NOT FOR PUBLICATION UNTIL RELEASED BY THE
SENATE ARMED SERVICES COMMITTEE
STRATEGICE FORCES SUBCOMMITTEE
UNITED STATES SENATE

**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: Mr. Gary E. Payton**
**Deputy Under Secretary of the Air Force for Space Programs**

NOT FOR PUBLICATION UNTIL RELEASED BY THE
SENATE ARMED SERVICES COMMITTEE
STRATEGICE FORCES SUBCOMMITTEE
UNITED STATES SENATE

**INTRODUCTION**

Chairman Nelson, Senator Vitter, and distinguished members of the Committee, it is an honor to appear before this Committee as the Deputy Under Secretary of the Air Force for Space Programs, and to discuss our military space activities. I support the Secretary of the Air Force with his responsibilities as the Service Acquisition Executive for Space Programs.

I believe the overall soundness of our Air Force space program is best illustrated by our consecutive string of 64 successful national security space launches over the past 10 years, most recently demonstrated with the December 2009 launch of the third Wideband Global Satellite Communications (SATCOM) satellite aboard a Delta IV launch vehicle. This record is the result of a world-class team of space professionals across our government and industry, all dedicated to the single purpose of providing essential capabilities to our joint warfighters and allies around the world. With superior space systems we provide our leadership with intelligence and situational awareness that otherwise would be impossible to collect. Space enables us to employ military force in both irregular warfare and conventional situations – we see the battlefield more clearly and destroy targets with greater precision. While acknowledging the ever increasing advantages that these space capabilities provide, we acknowledge that many of the satellites and associated infrastructure have outlived their intended design lives.

To ensure the availability of these systems, the military space portion of the President's FY2011 budget submission is focused on the continuity of key mission areas including worldwide communication; global positioning, navigation and timing; global missile warning; weather; and launch. Simultaneously, we are enhancing the protection of our space capabilities through improved Space Situational Awareness (SSA), defensive counterspace, and

reconstitution efforts. This calendar year we will bear the fruit of investments from previous years with the planned launches of four "first of" operational satellites. The four "first of" satellites are the Advanced Extremely High Frequency (AEHF) protected communications satellite, Space Based Space Surveillance (SBSS) satellite, Global Positioning System (GPS) II-F satellite, and Operationally Responsive Space (ORS) 1 satellite.

Worldwide communication is enabled through a ubiquitous space-based system with government and commercial platforms. Our users stretch from the Oval Office to the mountains of Afghanistan. Using protected, wideband, or narrowband communications, the President can command the nation's nuclear forces, our UAV pilots can fly Predators over Iraq and Afghanistan from the United States, and Special Forces teams can call for exfiltration or tactical air support.

Global positioning, navigation and timing is a free worldwide service. It provides position accuracy down to the centimeter and time accuracy to the nanosecond over the entire planet, 24-hours a day, 7-days a week, and in any weather. The Department of Defense and the Intelligence Community depend on our Global Positioning System (GPS) to support a myriad of missions and capabilities including weapon system guidance, precise navigation, satellite positioning, and communication network timing. The civil and commercial communities are equally reliant on GPS as the underpinning for a vast infrastructure of services and products including search and rescue, banking, map surveying, farming, and even sports and leisure activities.

Global missile warning through Overhead Persistent Infra-Red (OPIR) sensors is our unblinking eye ensuring that we know whenever a rocket launches from anywhere on Earth. Our missile warning system is fast, persistent, and accurate in determining missile launch

directions. At the strategic level, it informs leadership as they determine courses of action to defend America and our allies, and at the tactical level our real-time warning provides theater commanders with superior battlespace awareness.

Weather observation and forecasting has greatly improved over the last four decades primarily due to space-based environmental sensing. Global, high resolution measurements of atmospheric temperature, density, and humidity populate mathematic models for weather prediction. Our warfighters need accurate, time-sensitive weather data as a key enabler for maneuver planning, weapons employment, and intelligence collection.

Our on-orbit assets continue to face greater threats that could deny, damage, or destroy our access to space capabilities. We must anticipate potential disruptions, either accidental or intentional, to our space operations or risk losing continuity of service. As such, we are expanding our ability to detect, identify, characterize, and attribute threats, as well as clearly discriminate between a hostile act and one that occurs naturally. In parallel, we are developing the organizational, operational, and technical enablers, including command and control systems, which will allow us to react swiftly and decisively when threats materialize.

Congress' support has been a vital component in improving our acquisition of space systems, maintaining continuity of service, and charting a course for the next generation of space capabilities that will enhance American security, freedom, and prosperity.

**UPDATE ON SPACE PROGRAMS**

I would like to briefly discuss some of the achievements we have had over the last year and the progress we are making with regard to the mission areas I described earlier.

*MISSILE WARNING*

For over 35 years, our legacy Defense Support Program (DSP) satellites, in conjunction with ground based radars, have unfailingly met the nation's missile warning needs. This legacy constellation, however, continues to age, while threats such as the proliferation of theater ballistic missiles and advanced technologies continue to grow. These threats are driving the need for increased coverage and resolution provided by the Space Based Infrared System (SBIRS).

SBIRS supports four mission areas: missile warning, missile defense, technical intelligence, and battlespace awareness, and is comprised of both geosynchronous earth orbit (GEO) satellites and highly elliptical orbit (HEO) payloads. Two HEO payloads are fully operational and, along with the DSP constellation, continue to perform the missile warning mission while providing increased support to the other three mission areas. Completion of the first SBIRS GEO satellite is planned for the end of 2010.

Our FY2011 funding request continues development and procurement of the GEO satellites, HEO payloads, and the necessary ground elements. This budget requests full procurement for a fourth GEO satellite, and contains future year requests for procurement of the fifth and sixth GEO satellites. The first GEO satellite completed environmental testing, and we continue to work the final qualification of flight software prior to a final integration test and delivery by the end of this year. Our budget request also continues the commercially hosted on-orbit Wide Field-of-View (WFOV) technology demonstration effort. By partnering with the commercial space industry, we will have the opportunity to conduct an early on-orbit scientific experiment of WFOV infrared data phenomenology using a Commercially Hosted IR Payload.

*COMMUNICATIONS*

The United States military is a highly mobile and dispersed force that relies heavily on wideband, protected, and narrowband satellite communications (SATCOM) for command, control, and coordination of forces. SATCOM enables forces to receive real-time images and video of the battlefield, thereby accelerating decision-making from the strategic to the tactical levels. These images and video often come from Unmanned Aerial Vehicles (UAVs) controlled via SATCOM links, allowing the UAVs to fly far beyond the line of sight and to collect information without endangering U.S. forces.

On December 5, 2009 we successfully launched the third Wideband Global SATCOM (WGS) satellite as part of the Department's constellation of wideband satellites providing increased capability for effective command and control of U.S. forces around the globe. Each individual WGS satellite provides greater wideband capacity than the entire legacy Defense Satellite Communications System (DSCS) III constellation. Our funding request continues on-orbit support for WGS 1-3, continues production of WGS 4-6, contains full procurement for WGS 7, and advance procurement for WGS 8.

In the protected SATCOM portfolio, we are conducting final confidence testing of the first Advanced Extremely High Frequency (AEHF) satellite with a projected launch in the third quarter of 2010. This initial AEHF launch will complete the worldwide Medium Data Rate (MDR) ring, increasing the data-rate for low probability of intercept/detection and anti-jam communications from tens-of-kilobytes per second to approximately a megabyte per second. Our funding request supports the launch and on-orbit support of AEHF 1; assembly, integration, and test of AEHF 2-3 and the AEHF Mission Control Segment; and the production of AEHF 4. This budget requests advance procurement for AEHF 5, and contains a future year request for procurement of AEHF 6.

While near term satellite communication needs will be met with a combination of military systems (WGS and AEHF) and leased commercial SATCOM, the Air Force continues to work closely with the other Services, the Office of the Secretary of Defense, Joint Staff, and the Combatant Commands to meet the Department of Defense's future protected and wideband communication needs. To this end, the Air Force will investigate options to harvest technologies matured by previous Transformational Satellite Communications System (TSAT) efforts, and evolve the next generation MILSATCOM architecture to provide connectivity across the spectrum of missions, to include land, air and naval warfare; special operations; strategic nuclear operations; strategic defense; homeland security; theater operations; and space operations and intelligence.

*POSITIONING, NAVIGATION AND TIMING*

The United States Global Positioning System (GPS) continues to be the world standard for positioning, navigation, and timing (PNT). As a result, GPS has been incorporated into military, commercial, and civilian applications, to include navigation, agriculture, banking, cartography, telecommunications, and transportation. The current GPS constellation is robust and healthy, consisting of 30 operational satellites.

Last year, we launched the final of twenty GPS IIR satellites, the last eight of which were upgraded GPS IIR-M satellites with military code (M-code) for additional anti-jam capability, and a second "L2C" civil signal for increased accuracy. The GPS IIR program was started over twenty years ago, and represents one of our most successful, enduring space acquisition programs. This year, we will launch the first GPS IIF satellite, and twelve GPS IIF satellites will

sustain the constellation over the next six years. GPS IIF will continue to populate the GPS constellation with military capability and introduce a third "L5" civil signal.

Moving beyond GPS IIF, GPS III will offer significant improvements in navigation capabilities by improving interoperability and jam resistance. The procurement of the GPS III system will occur in multiple blocks, with the initial GPS IIIA contract awarded in May 2008. GPS IIIA includes all of the GPS IIF capability plus a ten-fold increase in signal power, a new civil signal compatible with the European Union's Galileo system, and a new spacecraft bus that will support a graceful growth path to future blocks. The next generation control segment (OCX) for GPS III contract was awarded on February 25, 2010, and is on-track to be in place to support the first GPS IIIA launch, as well as continue to support the legacy GPS satellites. Finally, development of Military GPS User Equipment (MGUE) continues with technology maturation of modernized receiver cards that will take advantage of the increased capability of GPS IIIA including a stronger and more secure M-code signal.

*WEATHER*

The Defense Meteorological Satellite Program (DSMP) continues to be the nation's workhorse for terrestrial forecasting and space environmental sensing. DMSP Flight 18 was successfully launched in October 2009. We have two DMSP satellites remaining with Flight 19 and 20, and they are currently undergoing a Service Life Extension Program (SLEP) to repair, replace, and test components that have exceeded their shelf life. Flight 19 will launch in October 2012 and Flight 20 will launch in May 2014 or October 2016, depending on operational requirements.

On February 1, 2010, the Executive Office of the President restructured the National Polar-Orbiting Operational Environmental Satellite System (NPOESS) program to assign responsibility for each of the three planned orbits to the agency holding the majority of the interest in that orbit. Accordingly, the Department of Commerce will populate the afternoon orbit, the Department of Defense (DoD) will populate the early morning orbit, and the U.S. Government will continue to rely on capabilities from our European partners for the mid-morning orbit. For the morning orbit, DMSP satellites will continue to ensure weather observation capability. The DoD, in cooperation with partner agencies, will conduct a short requirements analysis for the morning orbit to serve as the basis to restructure the program in FY2011. While this analysis is conducted, DoD will work closely with the civil agency partners to ensure efforts to ensure continuity of the afternoon orbit continue productively and efficiently.

*OPERATIONALLY RESPONSIVE SPACE*

Operationally Responsive Space (ORS) is focused on meeting the urgent needs of the joint force commanders using a combination of existing, ready to field, and emergent systems. This program builds on the "back to basics" approach we have cultivated over the past several years by providing enhanced mission capability through incremental blocks of small satellites and integration of other responsive space capabilities. Key tenets of the ORS program are to keep costs low, react rapidly to urgent warfighter needs, and reconstitute capability in contested environments. A clear example of these tenets is exemplified in the first ORS operational satellite (ORS-1), scheduled to launch at the end of 2010. It is being built for United States Central Command (USCENTCOM) to monitor denied areas and will be taskable like other USCENTCOM organic airborne ISR assets.

In the FY2011 budget request, ORS will continue to develop the enabling infrastructure of on-demand space support with Rapid Response Space Capability, whereby plug-and-play spacecraft will be assembled, integrated, and tested with Modular Open System Architecture (MOSA) payloads, spacelift, satellite control, and data dissemination capabilities. Tactical Satellite 3 (TacSat-3), launched in May 2009, demonstrated this "plug and play" modular, low cost spacecraft with a hyper-spectral imaging payload. TacSat-3 provides a new capability for strategic and tactical reconnaissance from space, and continues to successfully provide military utility as a technology and test asset.

*LAUNCH*

National Space policy requires assured access to space. Currently this requirement is satisfied by the Evolved Expendable Launch Vehicle (EELV) program consisting of the Delta IV and Atlas V launch vehicles. The first 30 EELV launches have all been successful, and are part of our consecutive string of 64 successful national security space launches. Efficiencies are achieved through combined engineering, production, and launch operations while maintaining the separate Delta IV and Atlas V families of launch vehicles for assured access. The FY2011 budget request funds EELV launch capability (ELC), or infrastructure activities and on-going support for over eight launch services planned for 2011. In addition, we request funding for three EELV launch vehicles which will launch in 2013. We combined the two launch vehicle families into the United Launch Alliance (ULA), resulting in some cost savings due to labor reductions and facility consolidations; however, launch costs are still rising. Factors contributing to rising launch costs are the depletion of inventory purchased in prior years, reduced number of annual buys increasing unit costs, and a deteriorating subcontractor business base without

commercial customers. These industrial base factors will also be affected by the decision to replace NASA's Constellation program with a new, more technology-focused approach to space exploration, which will likely reduce the customer base for solid rocket motors and potentially increase demand for liquid engines and strengthen the liquid-fuel rocket industrial base. We have initiated several efforts to examine the severity of these business base issues and identify potential mitigation steps.

*SPACE PROTECTION*

The need for increased space protection of our space assets is paramount, and requires enhanced Space Situational Awareness (SSA) capabilities and a legitimate battle management system. We need improved accuracy, responsiveness, timeliness, and data integration to support the warfighter. Our FY2011 budget request continues development of the Joint Space Operation Center (JSpOC) Mission System (JMS) to provide this capability and replace our aging mission systems. The JMS program will provide a single, theater-integrated, command and control, information technology system to allow informed and rapid decisions with real-time, actionable SSA. An operational utility evaluation effort will deliver the foundational infrastructure and mission applications to deploy a services-oriented architecture (SOA) with user defined applications

The JSpOC is our single focal point for monitoring space activity. Over the last year, the JSpOC has transitioned the Air Force's commercial and foreign entities (CFE) pilot effort into USSTRATCOM's SSA sharing program. This involved growing the capability to monitor and conduct conjunction assessments for all U.S. government, commercial, and foreign active satellites, over 1,000 systems. As a result, the SSA sharing program screens for collisions daily,

and has a formalized information sharing process that reports potential conjunctions to commercial and foreign satellite owners and operators.

The Space Fence and Space-Based Space Surveillance (SBSS) are two programs critical to providing increased SSA data. The Space Fence is a three station, worldwide, radar system to detect and track smaller sized space objects, while the SBSS satellite is an optical system to search, detect, and track objects in earth orbit, particularly those in geosynchronous orbit. The Space Fence replaces the Air Force Space Surveillance System (AFSSS), and SBSS builds upon our success with the Space Based Visible (SBV) technology demonstration. In the FY2011 budget, the industry teams working on the Space Fence program will complete a Preliminary Design Review, and the SBSS program will conduct on-orbit operations of the SBSS Block 10 satellite, planned to launch this summer. Additionally, we will continue efforts toward a SBSS follow-on by completing the acquisition strategy and conducting a full and open competition.

*AIR FORCE MANAGEMENT OF SPACE*

The Secretary of the Air Force recently directed a review on Headquarters Air Force management of space responsibilities. Since the Air Force's last reorganization of space management following the 2001 Space Commission, events and new authorities have changed how responsibilities were assigned. This study will assess the impact of those changes for planning and programming, acquisition, oversight, and coordination with other DoD components and agencies.

The Air Force Acquisition Improvement Plan serves as the strategic framework for re-instilling excellence in space systems acquisition. This plan focuses on workforce, requirements generation, budget discipline, source selections, and clear lines of authority.

Additionally, the plan builds on our “Back to Basics” philosophy, and leverages enduring principles from over 50 years of space acquisition experience.

The Air Force is committed to providing the best possible education, training, and career development to these professionals who operate, acquire, and enable our systems. Institutions like the Air Force Institute of Technology, Defense Acquisition University, and the National Security Space Institute are at the forefront of our efforts to educate and train these warriors. These organizations continue to provide the education and training necessary to sustain the space workforce, our most vital asset.

**CONCLUSION**

Our space systems are the envy of the world. Our infrared surveillance satellites are able to detect missile launches anywhere in the world; no other nation can do that. Our strategic communications systems allow the President precise and assured control over nuclear forces in any stage of conflict, and our wideband SATCOM systems rapidly transmit critical information between the continental U.S. to our front line forces; no one else has global, secure, anti-jam communications. Our weather satellites allow us to accurately predict future conditions half a world away as well as in space. Our GPS constellation enables position knowledge down to centimeters and timing down to nanoseconds; no one else has deployed such a capability. These sophisticated systems make each deployed Soldier, Sailor, Marine, and Airman safer, and more capable.

In the FY2011 budget, continuity of service across our space portfolio and improved space protection is paramount. Our ‘back to basics’ strategy over the recent years is

demonstrating results, as we continue toward securing the world's best space capabilities today and ensuring the same for our nation's future.

The space constellations and space professionals that deliver these capabilities are our critical asymmetric advantage. We must ensure the recapitalization and health of these constellations and continue the professional development of our future space leaders. Delivering space capabilities is complex, challenging, costly, yet rewarding. Although we have faced significant challenges, we are also making significant progress. I look forward to continuing to work with this Committee and thank you for your continued support of military space programs.