NOT FOR PUBLICATION UNTIL RELEASED BY THE
SUBCOMMITTEE ON STRATEGIC FORCES
HOUSE ARMED SERVICES COMMITTEE
UNITED STATES HOUSE OF REPRESENTATIVES

STATEMENT OF

MR. DYKE WEATHERINGTON
PRINCIPAL DIRECTOR
FOR SPACE, STRATEGIC, AND INTELLIGENCE SYSTEMS

BEFORE THE HOUSE COMMITTEE
ON ARMED SERVICES
SUBCOMMITTEE ON STRATEGIC FORCES

MARCH 15, 2016

NOT FOR PUBLICATION UNTIL RELEASED BY THE
SUBCOMMITTEE ON STRATEGIC FORCES
HOUSE ARMED SERVICES COMMITTEE
UNITED STATES HOUSE OF REPRESENTATIVES

Introduction

Chairman Rogers, Ranking Member Cooper, and Members of the Subcommittee, I am pleased to join General Hyten, Lt. General Buck, Ms. Sapp, Mr. Cardillo and Mr. Loverro to testify on Department of Defense space programs.

In my testimony I want to highlight recent activity of the Department that will continue to allow us to operate in an increasingly congested, competitive and contested space domain.

During 2015 the DoD launched eight national security space payloads– including tactical and strategic communications, and navigation, position and timing satellites – capabilities benefiting both military and civilian users. Our engagement with allies to build America's space partnerships and our continuing focus on Better Buying Power, sound systems engineering and the hard work of our acquisition professionals are resulting in noteworthy savings to the US taxpayer. Examples include over $1 billion savings in the Space Based Infrared System (SBIRS) program and, in space launch, our continuing benefit from the over $4 billion savings from the Evolved Expendable Launch Vehicle (EELV) program Block Buy. This year, we also qualified a new launch provider to increase competition, reduce costs, and preserve American assure access to space in the future. Emergence of this new provider is allowing the Department to compete the launch service contract for the Global Positioning System (GPS) III-2 satellite, the first competition held for launch of a National Security Space (NSS) mission since 2006. These acquisition successes are encouraging but we face increasing threats that require us to continue evolving our space architectures and acquisition strategies.

The space domain has changed significantly in fifty years. It has evolved from a sparsely populated, essentially uncontested destination to a crowed domain where potential adversaries seek to counter our capabilities.. The environment has seen many types of activity proliferate: the number of spacefaring nations has increased dramatically since Sputnik; users of space systems and products have multiplied; space capabilities and activities have become enmeshed in the security and economic affairs of many nations. For the United States, space has become pervasive in all aspects of our

thinking about military operations and warfare. Our asymmetric advantage in space also creates asymmetric vulnerabilities. Our potential adversaries recognize our dependence on space and continue to develop and field a range of capabilities and means to deny our ability to use space.

The Threat

Even as our dependence on space capabilities continues to increase, and although we maintain a substantial asymmetric advantage due to those capabilities, the rapid evolution and expansion of threats to our space capabilities in every orbit regime has highlighted the converse: an asymmetric disadvantage due to the inherent susceptibilities and increasing vulnerabilities of these systems.

We risk encountering a potential strategic imbalance in which adversaries are increasingly able to use space to support military operations, and also threaten our ability to sustain use of our space capabilities. Meanwhile our abilities have lagged to protect our own use of space and operate through the effects of adversary threats. Any adversary would almost certainly trade its own ability to utilize space if in return it could deny U.S. use of space to support military and intelligence operations.

I would like to amplify details about a few specific programs that offer insight into how we are balancing our acquisition approaches with the need to counter emerging threats as we look to the future.

Space Based Infrared System (SBIRS)

In July 2015, the third Geosynchronous Earth Orbit (GEO) satellite entered storage. The fourth GEO satellite is in integration and test and remains on track for a July 2016 launch. SBIRS GEO satellites 5 and 6 are progressing according to plan and are within cost and schedule. SBIRS continues to utilize Space Modernization Initiative (SMI) investments to improve affordability, reduce risk and enhance the current program of record to remain effective in a strategic environment. SBIRS SMI continues to invest in efforts that explore the trade space for future acquisition decisions through

studies and investments that explore future technology alternatives and architectures. As part of their resiliency efforts, the SBIRS program is transitioning to use of commercial buses and we are exploring alternate orbits. In February, Air Force Space Command established a team to evaluate how SBIRS will transition to the future space enterprise and improve its resiliency posture. This team will conclude its evaluation with a final deliverable in late summer which is expected to inform future acquisition investment decisions.

SBIRS ground development, GEO starer data availability and progress toward full integration into ground operations remain on-track. Current real-time missile warning is accomplished using only scanner sensor data from SBIRS GEO satellites and Highly Elliptical Orbit (HEO) payloads. The GEO starer sensor is manually taskable today and starer sensor wideband data from SBIRS GEO satellites has been available to a limited set of users since 2013 in support of the Battlespace Awareness mission area. In November 2016, Block 10.3 Missile Warning (MW) messages will include data from both scanner and starer sensors. Block 10.3 will provide performance equal to, and in many cases significantly better than, the current operational system (Increment 1) and provide starer manual cueing for track burn out. GEO starer data will be included in operational MW messages after Program Executive Officer certification of the ground system in 2016. Block 20 ground software (delivery in 2018) will increase performance beyond the current Increment 1 system and will include automated tipping and cueing. Operational Acceptance of the Initial Capability (Increment 2) Ground Architecture is projected for November 2016.

Evolved Expendable Launch Vehicle (EELV)

Our assured access to space provides national security decision-makers with unfettered global access and unprecedented advantages in national decision-making, military operations, and homeland security. Maintaining the benefits afforded to the United States by space is central to our national security, and enabling our space operations requires we have access to efficient and reliable space launch capabilities,

that are robust, responsive and resilient. The DoD's focus on sound and disciplined systems engineering practices, what we call our Mission Assurance Process, emerged from very hard lessons learned from a string of costly failures in the late 1990's.

Over the past 17 years, this National Security Space (NSS) Mission Assurance Process has proven to be exceptionally effective with an incredible record of 92 successful operational EELV missions since 2002 and 118 National Security missions since 1999. We champion mission assurance because the cost of a single launch failure, especially one with a multibillion dollar satellite on board, can very quickly overwhelm any savings achieved by overly aggressive cost-cutting acquisition strategies. This is why we consider certification of new entrants, and mission assurance for all launch service providers, to be essential elements of our Assured Access to Space. As we employ the certification process with new entrants to the EELV program, we continue this focus in cooperation with each of the prospective EELV new entrants. Our rigorous multi-step certification process ensures all new launch service providers meet the existing high NSS standards for design and operational reliability. We will continue to learn and evolve this process as new entrants are certified for the EELV program.

The last year has seen some major strides towards the Department's goal of ensuring the Nation has two or more commercially viable launch service providers that utilize domestically designed and manufactured propulsion systems, which are capable of meeting all the Department's space lift requirements. To this end, the Department has awarded almost $500M in development agreements to industry. These agreements focus on technology development and maturation in areas that are critical to the advancement of new propulsion capabilities, including both hydrocarbon based liquid rocket engines and solid rocket motors. Most recently four other transaction agreements (OTA) were awarded to both current and prospective launch service providers and rocket engine manufactures. The prototype work to be accomplished under these OTAs will directly focus on engine/motor development activities. This will allow a seamless transition into the new launch service capability development activities that the Department plans to fund in FY 17 and beyond.

The Air Force's long-term strategy continues to be to introduce competition into the EELV program as soon as possible by providing the opportunity for multiple launch providers to successfully complete the New Entrant Certification process through the joint development of New Entrant Certification Plans. The Air Force works cooperatively with all potential new providers to confirm their understanding of the certification process and its requirements while ensuring they meet the stringent mission assurance standards necessary to launch our Nation's national security payloads.

Use of Russian Engines (RD-180)

Section 1608 of the 2015 National Defense Authorization Act (NDAA) restricts the use of the RD-180 rocket engine. Just as the Department complied with Congressional direction to incentivize industry to adopt the RD-180 in the 1990s, we are now taking steps to eliminate the use of Russian engines while maintaining assured access to space. As was testified to last year, the Department continues to believe that authorization for use of 18 RD-180 engines will be sufficient to maintain a competitive environment during the transition period, FY 18-22, to new and improved launch service capabilities.

I want to emphasize the Department is committed to transitioning off of the RD-180 as quickly as possible while minimizing impacts to national security. As we continue to work with Congress to eliminate our utilization of the RD-180 rocket engine, the Department firmly believes the best path to end the use of the RD-180 engine for launch of NSS satellites is through the use of public private partnerships, with industry, that result in new and improved launch service capabilities. As the Department begins, in FY 17, with authorization and appropriation by Congress, to work with industry to develop a new and improved domestically-powered launch capability, the Department would like to make that transition as efficient and affordable as possible. The ultimate goal remains for the Department to have two or more commercially-viable launch service providers capable of launching the entire NSS manifest using domestically produced propulsion systems.

In order to transition from the RD-180 and ensure the Department has at least two viable domestic launch service providers for assured access to space as quickly as possible, we need to transition to launch capability development in FY 17. The Department would greatly appreciate the committee's support for our planned launch service acquisition activities.

Global Positioning System (GPS)

GPS is the premier provider of worldwide Position, Navigation and Timing (PNT) information for both civilian and military users. The Air Force launched three GPS IIF satellites in 2015 and completed the IIF launch campaign successfully with the launch of the 12th and final IIF vehicle in February 2016. This provides 19 capable military code (M-Code) vehicles on orbit. During 2014, GPS Block II Electronic Protection reached Initial Operating Capability. This milestone provides the following Selective Availability Anti-Spoofing Module (SAASM) operations: Special Navigation, Over The Air Distribution and Over The Air Rekey, increasing resiliency and our ability to operate in increasingly hostile electronic environments.

The initial GPS space segment design was inherently resilient calling for 24 satellites in 6 separate planes. This provides 5-10 satellites in view at any given point on the earth when only four are required. We have enhanced that design flying 31 satellites now and we have in excess of 7 spares on orbit. The next generation satellite technology (GPS III) currently under development will provide approximately three times more military signal power providing a user with increased resilience in a jammed environment.

While GPS is one of our most resilient systems, the DoD is exploring capabilities that complement those and enhance future PNT resilience. Among these are chip-scale atomic clocks, tightly coupled inertial and GPS navigation subsystems, jam-resistant GPS receive antennas, and terrestrial PNT reference systems that are separate from GPS.

Weather Satellite Follow-On (WSF)

In 2013, the Department completed a space based environmental monitoring analysis of alternatives. The analysis concluded that environmental monitoring sensors operated by civilian agencies and international partners could provide the data required to satisfy eight of eleven mission-critical weather capabilities. As directed by the Joint Requirements Oversight Council, the Air Force is developing materiel solutions for the remaining three capabilities—those that cannot be satisfied by civilian agencies or allies: ocean surface vector winds, tropical cyclone intensity, and energetic charged particles. The Weather System Follow-on, or WSF, is the acquisition program that will provide these materiel solutions.

The WSF Objective System is planned as a single satellite constellation to measure ocean surface vector winds and tropical cyclone intensity. The WSF program will also develop energetic charged particle sensors that will be hosted on multiple DoD satellites. The Air Force began investing candidate WSF technologies in 2012 and plans to culminate their research effort with the launch of a demonstration payload, the Compact Ocean Wind Vector Radiometer, or COWVR, as an Operationally Responsive Space Office mission in 2017. COWVR was developed by NASA's Jet Propulsion Laboratory for the Air Force and its projected Size, Weight, and Power (SWAP) is a reduction of up to 50% and requires a smaller satellite bus and launch vehicle. If successful, this size reduction could allow the potential for a distributed network of small satellites, leading to increased resiliency. We expect the Air Force to bring forward an acquisition decision for the WSF Objective System this year.

Conclusion

The rise of foreign capability is jeopardizing our technological superiority. The Defense Department has to balance among many competing requirements and the President's Budget will, as it always has, reflect the best balance of force structure, readiness, and modernization available. I look forward to this committee's continued

support as the DoD uses the available resources as efficiently and effectively as possible to deliver capability to our warfighters.