar-orbiting Operational Environmental Satellite System (NPOESS)

On 1 February 2010, the Executive Office of the President directed a major restructuring of the NPOESS program, whereby procurement of the system will no longer be joint. NOAA and NASA will take primary responsibility for the afternoon orbit, and the Air Force will take primary responsibility for the morning orbit. As we work through this transition, we will continue to foster our longstanding productive partnerships with NOAA and NASA, by sharing data, coordinating user needs and operating satellites.

AFSPC Goal: Forge a Battle-Ready Team by Attracting, Developing and Retaining America's Best

AFSPC will continue to be a leader in attracting, developing and retaining Airmen and civilians with the professional skills needed to succeed. Recognizing the critical roles of our families, we continue to extend the wingman culture to help nurture success on the home front. During 2010-2011, we will improve training and professional development programs; refine career paths and take necessary steps to care for our Airmen and their families.

Developing Airmen

Over the past year, we integrated space education and training into mainstream Air Force processes to enhance professional development and ensure continued sustainment. This construct equips our space professionals with a sound foundation at Undergraduate and Initial Qualification Training, expands their operational and strategic perspective of space through Space 200 and 300 continuing education and adds tailored advanced operational training at subsequent career milestones. Our programs have now developed over 13,000 space professionals who are experienced in today's real-world and combat operations.

Since my last appearance before your subcommittee, we worked with Air Education and Training Command (AETC) to restructure the National Security Space Institute (NSSI). In essence we created two complementary space academic organizations. The new NSSI is focused on "graduate level" continuing education and is now aligned under Air University, charged with specific responsibility for Air Force-wide Professional Continuing Education (PCE). AFSPC retained responsibility for advanced operational system training, fundamentals courses and pre-deployment training, now provided by the Advanced Space Operations School (ASOpS). Together the NSSI and ASOpS are the premier focal points for advanced space education and training, providing instruction to 1,728 students in 2009 including students from the Air Force,

Army, Navy, Marine Corps, civil service and allied partners. This year, we will begin construction on a \$19.9 million facility housing both schools on Peterson AFB CO.

We are carefully crafting a similar force development approach for our cyberspace professionals. Equipped with the vision outlined in “The Air Force Roadmap for the Development of Cyberspace Professionals,” and the experience gained by our Space Professional Development Program, we are building a parallel career development model for cyberspace. The goal is to ensure that cyberspace professionals have the proper academic credentials, the right training and education and requisite experience to establish, protect and leverage this critical domain. This year AETC will open the doors to Undergraduate Cyber Training (UCT) courses for the newly established Cyberspace Operations officer specialty and the Cyberspace Defense Operations and Cyberspace Support enlisted specialties.

Missions conducted in and through the cyberspace domain will require Airmen with specific technical education and network-savvy aptitude. Working with academia and industry partners, we have defined academic prerequisites for cyberspace accessions, and are addressing the challenge in identifying and recruiting such people. To do this right, we need effective, innovative recruiting strategies and meaningful incentives to attract and retain cyberspace professionals.

In addition to UCT, we are working with Air University and the Air Force Cyberspace Technical Center of Excellence to establish Cyber 200 and 300 courses along with advanced operations courses for cyberspace professionals. Course curricula are under development and we expect to teach classes on an interim basis in October 2010 with a permanent approach in place in FY12.

Families and Quality of Life

The year 2010 is the “Year of the Air Force Family.” In AFSPC, we recognize the sacrifices and contributions of our families by extending our wingman culture and emphasizing suicide prevention, safety and family support. In addition, we are working to attract and retain our Airmen and their families by providing quality housing and enhancing the sense of community on our installations.

AFSPC significantly improved mission capabilities and the quality of life for its Airmen and their families in 2009 by investing \$453 million on over 700 projects to sustain and modernize facilities, infrastructure and housing. We also executed \$149 million of American Recovery and Reinvestment Act funds on another 280 projects to improve our working, living and recreational environments. The combined \$602 million was invested in areas to include housing, dormitories, a new child development center, fitness centers, community activity centers, launch and nuclear mission facilities; and electrical, heating/air conditioning, water and road infrastructure. For 2010, we will invest \$118 million in MILCON projects for a child development center, facilities construction, and key projects across AFSPC.

AFSPC Goal: Modernize and Sustain AFSPC’s Enduring Missions and Mature Emerging

Missions

As the Air Force lead for cyberspace, AFSPC will provide cyberspace capabilities that, when integrated with air and space capabilities, enable combat effects in a new way. As we have done with our space capabilities, we will establish a path to grow cyberspace operations, education, training, and development. We will also identify specific areas to draw on the combined resources of the ANG, ARC and government civilians. Our plan is laid out in the

“The United States Air Force Blueprint for Cyberspace,” which we will use in working closely with our Joint fight partners to provide complementary capabilities. The blueprint describes how we will align cyberspace activities and functions, evolve and integrate these unique capabilities, and build operational capacity. We must ensure that we can both defend against attacks and “fight through” and respond to attacks, in order to assure mission accomplishment.

The newly activated 24th Air Force serves as the Air Force’s operational cyberspace component to USSTRATCOM and is charged to integrate, employ and present Air Force cyberspace capabilities. Structured pursuant to direction from the Secretary of the Air Force and Air Force Chief of Staff, the 24th Air Force achieved Initial Operational Capability (IOC) a few weeks ago (22 January 2010).

Total Force

In 2009, AFSPC continued to leverage ARC support to AFSPC missions. Our Total Force Integration (TFI) Strategy capitalizes on existing ARC presence and inherent strengths of the Reserve and Guard components. As we stood up 24th Air Force, our TFI partnerships played a key role in our success. Across AFSPC, our ARC partnerships in satellite and launch range operations, SSA, and battlespace awareness provide critical continuity and surge capacity. We are also preparing to increase ARC presence in missile warning, space control and cyberspace operations.

Schriever War Game Series

The recurring Schriever War Game series has proven insightful in identifying key strategic and policy issues. At the end of our fifth Schriever War Game in March 2009, we addressed key issues involving space deterrence, capability employment, and policy implementation and planning with senior leaders throughout the national security community.

This war game also identified areas requiring additional emphasis and highlighted the close relationships between space and cyberspace capabilities, and informed our strategic development efforts in both the QDR and SPR. We are now preparing for this year's wargame and look forward to increased international and industry participation.

AFSPC Goal: Reengineer Acquisition to Deliver Capability at the Speed of Need

No one doubts that we need to push relentlessly to improve acquisition. Our vision is to provide what the Joint Force Commander needs, when he needs it—capability at the speed of need. We have far to go, but recent successes show that we are on the right track. As mentioned earlier, in the past year we increased on-orbit capability with GPS IIR-20M & 21M, DMSP-18, WGS-2, and WGS-3. We are on track to deliver new capabilities as we have completed a GPS III Preliminary Design Review as well as GEO-1 and AEHF SV-1 TVAC testing.

We will continue to pursue our “back to basics” philosophy and block-build approach, fund to the most probable cost, increase our acquisition workforce and expertise, improve relations with industry, and implement strict requirements control. Our Space and Missile Systems Center will deliver five major systems in the next twenty-four months for SBIRS, AEHF, GPS IIF, ORS-1 and SBSS. The GPS III, OCX and Space Fence development programs are on the right track.

As we reengineer acquisition processes, we are focusing efforts to rebuild the acquisition workforce and strengthen relationships across Industry and DoD. In an effort to recapture acquisition excellence, the USAF implemented an Acquisition Improvement Plan (AIP) to revitalize the acquisition workforce; improve requirements generation processes; instill budget and financial discipline; improve major systems source selections; and establish clear lines of authority and accountability within organizations. Overall, the AIP increases accountability at

higher leadership levels, increases communication between MAJCOMs and between product centers and MAJCOMs.

Furthermore, we implemented a Human Capital Strategic Plan to recruit, develop and retain acquisition expertise. As part of the recruitment effort, we are developing and marketing a recruitment strategy that targets individuals with the desired education, experience, and skill sets. Taking advantage of favorable job market conditions and expedited hiring authorities, we hired over 300 recent college graduates.

Conclusion

Space and cyberspace capabilities allow warfighting commands to meet the challenge of protecting the American people, their livelihoods and interests with precision at the moment of need. At AFSPC, our vision, our mission, our job, and our dedication is to make sure those commanders have the very best capabilities that we can humanly provide. With the continued support of the Congress, we will be able to assure that our country will have the space and cyberspace forces it needs tomorrow and in years to come.