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Introduction

Chairman Cooper, Ranking Member Lamborn, members of the Subcommittee, thank you for the opportunity to testify today on national security space programs.

As the Assistant Secretary of Defense for Space Policy, I am responsible for the overall supervision of the policy of the Department of Defense (DoD) for space warfighting, as well as interagency coordination and international engagement on space policy and strategy. In addition to space, my policy portfolio includes those other strategic capabilities essential to integrated deterrence: cyber, nuclear weapons, missile defense, and countering weapons of mass destruction. I am grateful for the opportunity to appear before you as the first person confirmed to this new position, and I welcome the opportunity to address space policy, space security, and the role of space in DoD's approach to integrated deterrence. I am committed to continuing the close partnership between DoD and Congress on advancing our national security space interests.

Importance of Space

Space plays a critical role in American security, prosperity, and way of life.

Space contributes to our national security by enabling and supporting the entire Joint Force: our service members on land, at sea, and in the air rely on space every single day to defend the nation. Space capabilities provide indications and warning of emerging threats and attacks. Space systems deliver the positioning, navigation, and timing (PNT) signals that support rapid and precise global power projection. Space systems generate intelligence on operationally relevant timelines and allow national decision makers to anticipate risks and de-escalate crises, and space also enables those same decision makers to command and control forces in multiple theaters around the globe.

Russia's unlawful invasion of Ukraine provides a timely example of the role of space in shaping the information environment. U.S. Government, allied, and commercial satellites tracked Russian military movements in the lead-up to the invasion, aiding senior decision makers and helping facilitate our early coordination with allies and partners. Satellites have continued to track the activities of Russian forces during the conflict and are contributing to the international effort to hold Russia accountable for its unlawful invasion while supporting the Ukrainian people in their fight against brutal Russian aggression.

DoD's space capabilities provide value well beyond national security. The Department's Global Positioning System (GPS) constellation provides precise PNT signals that are used in an untold number of ways in both the civil and private sector. Examples include: routing cell phone data; synchronizing weather radars; timestamping financial transactions; geographical information systems (GIS); and driving from point A to point B in your car without getting lost. U.S. military satellites help support space-based environmental monitoring, including weather forecasting and climate change modeling. Our Overhead Persistent Infrared (OPIR) constellations are designed to provide missile warning and tracking capabilities, but also support crews on the ground fighting wildfires and help scientists track the impacts of climate change. DoD's space surveillance network supports the Department's space domain awareness mission, but also provides foundational data that both enables the safety of space operations and supports the global space situational awareness needs of all space operators.

The explosive growth of commercial space, which has been successful due in large part to the remarkable innovation of U.S. businesses, is fueling an increasingly important part of the U.S. economy. That same growth presents DoD with new opportunities to leverage commercial technological advancements to support national security needs. Moreover, space is once again capturing the imagination of a new generation of Americans. This can inspire more students to pursue careers in STEM (science, technology, engineering, and mathematics) disciplines, paying dividends to our national economy and national security in the future.

A striking way to highlight the importance of space to U.S. national security can be found by reviewing the four Defense priorities of the 2022 National Defense Strategy. All four priorities require and rely on the ability of the United States to operate in space, both in peacetime and during conflict:

1. Defending the homeland, paced to the growing multi-domain threat posed by the PRC.
2. Deterring strategic attacks against the United States, our Allies, and our partners.
3. Deterring aggression – while being prepared to prevail in conflict when necessary – prioritizing the PRC challenge in the Indo-Pacific, then the Russia challenge in Europe.
4. Building a resilient Joint Force and defense ecosystem.

The Threat Environment

In recent years, as the People's Republic of China (PRC) and Russia have integrated space into their respective national and warfighting strategies, the threats facing the United States in space and from space have changed fundamentally and continue to grow in both quantity and capability.

As Secretary Austin has made clear, China is the Department's pacing challenge. This holds true in space as it does in other domains. The United States developed our space architecture in an era when space was perceived more or less a sanctuary. In contrast, over the past decade China has dramatically increased quantity and quality of space and counterspace systems in order to

develop and field a wartime space architecture. China is working to match or exceed U.S. capabilities in space to gain military, economic, and prestige benefits: it is integrating space services and satellite communications into its weapons and command-and-control systems; its counterspace capabilities pose a growing threat to U.S. and Allied space systems and would be integral to potential military campaigns by the People's Liberation Army (PLA). China's wartime space architecture requires the United States to consider new approaches to ensuring our own use of space, including developing more proliferated – and therefore more resilient – constellations of our own.

Russia also remains a key space competitor, maintaining a large network of reconnaissance, communications, and navigation satellites. Russia will continue to integrate space services into weapons and command-and-control systems, allowing quicker identification, tracking, and targeting of U.S. forces during a conflict. In recent years, Russia has focused on developing its civil and commercial space capabilities, and it is able to employ its civil and commercial remote sensing satellites to supplement its military dedicated capabilities. Russia continues to train its military space elements and is developing, testing, and fielding counterspace weapons to target U.S. and allied satellites.

PRC and Russian military doctrines indicate that both countries view space as critical to modern warfare. They both consider the use of counterspace weapons as a means of reducing U.S. military effectiveness and a means for winning future wars. They both seek to leverage the space domain to gain informational, operational, and logistical advantages. And they both increasingly seek ways to expand their capabilities in space and to exploit the perceived U.S. over-reliance on vulnerable space-based systems.

As China and Russia improve their respective space and counterspace capabilities, both nations are integrating space scenarios into their military exercises. They continue to develop the means to deny others the use of space through cyberattacks against ground sites supporting space operations; both have developed sensor networks for tracking and targeting others' satellites; and both have extensive inventories of jamming capabilities to disrupt satellite communications. Russia and China have developed directed energy weapons to blind intelligence, surveillance, and reconnaissance (ISR) satellites, and continue the development, testing, and proliferation of direct-ascent and on-orbit antisatellite weapons to hold at risk U.S. and allied space assets.

Space, Integrated Deterrence, and the President's Budget Request

Deterrence requires actions to reduce a competitor's perception of the benefits of aggression relative to restraint. It also derives from credible capability and will to impose costs that would outweigh the benefits of aggression. Ultimately, deterrence is premised on altering a competitor's perceptions of the net benefits and costs of aggression.

Assured space capabilities, and the ability to prevent hostile uses of space, are vital components of integrated deterrence across all domains and through all levels of competition, crisis, and

conflict that the Department will leverage and continue to strengthen. In this regard, our Fiscal Year (FY) 2023 budget request would:

- Strengthen mission assurance and reduce the benefits of attacks in space by accelerating the transition to diverse, proliferated, and protected space architectures that will demonstrate our growing ability to maintain mission capable status in a degraded state and under sustained attack;
- Bolster our ability to fight through disruption by improving defensive capabilities and increasing options for reconstitution, thereby reducing the benefits of aggression in space.
- Expand and modernize our ability to deliver advanced capabilities to enable joint and combined operations across domains, and support national leadership decisions with assured missile warning, missile tracking, and secure nuclear command and control.
- Sustain our information advantages by improving our ability to integrate, defend, and reconstitute our surveillance and decision systems on operationally relevant timelines to achieve our objectives, notwithstanding aggressive interference and deception.
- Advance and expand our architectures of: space-based sensors that provide indications and warning of threats to space systems; ISR capabilities that provide persistent, global information; and multi-function terrestrial sensors that provide additional opportunities to strengthen space domain awareness.

More specifically, DoD's FY 2023 national security space budget request provides \$27.6 billion in vital space capabilities, resilient architectures, and enhanced space command and control to support our terrestrial forces and keep space safe for military, civilian, and commercial operations. These investments include:

- Missile Warning: \$4.7 billion funds transition to new, resilient missile warning and missile tracking architectures, completion of the Next Generation OPIR Polar capability, and development of the associated enterprise ground portfolio that will track an increased range of threats, including hypersonic and maneuverable weapons.
- GPS Enterprise: \$1.8 billion for PNT funds procurement of two GPS III follow-on satellites and continues testing and lead platform integration of Military GPS User Equipment (MGUE) Increment 1 receivers capable of using our most protected, jamming-resistant GPS M-Code signals.
- Satellite Communications (SATCOM): \$1.6 billion funds development of secure, survivable, and jamming-resistant SATCOM capabilities.
- Launch Enterprise: \$1.6 billion funds six national security space launch vehicles for assured access to space across all of the orbits that we use.

Norms and Tenets of Responsible Behavior

In previous hearings, this committee has helped increase visibility of the importance of norms and responsible behavior in space as an element of ensuring a safe operating environment and reducing the risks of misunderstandings and miscalculations that could lead to conflict and escalation. In collaboration with the Department of State, the Department is committed to promoting standards and norms of responsible behavior in space to shape the operating environment and ensure that the space domain remains secure, stable, and accessible.

As a defense organization and one of the single largest space operators in the world, the Department has taken an important step toward these objectives by sharing tenets that describe our longstanding operational practices in space. We hope this step will set an example and help develop a shared understanding among nations of what constitutes safe and responsible behaviors for all military space operators, and help reduce the risks of misunderstanding and inadvertent escalation.

In July 2021, Secretary of Defense Lloyd Austin signed a memorandum to DoD leadership that outlines guidance for DoD space operations in the form of five key “Tenets of Responsible Behavior in Space.” That guidance provides a clear and transparent statement of how Department of Defense Components will operate in space under normal circumstances. These Tenets of Responsible Behavior provide that our space operators, unless otherwise directed, will:

- Operate in, from, to, and through space with due regard to others and in a professional manner;
- Limit the generation of long-lived debris;
- Avoid the creation of harmful interference;
- Maintain safe separation and safe trajectory; and
- Communicate and make notifications to enhance the safety and stability of the domain.

U.S. Space Force Guardians, and Military Service members from across the Joint Force who use space or deliver effects in space, operate consistent with these tenets. Furthermore, at the Secretary’s direction, the U.S. Space Command continues to develop guidance regarding specific behaviors for DoD operations in the space area of responsibility that will continue to advance these tenets.

On November 15, 2021, when Russia conducted a destructive test of a direct-ascent anti-satellite missile against an orbital target, the world saw clearly that not all nations adhere to the same sense of responsibility for their actions in space. That test created more than 1,500 pieces of trackable debris (greater than 10 cm) and hundreds of thousands of smaller pieces that pose a threat to safe operations of satellites in low Earth orbit, including to astronauts on the

International Space Station and on a growing number of other platforms. The threats that such irresponsible behavior present for the interests of all space operators are one reason why the Deputy Secretary of Defense stated at the December 1, 2021, National Space Council meeting that the Department “would like to see all nations agree to refrain from anti-satellite weapons testing that creates debris.”

Allies and Partners in Combined Space Operations

U.S. allies and partners provide an asymmetric strategic advantage that our adversaries cannot hope to match. The United States and its partners in the Combined Space Operations (CSpO) initiative – Australia, Canada, France, Germany, New Zealand, and the United Kingdom – are increasingly focused on ensuring freedom of access in space, and recognize the role that space plays in our security and in our ability to deter aggression. On February 22, 2022, the CSpO partners published the “Combined Space Operations Vision 2031,” which addresses the overarching need to encourage responsible use of space, recognizing the challenges to space sustainability, the threats presented by technological advances, and the increasingly comprehensive and aggressive counterspace programs of other nation states.

The CSpO Vision 2031 describes a common mission to generate and improve cooperation, coordination, and interoperability to sustain freedom of action in space, optimize resources, enhance mission assurance and resilience, and prevent conflict. It sets forth common objectives focused on:

- Preventing conflict extending to or originating in space while promoting security and stability in all domains;
- Achieving unity of effort through information sharing across multiple classification levels and real-time synchronized networked operations centers operated by a workforce with common training;
- Establishing and maintaining a robust, responsive, and interoperable space infrastructure enabling continued space effects in the face of adverse action or changes to the space domain; and
- Defending and protecting our national interests and the space domain.

As our competitors continue to advance their capabilities and capacity to use space and hold U.S. space systems at risk, space partnerships like those we are developing through CSpO will fundamentally strengthen deterrence.

Conclusion

The security environment in the space domain is undergoing significant changes. Those changes can increase opacity and risk of miscalculation during a crisis or conflict. The risk of inadvertent

escalation is high in the space domain due to the lack of clear norms of behavior, unclear escalation thresholds, complex domain interactions, and the rapid introduction of new capabilities, including adversarial counterspace capabilities. The Department remains committed to strengthening our space mission assurance, denying hostile uses of space, advancing international norms for responsible behavior in space, and maintaining our strategic advantages in space, including through our increasingly robust international space partnerships with our longstanding allies and partners.

The United States and our allies and partners are ready for the challenge. Here at home, U.S. advances in our approach to space security over the past decade are a result of persistent, bipartisan effort and close cooperation between the Executive and Legislative branches of our government. I am committed to sustaining those efforts and honored to work with the Congress, our DoD civilian and Military Service members, my interagency colleagues, U.S. industry, and our international allies and partners in a common cause to secure the advantages of space for our national interests.