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SUBCOMMITTEE ON STRATEGIC FORCES
HOUSE ARMED SERVICES COMMITTEE
US HOUSE OF REPRESENTATIVES

DEPARTMENT OF THE AIR FORCE

PRESENTATION TO THE
SUBCOMMITTEE ON STRATEGIC FORCES
HOUSE ARMED SERVICES COMMITTEE
US HOUSE OF REPRESENTATIVES

SUBJECT: Fiscal Year 2018 Priorities and Posture of the National Security Space Enterprise

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INTRODUCTION

Chairman Rogers, Ranking Member Cooper and distinguished Members of the Committee, thank you for the opportunity to appear before you in my capacity as the Commander of Air Force Space Command. It is my distinct privilege to lead and represent the nearly 36,000 dedicated men and women of Air Force Space Command (AFSPC) who serve at 134 locations around the world and provide foundational space and cyberspace capabilities vital to the protection of the Nation. The AFSPC mission remains to provide resilient and affordable space and cyberspace capabilities for the Joint Force and the Nation.

This year marks the 70th anniversary of our Air Force and the 35th anniversary of Air Force Space Command. Over that 35 year history AFSPC's contributions to our Air Force and the nation have been profound. Together with our Joint Force partners, Airmen have enabled and contributed to a fundamental transformation of the American way of war -- ensuring that our Air Force can always provide the United States with Global Vigilance, Global Reach, and Global Power. However, 26 years of continuous combat operations coupled with budget instability and lower-than-planned budget levels have placed great strain on the United States Air Force and Air Force Space Command. My comments today will focus on the space domain.

SPACE IS A WARFIGHTING DOMAIN

For decades the United States has enjoyed unimpeded freedom of action in the space domain. This has allowed us to deliver space capabilities that include intelligence collection, missile warning, weather monitoring, satellite communications and precise positioning, navigation and timing essential to U.S. Armed Forces that operate globally with unmatched speed, agility and lethality. These same capabilities also contribute to the many civil capabilities that impact our economy and improve our quality of life. These on-orbit space capabilities were

designed primarily to operate in an uncontested space environment void of adversary threats – a condition we no longer enjoy today. At present, our potential adversaries understand the competitive advantage we derive from space and view our reliance on space as a critical vulnerability they can exploit. As I have testified before, in the not too distant future, near-peer competitors will have the ability to hold every U.S. space asset in every orbital regime at risk. To meet this challenge, we need to embrace the fact that space is a warfighting domain just like the Air, Land, Cyberspace and Maritime domains, which requires that we address our vulnerabilities and maintain our resolve to ensure the peace.

To that end, my focus and priority as the Air Force Space Command Commander is to organize, train, and equip Air Force space forces to deter conflict from extending to space, but if deterrence fails to fight and win. In order to preserve the peace, we must posture with strength and should conflict occur, enable Combatant Commanders to seize the initiative and counter any potential adversary in support of U.S. national interests.

SPACE WARFIGHTING CONSTRUCT

In my first seven months of command, we have aggressively pushed implementation of the joint AFSPC/National Reconnaissance Office (NRO) Space Enterprise Vision with a new Space Warfighting Construct (SWC). This Warfighting Construct is the framework for turning the Space Enterprise Vision into reality.

The foundation of this construct is the development of concepts of operations (CONOPS). Working collaboratively with the NRO, the broader intelligence community, and United States Strategic Command, we are developing a series of CONOPS that document how we expect to achieve synchronized planning and integrated operations in order to protect and defend the national security space enterprise.

The Space Mission Force (SMF) is the human capital of the Space Warfighting Construct. I can't overstate just how powerful the SMF has been in helping us adapt a warfighting culture across the command. Our operations crews have made significant strides since the inception of the SMF and are now operating with a mindset tuned to the threat. By normalizing space training with the rest of the Air Force, our Airmen will be prepared to recognize and react to adversary threats. Today the 50th Space Wing and a portion of the 21st Space Wings have achieved initial operational capability (IOC). The remainder of the 21st and the 460th Space Wings will achieve IOC on 1 October 2017.

We have a near term national imperative to re-architect the space enterprise for warfighting. We have already programmed in some incremental resilience upgrades to our protected SATCOM, Missile Warning and Global Positioning System satellites and are now doing the analysis to inform the future architectures.

To fully implement the warfighting construct, we must continue to develop strong partnerships within the U.S. Government (DoD/IC/Civil) and with the growing capabilities of Allies and the commercial space sector. Each partner has unique strengths they can bring to bear in support of the goal to deter and dissuade a conflict from extending into space. One key partnership we highlight throughout this testimony is the Air Force and NRO relationship regarding the Space Enterprise Vision and SWC. Another is our evolving partnership with the Missile Defense Agency as they deliver the Long Range Discrimination Radar to the Air Force, while we concurrently address emerging threats by making the Overhead Persistent Infrared enterprise more resilient through diversified architectures. On the civil side we are partnering with providers of space-based weather capabilities and have been working with the Federal Aviation Administration, a long-term partner on position, navigation and timing, on space traffic

management solutions. Regarding international partnerships, one of our recent successes is the inclusion of Japan's Self-Defense Forces into the Schriever Wargame, our annual exercise to explore critical space issues and investigate the integration activities of multiple agencies associated with space systems and services. In the last Schriever Wargame, our Five Eyes partners, together with France and Germany, were active participants and we anticipate Japan being a full participant in the exercise which is scheduled to occur in the fall of 2018. We remain committed to expanding and leveraging all partnerships going forward.

JOINT WARFIGHTING NEAR TERM IMPERATIVES

1) Developing Effective and Responsive Space Command and Control

a) National Space Defense Center

The National Space Defense Center (NSDC), formerly known as the JICSpOC, was renamed by U.S. Strategic Command (USSTRATCOM) to better reflect its purpose, which is to defend and secure the space domain. Responsibility for the NSDC officially transferred from AFSPC and the Space Security and Defense Program (SSDP) to Joint Functional Component Command for Space (JFCC Space) under USSTRATCOM in fiscal year (FY) 2016. This organization entered its initial phase of operations in November 2016 following a series of experiments and exercises designed to explore, develop, and refine operational concepts and tactics, techniques and procedures. The Air Force has shouldered the preponderance of the resource responsibility in establishing the NSDC by freeing up facility space at Schriever Air Force Base, using Air Force dollars and manpower to outfit those spaces and providing the leadership that allowed for the execution of the experimentation phase. Furthering our commitment, we are now expanding the existing NSDC floor space, upgrading the underlying infrastructure, outfitting the information systems and providing a large portion of the manpower

to establish an around-the-clock operational capability that will play a key role in deterring any adversary that might consider extending a conflict to space, and to ensure critical space capabilities for our forces should deterrence fail.

b) Command and Control

Our Joint Warfighters must have the capability to command and control our joint space forces, discover and fuse multiple data sources at all classification levels, and to share this decision quality information to diverse operations floors on tactically relevant timelines across the space organization enterprise. Delivering this critical capability is my highest priority and we have several parallel efforts working to meet this priority.

Joint Space Operations Center (JSpOC) Mission System (JMS) Increment 2 is still in development and is planned to be delivered by May of 2019. This system will provide space situational awareness data required for C2 of our space systems. Specifically, JMS will provide near real time, high accuracy position of all objects tracked by space situational awareness (SSA) sensors. JMS will also provide decision-quality information on the detection and situational awareness of space events such as launches, maneuvers, close proximity operations, breakups, separations, reentries, conjunctions and de-orbits. The JSpOC, NSDC and the National Reconnaissance Operations Center will have access to JMS applications and data to ensure seamless space situational awareness across the operations centers.

However, space C2 is larger than SSA and we must accelerate our efforts to put C2 tools in the hands of our warfighters. We are accelerating the space C2 capability development by partnering with the Air Force Research Laboratory (AFRL) to meet a space C2 Joint Emergent Operational Need (JEON) and with the Air Force Rapid Capability Office (AFRCO) for continued development of space C2. These partnerships will allow us to make use of their

proven rapid prototyping to assess new concepts and technologies, leverage the broad commercial industry, reduce risk to acquisition, and field early capability. We will leverage the demonstrated success of AFRL's C2 prototypes and the AFRCO's rapid capability development and fielding experience from the Common Mission Control Center (CMCC). This plan capitalizes on Air Force investments in industry consortia developed open architecture standards to provide a framework and process for agile acquisition that enables the Air Force to increase the pace of producing capability.

The plan is for AFRL to complete the initial space C2 capability in response to the JEON by the end of FY 2018, and in parallel, AFRCO has started work on the framework and a scalable capabilities prototype with the intent of integrating the JEON effort into the AFRCO's prototype.

The results of the AFRCO's work will be proliferated through the space enterprise with the program called Enterprise Space Battle Management C2 (ESBMC2) and transitioned to a Space and Missile Systems Center (SMC) Program of Record in the 2021 timeframe.

Ultimately, the enterprise will leverage industry and commercial capabilities to the maximum extent possible to rapidly develop applications. The AFRCO is renowned for their ability to move fast, which supports the Air Force's commitment to increase the pace with which we field space systems.

2) Improved Space Situational Awareness

Our other top priority is to enhance awareness of the space domain. We are leading an effort to fundamentally change our approach to SSA operations from cataloging to warfighting. In a warfighting domain, domain awareness is essential to successful mission accomplishment. Today's SSA capability is catalogued focused and based on passive tracking. As potential

adversaries continue to field capabilities that challenge our freedom of access in space, we need better SSA tools, methodologies and CONOPS to enhance the Nation's SSA mission. AFSPC, in partnership with the NRO, has taken action codified in a CONOPS to guide our way forward in this endeavor. We have already activated the 18th Space Control Squadron (18 SPCS) under the 21st Space Wing in order to increase our overall operational effectiveness and agility. The 18 SPCS, as the focal point for SSA, will drive great tactical synergy alongside our other SSA units.

AFSPC and NRO have developed an SSA architecture designed to meet the DoD and Intelligence Community needs to enable space protection. As a result of the architecture work, we have developed a collaborative acquisition program to meet both NRO and Air Force Indications and Warning and SSA requirements. This new program is called SILENT BARKER.

Another element of SSA includes space traffic management (STM), a concept that includes technical as well as regulatory elements to provide a framework for the safety, security and stability of space activities in the future. I have met with the Federal Aviation Administration Administrator and we have agreed to develop a pilot program to serve as a pathfinder to inform the STM construct moving forward.

RESILIENT ARCHITECTURE

As I mentioned previously, we have a near term imperative to transition our current on orbit space architecture into a resilient defensible architecture.

1) Protected SATCOM

Global satellite communications (SATCOM) is essential to every warfighter. To that end, protected SATCOM resiliency efforts are currently underway for the Advanced Extremely

High Frequency (AEHF) constellation. We have identified several on-orbit resilience initiatives that provide significant operational benefits. Efforts include new space vehicle (SV) hardware and software modifications for AEHF-6. Additional modifications are also underway for SV and ground software modifications that will be used by all AEHF satellites (SVs 1-6) to provide significant resiliency capability to mitigate current and emerging threats.

In the future protected SATCOM architecture, strategic SATCOM will continue to utilize the extended data rate (XDR) waveform to enable nuclear command and control services in all operational environments. Protected tactical communications will employ the Protected Tactical Waveform (PTW) to support tactical services in benign and contested environments. Future protected SATCOM systems will be designed to provide both mid-latitude and polar coverage (65°S to 90°N). To bridge the gap between the Enhanced Polar System and full deployment of these future capabilities, a separate mid-term polar solution will be fielded to provide coverage using the XDR waveform. These current and future efforts will support resiliency options for AEHF and follow-on systems to meet warfighter SATCOM requirements.

2) Missile Warning

In support of strategic and tactical missile warning, we completed production and delivery of the fourth Space Based Infrared System Geosynchronous Earth Orbit (SBIRS GEO) space vehicle. On January 20, 2017, GEO-4 (Flight-3) launched from Space Launch Complex-41 on Cape Canaveral Air Force Station. SBIRS GEO-4 Flight-3 will supplement the existing constellation of infrared missile warning satellites, and fulfills our commitment to U.S. Strategic Command, Missile Defense Agency, the Intelligence Community and warfighters deployed in harm's way. SBIRS GEO-3 Flight 4 is projected for launch later this fall completing the constellation architecture originally envisioned for the program.

Several Missile Warning resiliency efforts are currently underway for SBIRS GEO SV 5 and beyond. In our work during the SEV Missile Warning Tiger Team study, we identified significant operational benefits and funded operational resiliency initiatives to increase our survivability rates in the face of a direct attack. Additionally, the Air Force is pursuing a partnership with the Missile Defense Agency to develop a combined theater missile warning / defense system to address emerging threats and adversaries' evolving tactics. This combined system could increase our mission performance as well as increase our resiliency through diversified orbital layers with a proliferated constellation.

Additionally, AFSPC operationally accepted the SBIRS Block 10 ground system. Block 10 consolidated operations centers for the Defense Support Program (DSP), SBIRS Highly Elliptical Orbit (HEO) and SBIRS GEO constellations from three separate operating locations into one primary location, providing significant capability performance increases and effectiveness in integrated missile warning and battlespace awareness. AFSPC also declared IOC in September 2016 on the OPIR Battlespace Awareness Center located at Buckley Air Force Base, Colorado. This new capability delivered optimized ground processing to exploit the full potential from our SBIRS satellites to increase detection and reporting on critical Battlespace Awareness event within minutes.

3) Assured Access to Space

Assured access to space is critical to the national security of the United States. The Air Force has launched 70 national security mission over the past 17 years without a single mission failure. All space operations hinge on assured access to the space domain and successful launches are the result of close collaboration between AFSPC and a host of partners to maintain on-demand access to the high ground.

Since February 2016 there have been ten successful national security EELV missions: Global Positioning System (GPS) IIF-12; National Reconnaissance Office Launch (NROL)-45; NROL-37; Mobile User Objective System (MUOS)-5; NROL-61; AFSPC-6; Wideband Global SATCOM (WGS)-8; SBIRS GEO-4 (Flight 3); NROL-79; and WGS-9.

The Air Force goal remains maintaining two or more domestic commercial launch service providers that are capable of lifting the entire national security space manifest in support of our enduring commitment of assured access to space. Toward that end we certified SpaceX's Falcon 9 Upgrade and initiated the new entrant certification process for their heavy launch vehicle. We are excited about adding another launch vehicle to our complement of available launch providers and look forward to more opportunities in this area going forward. We have also initiated the new entrant certification process for United Launch Alliance's Vulcan launch vehicle and Orbital ATK's Next Generation Launch Vehicle.

We awarded the first competitive EELV mission in over a decade last year to SpaceX and a second GPS mission was awarded in March 2017. These missions will launch in 2018 and 2019, and show how the revitalization of competition is good for our national defense by providing assured access to space while improving affordability. This coming year, twelve national security space launches across a variety of mission sets will be competed. Going forward, the Air Force is laser-focused on maintaining mission success and implementing a strategy that supports sustainable competition that we expect will improve affordability.

The Air Force is also committed to transitioning off the Russian RD-180 engine while maintaining assured access to space, and will achieve this by partnering with industry through shared investment to also meet the more stressing national security launch needs. Additionally, the Air Force is investing in rocket propulsion system prototypes in compliance with the Fiscal

Years 2015, 2016, and 2017 National Defense Authorization Acts. The Air Force will bridge these Other Transaction Authority agreements into launch services.

An important element of assured access to space is the health and reliability of our range infrastructure. One of the exciting initiatives we have been working towards is the integration of the Autonomous Flight Safety System (AFSS) into our launch vehicles. This system greatly reduces dependencies on range infrastructure, human capital and the associated control centers during flight. SpaceX had their first launch using AFSS on February 18, 2017 and we are pushing to have all launch providers and weapons testers adopt AFSS as the standard.

4) Global Positioning System

The Global Positioning System (GPS) constellation remains healthy, stable, and robust with 31 operational satellites on-orbit providing precise position, navigation, and timing information to civil and military users worldwide.

In May 2008, the GPS III contract was awarded to Lockheed Martin for the development and production of two initial SVs, with eight more production vehicles now on contract and options for the production of up to two additional SVs. GPS III SV 01 has been completed and is in storage, with an initial launch capability date set to occur in spring 2018. It will be the first GPS satellite on-orbit with Military Code (M-Code) signals in support of warfighter operations. GPS III will introduce new capabilities to meet higher demands of both military and civilian users. Additionally, it expands international cooperation in the Global Navigation Satellite System (GNSS) arena by fielding the new L1C civil signal interoperable with European Galileo System, Japanese Quazi-Zenith Satellite System, and other GNSS systems. For SV 11 and beyond, the GPS III Follow-On studies are now underway and the plan is to release a request for proposal later this summer.

The GPS Next-Generation Operational Control System (OCX) is the ground component of the next generation GPS system. Air Force remains committed to turning the OCX program around from the challenges it has faced. We have implemented a number of corrective actions in partnership with Raytheon to stabilize program performance and we will continue regular deep dive reviews with the Under Secretary of Defense for Acquisition Technology and Logistics.

A Defense Acquisition Board for an OCX Milestone B decision will be held no later than June 30, 2017. In the meantime, progress continues to deliver Block 0, which will provide initial launch and checkout capability for GPS III satellites, implementing industry best practice development operations on Block 1 and finishing the Iteration 1.6 software.

5) Weather Satellite Follow-on

The Defense Meteorological Satellite Program (DMSP) continues to be the workhorse of DoD's Space Based Environmental fleet, providing critical cloud characterization and theater weather imagery data to the DoD and the world meteorological community.

In March, the Commander of USSTRATCOM and Secretary of the Air Force initiated a program through our Operationally Responsive Space Office to address immediate warfighter requirements for the top two priority gaps, while mitigating operational risk in the event of the premature loss of DMSP satellites. To help mitigate this need in the near-term, the DoD is assessing the transfer of a NASA GOES weather satellite to the Air Force and requisite infrastructure to help with weather monitoring coverage. Additionally, AFSPC has conducted significant analysis of potential materiel solutions, as part of recently-awarded weather Broad Agency Announcement efforts and is poised to proceed with materiel development. To that end, the Air Force has been engaged with the Joint Staff and is awaiting direction on the development of a materiel solution that will meet requirements in this important mission area.

NATIONAL SECURITY SPACE MANAGEMENT INITIATIVES

We greatly appreciate your focus on National Security Space Organization and Management. The Air Force has led America's national security operations in space for more than 60 years. Due to the Air Force's global perspective and under its leadership, we have seen space, the foundation of our strategic decision making in the Cold War, evolve to become central to every aspect of Joint Warfare. As previously stated, we recognize potential adversaries are working to undermine our space capability advantages. To maintain space superiority in an increasingly contested and congested environment, we must strengthen the leadership, management, acquisition, and organization of DoD space capabilities as a joint warfighting domain normalized with the way we fight in other domains. To address this problem statement the Department is working four lines of effort, 1) Strategy and Policy, 2) Strengthen CONOPs and Requirements Development, 3) Speed Acquisition to Stay Ahead of Adversaries and 4) Strengthen Joint Warfighting Organizations.

We are aggressively moving forward in the near term in each of these lines of effort to meet our growing challenges.

The Air Force Chief of Staff is the Joint Chief responsible for presenting space capabilities for the Joint Force and to maintain firm control of operational requirements. The Air Force is establishing a 3-star Deputy Chief of Staff for Space Operations (A11) to actively posture our service's senior leaders with the right expertise to treat space as a warfighting domain. The A11 streamlines operations and requirements decision making through the CSAF to the Joint Staff to meet the demands of a warfighting domain.

In addition, as a Service component to USSTRATCOM, AFSPC provides the Combatant Commander with the preponderance of its space power. We continue to hone our Joint

Warfighting focus, are committed to performing our mission in lock step with our national security space partners, and we stand ready to respond and provide new and upgraded capabilities when and where the Nation needs. We are fully supportive of the USSTRATCOM Commander's recent realignment activities which simplify and strengthen USSTRATCOM's command structure.

In this realignment, I will serve as USSTRATCOM's Joint Forces Space Component Commander, thus elevating the operational commander responsible for day-to-day space operations to a four-star position. This aligns the service component and joint forces component under one commander and elevates the component to a 4-star commander. This best postures us to better integrate space capabilities into joint theater operations leading to normalized command relationships with theater commanders. Finally, this new role also effectively empowers the AFSPC Commander to better inform joint requirements. This should drive toward more integrated requirements consistent with Joint Requirements Oversight Council intent.

The Air Force is also taking steps to streamline the acquisition process, enhance responsiveness to threats in space, strengthen requirements and bolster the Space Warfighting Construct.

Consistent with the 2016 National Defense Authorization Act, the Air Force has requested Milestone Decision Authority for space programs be returned to the Air Force. This will reduce review layers and allow the Service to be more responsive and to move more rapidly.

We are strengthening the Joint Requirements Process for space to provide a space focus on the Joint Staff. The previously mentioned A11 will provide significant assistance towards this effort. Additionally, we are increasing our analytical and prototyping efforts to support architecture development. This has already paid significant dividends as we have changed our

SILENT BARKER acquisition strategy to partner with the NRO to provide us greater capability, faster and at the same cost. Finally, we are leveraging the rapid acquisition authorities of AFRCO and the Operationally Responsive Space office more broadly.

CONCLUSION

The Space Domain is a Joint Warfighting Domain just like the air, land, and sea and the Airmen of Air Force Space Command are Joint Warfighters. Today, our space enterprise remains the envy of the world but potential adversaries are making gains and there is hard joint warfighting work to be done to stay ahead of our growing challenges. It is a national imperative that we posture ourselves to deter any conflict that would extend to space, and if deterrence were to fail that we fight and win. Our national security and the security of our Allies depends on it. I thank the Committee for their leadership and support and look forward to our continued partnership to provide resilient, capable, and affordable space capabilities for the Joint Force and the Nation.