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THE HOUSE ARMED SERVICES COMMITTEE
STRATEGIC FORCES SUBCOMMITTEE

STATEMENT OF

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Mr. Chairman and members of the sub-committee, thank you for the opportunity to testify on Department of Defense space policy. I am honored to join my distinguished colleagues from the Department of the Air Force, Air Force Space Command and the National Reconnaissance Office.

Our space assets grant us myriad national security advantages. Among other benefits, they allow us to strike with precision, navigate with accuracy, communicate with certainty, and see the battlefield with clarity. Space capabilities are key to prevailing in today's conflicts.

From the warfighter's perspective, space capabilities have evolved from unique "one-of-a-kind" systems, to "nice to have" in the fight, to their current status as "must-have" capacities. And this evolution has occurred in a relatively short timeframe. Our battlefields have changed dramatically as a result: commanders on the ground, in remote theaters such as Afghanistan, can receive actionable intelligence in minutes, rather than hours due to investments in space-based intelligence, surveillance and reconnaissance. Similarly, our approach to strategic planning has changed by virtue of our reliable access to space and the capabilities it affords. This access is a potential source of strategic stability, improving decision-makers' timely insight into developments around the world that have an impact on U.S. interests.

The Administration delivered to Congress a Space Posture Review (*interim report*) on March 15th, 2010. This report highlighted the space environment in which the U.S. finds itself, and the three broad characteristics which best describe that environment today: congested, competitive, and contested.

Space is congested. There are over 21,000 objects in the current space catalog and over 1100 active systems on orbit. Our own space ventures have created some space debris, and as more countries enter the space domain with on-orbit assets, increasing space debris could jeopardize the long-term sustainability of key orbital "belts." The 2007 Chinese ASAT test alone created over 2,750 pieces of "trackable" space debris. In February 2009, Iridium 33 (a commercial satellite) and COSMOS 2251 (a non-functioning Russian communications satellite) collided in low Earth orbit. This collision created another 500 pieces of debris in low Earth orbit. The U.S. Space Shuttle and the International Space Station have maneuvered to avoid this dangerous

debris. At speeds greater than 17,000 miles per hour, a seemingly harmless paint chip from a rocket body becomes a potentially devastating obstacle. This is particularly unnerving given the risk to manned space flight presented by a potential debris collision with the U.S. Space Shuttle and the International Space Station, or with another country's manned space missions.

Unmanned national security systems, which cannot be refueled, have had to expend fuel on unplanned maneuvers to avoid collisions with space debris. Another impact of the debris problem on U.S. space operations is that the growing inventory requires an increasing commitment of resources to catalogue, track report and "manage" – indeed, one might say that "debris management" has now become a critical element of day-to-day U.S. space operations.

Space is also increasingly *competitive*. Today, more than 60 nations or commercial entities have satellites in space. European nations and consortia have emerged as leading global players in the development of space technologies and applications that support civil, commercial, intelligence, and military use—indeed, many of these efforts are undertaken with dual-use space capabilities specifically in mind. Among them, Russia has maintained the largest infrastructure to support space operations. Many foreign countries which have a different approach to controls of dual-use technologies than the United States are increasing their presence in the international market with satellites, sub-components, and launch activities. As a space technology leader, the United States must balance carefully national security oversight of its space-related exports with the long-term health and international competitiveness of our domestic space industrial base

Finally, space is *contested*. China is far from the only actor seeking to develop the capability to deny or interfere with the space capabilities of others. In 2003, Iran jammed broadcasts of the Telstar-12 commercial satellite, and Iraq jammed GPS signals during Operation IRAQI FREEDOM. Libya reportedly jammed Telstar-12 in 2005. As recently as March 20, 2010, Iran was jamming commercial satellites to block international television news broadcasts to their public, and other countries have conducted similar efforts. U.S. and allied space assets today are threatened by both reversible and non-reversible capabilities. Some of these are physically destructive "kinetic" options, while others involve use of the radio frequency spectrum to jam communications links. Taken together, these capabilities represent tools that competitors and adversaries can use readily to deny the U.S. and allied countries reliable access to space during a crisis or conflict.

Leveraging the opportunities of this strategic environment, while addressing its challenges, requires significant investment, oversight and management. We divide space into a variety of mission areas, all of which are interdependent:

- Space Command and Control (Space C2)
- Space Situational Awareness (SSA)
- Space Control
- Satellite Operations (SATOPS)
- Spacelift Operations
- Positioning, Navigation and Timing (PNT)
- Satellite Communications (SATCOM)
- Environmental Monitoring
- Integrated Tactical Warning/Attack Assessment (ITW/AA)
- Space-based Intelligence Surveillance and Reconnaissance (ISR)

In an increasingly congested, competitive, and contested space domain, the Department of Defense must continue to provide the required services across the aforementioned mission areas despite the level of conflict and plan and program for capabilities that take into account the projected space environment. Adding to this dynamic context, the Department must continue to reap asymmetric benefits from the space domain in a cost-constrained fiscal environment. As part of the ongoing Space Posture Review, we will examine the implications of a new strategic approach on these mission areas.

Today, however, I would like to focus my remarks on Space Situational Awareness (SSA), international engagement, and the importance of the commercial sector for space.

The President directed the Secretary of Defense provide Space Situational Awareness (SSA) for the U.S. government and, as appropriate, to commercial and foreign entities. The 2010 National Defense Authorization Act provided authority for the Secretary to provide SSA services to commercial and foreign entities, and to accept such information from those entities. In December 2009, the Secretary directed United States Strategic Command to take the lead for this important expansion of the SSA mission, indicating the growing importance of the SSA mission, for the U.S. and its space-faring partners, and to better align missions under USSTRATCOM.

The Department continues to invest in maintaining and modernizing the U.S. SSA architecture to prepare for continued increases in spaceflight by international players, and to ensure that the benefits of space operations for the U.S. continue into the future. SSA is not solely a U.S. interest. Far from it. We are committed to maintaining a sustainable space environment for space operations for all nations, even as we both protect U.S. and allied interests and deter aggression in space. While maintaining a viable domain for space operations and protecting U.S. interests in space are of the utmost importance, so too is diminishing U.S. vulnerabilities in space. Continued U.S. leadership is required to enable safe spaceflight operations. Such leadership, in turn, is essential to fostering responsible behavior and use of the space domain.

The February 2009 collision highlights the need to improve shared space situational awareness. As part of an effort to prevent future collisions, the United States has improved its capacity to track objects in space as well as its capability to predict potential close satellite approaches that might pose a hazard to active spacecraft. I am pleased to report that as of December 2009, the Joint Space Operations Center at Vandenberg Air Force Base, California, routinely screens all active satellites against every object in the satellite catalogue to identify close approaches. The United States also provides notification to other government and commercial satellite operators when U.S. space analysts assess that an operator's satellite is predicted to pass within a close distance of another spacecraft or space debris.

In addition to improved SSA, DoD is also addressing what would happen to our operations in a degraded space environment. Numerous war games, such as Schriever-series, as well as subsequent analyses, have shown us that testing ourselves in a framework of diminished access to space may be an important part of our strategy development. Each of the Services conducted a "day without space" study to determine the impacts of losing critical space capabilities; the results were stark. The United States is so heavily reliant on space capabilities, for both wartime prosecution and day-to-day operations, that to lose those capabilities would hamper severely our ability to pursue national security interests. This is exactly why we must scope our approach to address the ability to succeed in a degraded space environment. We must be cautious in other ways as well.

Our inventory of space assets must collectively include responsive and resilient capabilities. The United States must protect existing systems through tactics that limit their vulnerability but also

include redundancies that make our systems more resilient. We must also be prepared to rapidly augment our capabilities or to reconstitute them in the event of catastrophic loss or attacks.

Replacement satellites, unmanned platforms, and other cross-domain (air, land, sea, and cyber) solutions, can temporarily mitigate the loss of some space assets. In this context, our Operational Responsive Space (ORS) program can help us counter some threats to our space capabilities – and supplement yet others. The first ORS satellite will support operations in theaters of active conflict. DoD is on track to meet our goal of going from program start to launch soon in 24 months.

Growing international and commercial interest and expertise in space presents opportunities for the United States. The long history of international cooperation in civil space programs and U.S. government partnerships with commercial space service providers can serve as a foundation for collaborative global action to shape the future space environment. In coordination with the Department of State and other U.S. departments and agencies, DoD has the opportunity to build on existing international and commercial relationships, as well as develop new partnerships, to enable positive changes to the space posture of the United States. Greater global investment in space can also help strengthen the U.S. space industrial base by providing more market opportunities to U.S. suppliers and service providers.

Current international cooperation includes a variety of military-to-military agreements, as well as specific operational relationships. Bilateral defense space cooperation forums with key allies and partners can explore opportunities for mutually-beneficial cooperative activities and facilitate the coordination and implementation of defense space policies, architectures, activities and programs. These forums can lead to specific bilateral agreements with other nations or international consortia for cooperative activities such as data exchange and system sharing.

Additionally, the United States is expanding its current data sharing and space situational awareness services to the broader international space-faring community in order to support spaceflight safety worldwide. DoD has a number of partnership agreements to conduct space operations and we are rapidly building on and expanding those relationships. These agreements

include shared operations and maintenance of surveillance sites and satellite operations. The Department also conducts space operations in a variety of world-wide locations with the help of our allies and partners. DoD also exchanges space operations personnel with a number of our allies and partners.

These activities are opportunities to deepen international relationships with existing space allies and make inroads with the growing number of nations fielding, or seeking to field, their own space capabilities. As the number of nations with space capabilities increases, so too will the opportunities for increased sharing. For nations with existing capabilities, there exist opportunities for mutually-beneficial partnerships to exchange current and planned data and capabilities. For nations without space capabilities there exist opportunities for the United States to assist those nations in developing capabilities that are compatible with U.S. programs and capabilities to enable future cooperation. Greater international interest and expertise in space ultimately broadens and deepens the pool of potential partners and enables a more collaborative approach to future activities in space. Any cooperative agreements, however, should protect sensitive U.S. national security capabilities and technologies, and be consistent with broad foreign policy and national security interests.

Current national security use of commercial space services is focused in two areas – satellite communications and remote sensing. Forces deployed to theaters without reliable terrestrial communications infrastructure depend on satellites to meet much of their communications needs.

Though there are government capabilities to support users, demand in some theaters far outstrips supply. Commercial wideband satellite communications services help meet that demand, in most theaters carrying far more communications than government systems. Remote sensing firms provide a complementary capability to national imagery systems. Though commercial systems do not provide the resolution, volume, or timeliness of national systems, they can meet selective national security requirements. The United States has the opportunity to strengthen partnerships with existing commercial service providers and encourage the development of new commercial space capabilities. Because some existing commercial capabilities were initially procured to meet unanticipated needs, some commercial firms have not been approached strategically. For

example, in some mission areas, the government has negotiated long-term rates for space services, but in others, services are purchased at spot market prices. Addressing the shortcomings of these relationships with commercial service providers can enhance U.S. capabilities, strengthen partnerships with private industry and stabilize cost profiles over the long term. Encouraging additional commercial endeavors in other mission areas could expand the range of available commercial capabilities available to the DoD, IC and other national space activities.

Conclusion

In the end, there is no simple solution to a space environment that is congested, competitive, and contested. Instead, we require a strategy that encompasses a broad range of responses. As the space domain rapidly evolves, we face both risks that threaten to erode our current substantial advantage in space and opportunities to strengthen our security. The challenges related to access to, and use of, space are among the most pressing and difficult the Department of Defense is addressing today. With the continuing support of the Congress, the Department is committed to continuing to strengthen the strategic posture of the United States with improved capabilities, and appropriate interagency, international, and private sector partnerships. In the near future the Defense Department and the Office of the Director of National Intelligence (ODNI), in full consultation with other departments and agencies of the Executive Branch, will develop a National Security Space Strategy. This effort will help us better align the ends, ways, and means to succeed in a congested, competitive, and contested space environment.

Thank you again for the opportunity to testify. I look forward to your questions.