UNITED STATES SPACE COMMAND

PRESENTATION TO THE
SUBCOMMITTEE ON STRATEGIC FORCES
HOUSE ARMED SERVICES COMMITTEE
U.S. HOUSE OF REPRESENTATIVES

SUBJECT: Fiscal Year 2022 Priorities and Posture of the United States Space Command

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Introduction

The establishment of United States Space Command (USSPACECOM) as the Combatant Command solely focused on protecting and defending U.S. space operations and the American way of life demonstrates the priority America places on space. Our mission is to assure the delivery of space-based services to the nation, our allies and global security partners, and warfighting superiority for conflict extending to space. An incredibly talented Joint Force and interagency team operating around the world accomplishes this unique and critical task. I am honored and thankful to the President, Secretary of Defense, and the Chairman, Joint Chiefs of Staff for entrusting me with leading this team of warfighters. I am also thankful for the unwavering support of Congress in providing the USSPACECOM team with the necessary resources for this critical mission.

President Biden described his priorities in the March 2021 Interim National Security Strategic Guidance, including defending the underlying sources of American strength and promoting a favorable distribution of power to deter adversaries. I have outlined my key tasks to support the Interim National Security Strategic Guidance and accomplish the USSPACECOM mission in my Commander's Strategic Vision. As always, underpinning this vision is our focus on caring for our most important asset – our people and their families. Our command attracts the best and brightest across the Department of Defense, intelligence community, and civil society, resulting in a dynamic and diverse team of space professionals. In fact, during International Women's month we featured many of the amazing women of USSPACECOM—both military and civilian, including operations leaders, division chiefs, senior enlisted leaders, and many other key roles. The diversity in our ranks is one of our greatest strengths. Our people will advance our critical mission through innovative approaches to accomplishing those key tasks, which include:

(1) understanding our competition; (2) building the command to compete and win; (3) maintaining key relationships; (4) maintaining digital superiority; and (5) integrating commercial and interagency organizations. With our focus on these priorities, we will achieve our end state goal of a team of warfighters who outthink and outmaneuver our adversaries and enemies, and if necessary, win through space combat power—so that there is never a day without space.

The U.S. must respond to a rapidly changing space security environment

The American way of life depends on reliable access to the space-based capabilities that provide the foundation of our economic security and enable our Joint Force to conduct sustained military operations in all domains. Every lever of national power in the new Joint Doctrine Note 1-18 "MIDFIELD" model – Military, Informational, Diplomatic, Financial, Intelligence, Economic, Law, and Development -- is reliant upon space-based capabilities. Every element of our Joint Warfighting Concept as executed through Joint, All-Domain Operations is dependent on space-based capabilities. The ever-increasing challenge posed by adversaries against those capabilities led to the necessary creation of USSPACECOM and the United States Space Force. We must continue to grow the capabilities of these new organizations charged with protecting and defending our interests in space.

This extensive reliance on space creates potential vulnerabilities that competitors and adversaries actively seek to exploit. These adversaries and competitors are increasing their capabilities in space by developing and demonstrating counter-space systems, and, similar to what we have seen in the other domains, by engaging in deliberately provocative behavior to advance their plans to gain control of space. To safeguard our national interests at home and abroad and to support a rules-based international order, the U.S., along with our allies and partners, must promote and protect the peaceful and responsible use of space.

Understanding our Competition

The number one priority for the Command is to understand our competition, which relies on a deep understanding of the space environment. To achieve this, we prioritize space domain awareness, which encompasses tracking, identifying, and characterizing objects in space in a way that enables real-time understanding of potentially threatening activities. Through this perception of activities that affect our domain, we can better protect and defend our assets when there may be only minutes to act. This is our highest priority and we need Congress's continued support to achieve comprehensive space domain awareness.

China desires to use space to supplant the U.S. as a global economic and military leader

Over the past two decades, an increasingly assertive China and a resurgent Russia worked to develop advanced technologies to erode core U.S. military advantages, such as power projection and rapid, global, space-enabled precision fires. Their militaries actively integrate advanced space and counterspace technologies into multi-domain warfighting strategies to challenge U.S. regional superiority, position themselves as space powers, and create improved balance of power dynamics in their near abroad. Both countries reorganized their militaries to develop deeper competency in technical military fields such as electronic warfare, cyberspace and space operations. China and Russia each weaponized space to deter and counter U.S. and allied intervention and military effectiveness in future conflicts. Today, space is a warfighting domain not because we desired it to be; it is a warfighting domain because our competitors made it so.

The Pacing Threat -- China

China poses a major security challenge and remains a long-term strategic competitor to the United States. Beijing views the international environment and China's relationship with

Washington as increasingly adversarial. China continues its decades-long military modernization campaign in order to build what it terms a "world-class military." Chinese leaders characterize China's long-term military modernization program as essential to achieving great-power status. People's Liberation Army (PLA) modernization focuses on developing and fielding advanced military capabilities in all warfighting domains – emphasizing long-range precision strike, cyberspace, electronic warfare, space, counterspace, and a modern, effective nuclear deterrent while restructuring the PLA into a combat-capable global joint force. Looking forward, an increasingly capable and lethal Chinese joint force will almost certainly be able to hold U.S. and allied forces at risk at greater distances from the Chinese mainland.

China developed robust and capable space services, including space-based intelligence, surveillance, and reconnaissance (ISR). Moreover, they are making improvements to existing systems, including space launch vehicles and satellite navigation constellations. Their current BeiDou navigation system is now globally operational. These capabilities may mask potential military activities and may be considered dual-use in nature. Operated collectively, these capabilities provide their military with the ability to globally command and control their forces, enhance their situational awareness, as well as enable them to monitor, track, and target adversary forces. Today China's ISR satellites are capable of providing electro-optical and synthetic aperture radar imagery, as well as electronic intelligence and signals intelligence data. Beijing has a goal of becoming a broad based, fully capable space power. China's rapidly growing space program is second only to the United States in the number of operational satellites.

Beijing actively seeks space superiority through space and space attack systems. One notable object is the Shijian-17, a Chinese satellite with a robotic arm. Space-based robotic arm

technology could be used in a future system for grappling other satellites. China also has multiple ground-based laser systems of varying power levels that could blind or damage satellite systems. China is developing a broad complement of jamming and cyberspace capabilities, directed energy weapons, on-orbit capabilities, and ground-based antisatellite missiles that can achieve a range of effects. China will attempt to hold U.S. space assets at risk while using its own space capabilities to support its military objectives and overall national security goals.

Russia seeks to degrade U.S. space capabilities in order to prevail in future conflicts

The Russian military remains an existential threat to the United States and a potent tool designed to maintain Russia's influence over the states along its periphery. Russia sees space as integral to winning modern wars and reorganized their Aerospace Force in 2015 to incorporate space operations and counterspace capabilities. Russia views its space program as a longstanding example of its leadership on the international stage. Moscow concluded that gaining and maintaining supremacy in space has a decisive impact on the outcome of future conflicts and is developing space attack systems to hold U.S. and allied space assets at risk.

Russia considers U.S. dependency on space to enable military power projection as a vulnerability it can exploit in a conflict. Concurrently, Russia pursues counterspace weapon systems that can deny, damage, and defeat U.S. space-based systems in order to reduce U.S. military effectiveness and control conflict escalation if deterrence fails. Russia is also developing and testing space-based and direct ascent anti-satellite weapon systems.

The Nudol is a Russian mobile ground-based missile designed to destroy satellites in low Earth orbit. Additionally and already on orbit are COSMOS 2504 and COSMOS 2536, prototype Russian antisatellite weapons that could kinetically destroy satellites in low Earth orbit. Russia

also has several ground based low-power lasers designed to temporarily blind U.S. missile warning and imagery satellites, and high-power lasers developed to damage U.S. satellites.

In 2020, Russia conducted several counter-space weapon systems tests while also exhibiting unsafe and irresponsible maneuvers on orbit. It tested an improved, highly survivable ground-based anti-satellite missile system, and a space-based weapon system that released a projectile designed to target other satellites on orbit. Both weapon systems could damage or destroy a satellite, creating a cloud of debris that would endanger every space-faring nation's satellites, to include the International Space Station. Such activities are inconsistent with the safe and peaceful use of space. Meanwhile, Russia continues to update and modernize terrestrial alternatives to space systems, creating asymmetries that could enable them to hold U.S. space-based capabilities at risk.

Iran and North Korea continue to develop and expand their counter-space capabilities

Iran and North Korea continue to advance their own counter-space threats through cyberattacks, jamming, and electronic warfare. Having closely observed our ability to harness the advantages from space, Iran and North Korea actively seek asymmetric approaches to negate our power projection capabilities.

Iran recognizes the strategic value of space and counterspace capabilities. Tehran claims to have developed sophisticated capabilities, including space launch vehicles and communication and remote sensing satellites. Iran's simple space launch vehicles are currently only able to launch microsatellites into low Earth orbit. Iran proclaimed the April 2020 launch of the NOUR-01 satellite to be a "start of the formation of a global power." While Iran claims the NOUR-01 has imaging capabilities, our persistent observation efforts prove that it is actually non-operational, tumbling through space, and unlikely to provide any useful intelligence. However,

Iran is using improvements in the missile launch technology used to put the NOUR-01 satellite on orbit to develop longer-range, more accurate strike weapons. Iran's counterspace capabilities have centered around jamming satellite communications and global positioning system (GPS), and Iran is reportedly making advancements in these areas.

North Korea also maintains a threat to space operations through its electronic warfare capabilities, with an emphasis on deception operations and GPS jamming. The technology to evolve and mature their cyberattack capabilities continues to improve, along with their ability to develop more advanced long-range missile launch systems.

One way that these less developed adversaries seek to leapfrog or negate our advantages is by leveraging commercially available capabilities. These capabilities provide them with partially effective military support that helps them to navigate, gather intelligence, communicate, and otherwise achieve competencies that until very recently were the exclusive purview of more advanced space powers. We should not assume that our current qualitative advantage in these areas necessarily ensures the space superiority we previously held.

Other nations and commercial expansion are increasing opportunities and challenges in space

With more than 50 space-faring nations and commercial entities, space is one of the most interconnected and interdependent operational domains. Interestingly, as of 2020, six of those nations and one alliance of nations have demonstrated an inherent Mars exploration capability through attempts to place a vehicle on its surface. Those countries include the United States, Russia, China, the United Arab Emirates, Japan, India, and the European Union. While this is a positive indication of a rapidly accelerating interest in space that can benefit a greater number of people, it also highlights the need to prioritize space development. More significantly, it

highlights the need for good stewardship of the domain, which demands responsible behavior; a mistake by one could have catastrophic consequences for all.

Commercial growth in space provides both significant opportunities and potential challenges to overcome. The commercial space sector continues to grow, with global revenue exceeding $366 billion in 2019 and 60-satellite per launch missions or advancements in commercial space tourism from companies like SpaceX and Virgin Galactic highlighting the importance of the domain. Commercial opportunities open new possibilities, but can also complicate access to the domain with the proliferation of mega constellations. As commercial satellite constellations expand and begin pushing out beyond geosynchronous orbits, it becomes increasingly important to understand the domain and to manage burgeoning traffic.

Underpinning this growing congestion is the ability to understand the environment through shared space situational awareness—tracking objects in space—and space domain awareness—tracking, identifying, and characterizing space objects with the appropriate fidelity to identify threats. USSPACECOM continues to develop partnerships with allies, within the U.S. Government, and with commercial partners to advance mission capability in both space situational awareness, and space domain awareness. As part of this overarching effort, the Department of Commerce is increasing its role in promoting spaceflight safety standards and the coordination of space traffic, a critical component to safe operations in the domain. I appreciate the Department of Commerce's enthusiasm and dedication to effectively develop, maintain, and use space situational awareness data from a variety of governmental, commercial, and international sources in an Open Architecture Data Repository. I urge Congress to afford the Department of Commerce the resources they need to accomplish the civil and commercial spaceflight safety mission. This transition allows USSPACECOM to concentrate on developing

the more precise space domain awareness capabilities essential to characterizing threats in space and, in turn, enabling a whole-of-government response. A continuing partnership between USSPACECOM and the Department of Commerce is a key enabler of U.S. and allied space superiority, not to mention a necessary element of a vibrant space economy.

Build the Command to Compete and Win

United States Space Command has unique space domain responsibilities

Where the U.S. once enjoyed a profound technological lead in developing and fielding space capabilities, strategic competitors now compete for space dominance. As these potential adversaries have evolved and proliferated an increasing array of counter-space capabilities, USSPACECOM relies on its service and interagency partners to outpace the threats. This requires continued emphasis and focus on correctly identifying threats and responding rapidly in a threat-relevant timeframe.

USSPACECOM has two essential tasks – first, to enable the Joint Force by providing unmatched, dependable space capabilities; and second, employing combat power in the space domain. Our mission is to conduct operations in, from, and to space that deter conflict and, if deterrence fails, deliver decisive space combat power for the Joint and Combined Force. Our ability to accomplish this mission effectively is contingent on amassing a variety of capabilities and effectively integrating them across all domains and in concert with the Joint force and our allies and partners.

USSPACECOM is increasing its operational reach and expanding its capabilities through participation in joint, combined, and integrated exercises

USSPACECOM continues to grow its operational capability with our two functional components and five service components. These functional and service components provide warfighting capabilities for joint execution in support of USSPACECOM. Through Joint Task

Force – Space Defense, we protect and defend our on-orbit assets, and through Combined Force Space Component Command, we provide support to terrestrial forces and integrate with commercial partners, while defending the domain against aggression. To task these organizations efficiently and effectively, USSPACECOM published its first campaign plan and operating order that aligns joint operations and achieves unity of effort.

To test our plans and operating concepts, USSPACECOM regularly participates in advanced, coalition-integrated global and regional exercises and wargames, such as Global Lightning, Austere Challenge, and Pacific Fury. These events prepare our Joint Force, allies, and partners to protect and defend our space assets while providing combat effects in, from, and to space. Through these multiple exercises and senior level war games, USSPACECOM demonstrates its ability to work with other Combatant Commands, the Joint Staff, and international partners to execute globally integrated operations across the spectrum of warfare.

Warfighting exercises require a multi-service, multi-domain, and globally integrated approach to national security objectives, consistent with the Chairman's Joint All-Domain operations directive. We are also preparing to execute our own tier one multi-combatant command exercise in fiscal year 2022. In future exercises, we will continue to integrate fully across regions and domains to protect and defend U.S. and allied space interests globally.

The United States must improve its defensive and offensive space warfighting capabilities to deter adversaries and prevail in future conflicts

The DoD's legacy space architecture and organizations were designed for a relatively benign and uncontested environment. In past decades, we invested in vulnerable, space-based platforms while our adversaries invested in relatively low-cost methods to counter these capabilities. Our focus was engineering redundancy rather than warfighting reliability. This left us vulnerable to exploitation – particularly as our dependence on space-based capabilities to

advance U.S. interests continued to grow. This changing strategic environment resembles the environment experienced by the U.S. in the Vietnam War, where conventional strength dependent on vulnerable supply lines and centralized forces left troops pursuing a defense strategy, vulnerable to asymmetric and decentralized attacks.

Today, even as potential adversaries continue their effort to achieve parity in space capability, they also employ asymmetric capabilities to deny us the advantages of space. The U.S. must continue to build resilience in the vital space capabilities the Joint Force requires to fight and win in space, as well as in the air, land, sea, and cyber domains, while strengthening its space warfighting capability to counter these rising peer, near-peer, and asymmetric threats. Such warfighting capability provides a credible deterrent against belligerent actions in the space domain as part of a broader U.S. strategy for deterrence and defense.

USSPACECOM aims to advance our capability and capacity aggressively by coordinating with the services, leveraging innovative space systems, and by developing joint warfighters who have the expertise, judgment, and will to fight and win against a determined adversary. To this end, USSPACECOM provides warfighter requirements to the Department, which leads the acquisition of the capabilities we need to achieve our mission. This is critical to revitalize our aging space architecture, remaking older, less flexible, and vulnerable systems into a resilient, redundant, and survivable architecture to cope with evolving threats. Consequently, we need the continued support of Congress for the Services as they acquire components of this architecture and work to streamline acquisition processes and shorten the time from concept to fielding. USSPACECOM also strongly supports any economical, innovative solution that increases the defensibility of our space systems and provides the means to maintain space superiority.

Moreover, in today's threat environment, strategic deterrence remains the bedrock of our national defense. Every Operational Plan across the Department begins with the assumption that strategic deterrence will hold. A safe, secure, and effective nuclear force, enabled by space-based assets, remains the most credible combination of capabilities to deter strategic attack and execute our national strategy. We must stay the course with nuclear and conventional force recapitalization commitments to ensure the Joint Force can operate when, where, and as required to defend our national interests. Moreover, we must defend our space assets and improve our space domain awareness to present viable options to the Joint Force across the spectrum of operations.

Just as we must revise our systems and processes, we must also develop the most critical component of our enterprise – our warfighters. USSPACECOM is laying the foundation for a warfighting organization and is reinforcing a spirit of excellence, character, and resolve in our space experts. In so doing, we will promote coordination across the entire enterprise and empower our warfighters to act decisively and win.

United States Space Command is a joint warfighting organization with uniformed and civilian representatives from all services and the nation's Intelligence Community. A year and a half after reestablishment, we have approximately 430 military and civilian personnel assigned to the Headquarters, or just over one third of our authorized end strength. We need the continued support of Congress to help us achieve our full strength, especially with regard to funding our civilian personnel, who comprise two-thirds of our workforce and provide critical diversity, continuity, and skills. This is critical to our ability to prevent capability gaps in support of the National Defense Strategy and missions assigned to us in the Unified Command Plan. To this end, we continue to align our work force to bolster operational capabilities presented by our joint

centers. We use these forces to achieve our key tasks: understanding our competition, building the command to compete and win, fostering and maintaining key relationships, maintaining digital superiority, and integrating commercial and interagency organizations. By achieving these key tasks, we will accomplish our mission.

USSPACECOM focuses on personnel development as a key enabler of mission success

USSPACECOM works with our joint force providers to acquire the best and the brightest personnel, helping develop our future space leaders through training, education, and other aspects of human capital development. In partnership with the National Security Space Institute, USSPACECOM develops a cadre of joint space warfighters that ensures an enduring focus on space power as part of a more lethal and ready force. This interactive classroom instruction, coupled with individually tailored online training, allows newcomers an opportunity to build upon their knowledge base in the context of our directed missions. Additionally, we continue to integrate space into professional military education, other combatant commanders' conferences, and throughout joint education. Investment in human capital improves the development of joint space warfighters and our lethality in the space domain.

To remain a space power requires consistent and continued resources commensurate with the value that space provides and that the threat demands

USSPACECOM's ability to execute its assigned mission depends on the services' continued rapid development and timely delivery of critical space warfighting capabilities. Specifically, we require the sensor architecture necessary to detect and characterize activity in space; a unified and distributed command and control family of systems that enable synchronized space effects; flexible capabilities to deter aggression and deliver decisive effects; and the ability to protect and defend U.S. and allied interests.

Maintaining Key Relationships

USSPACECOM is strengthening alliances and attracting new partners, while working with private enterprises to improve space awareness

As President Biden lays out in the March 2021 Interim National Security Strategic Guidance, strengthening our relationships with allies and partners is crucial to maintaining a secure, safe, and sustainable space environment. To this end, we are expanding our network of partner nations, international organizations, and commercial entities that bring situational awareness, mutual support, and technological innovation to the space enterprise. We are enhancing our interoperability with allies and partners and sharing information to unite around a compelling narrative.

In 2020, USSPACECOM expanded space related data sharing agreements, including new partners Luxembourg, Peru, and Portugal. To date, USSPACECOM has agreements with 26 nations, two intergovernmental organizations, three academic institutions, and over 90 commercial satellite owners, operators, and service providers. By providing this advanced information and services to space-faring partners, we display American leadership in the space domain, promote transparency in the responsible and peaceful use of space, and support the planned transition of civil and commercial spaceflight safety services to the Department of Commerce in 2024. In 2020, in coordination with USSOUTHCOM, we implemented our first "space-centric" security cooperation initiative focusing on institutional capacity building with Brazil, Chile, Colombia, and Peru.

The safety and sustainability of an increasingly crowded space domain grows more complex as commercial entities plan to launch thousands of satellites in the next few years. The explosive growth of nano, micro, and small satellites will further stress our existing space surveillance networks. Working closely with companies as they plan, launch, and operationalize

these new mega-constellations is key to our continued ability to provide comprehensive space situational awareness. As a priority, USSPACECOM warfighters in the Combined Space Operations Center (Vandenberg AFB), the National Space Defense Center (Schriever AFB), the Joint Operations Center (Peterson AFB), and at a variety of other key nodes are working tirelessly with interagency partners to build and leverage complete and timely space domain awareness. Along with this battle space awareness, we are also prioritizing the associated and necessary space command and control capabilities.

Space domain awareness remains the bedrock of many partnerships and the top priority for USSPACECOM. The command seeks to develop a more complete, big picture understanding of activities in the domain. This goes beyond merely tracking space objects for situational awareness to a space domain awareness that identifies, tracks, and characterizes objects that can threaten U.S. and allied space capabilities. This is a necessary element of acknowledging space as a warfighting domain, which includes its enabling computer networks, terrestrial sites, and the electromagnetic links between space and ground systems.

Achieving the desired effects in the space domain requires close coordination with other Combatant Commands

The command continues to evolve Combatant Command integration and establish normalized relationships to coordinate, integrate, and synchronize operations extending beyond geographic areas of responsibility. To facilitate cooperation, interoperability, and unity of effort, USSPACECOM created Space-Integrated Planning Elements comprised of space and intelligence planners embedded within the staffs of our sister Combatant Commands. These experts integrate space capabilities and effects into their respective Combatant Command plans while mutually informing USSPACECOM's operational plan development. Furthermore, each

Combatant Command's space warriors integrate space effects across all warfighting functions, enhancing the Joint Force's ability to achieve military objectives rapidly and decisively.

Maintaining Digital Superiority

Underpinning all of these must be a robust cybersecurity environment that secures our intellectual and technological advantages from cradle to grave. It is critical to keep building this momentum by funding these fundamental capabilities: battle space awareness, command and control, deterrent space capabilities, cybersecurity, and protect and defend capabilities. Additionally, we must capitalize on machine learning and artificial intelligence developments to secure our systems, advance our capabilities, and increase the speed of our decision-making process. Accordingly, within our efforts to maintain digital superiority, USSPACECOM is determined to innovate for competitive advantage, evolve cyber operations for an agile and resilient posture, and invest in game-changing technologies. The research and development, acquisition, and operationalization process relies on innovation at every level, and we must streamline this process to operate at the growing pace of decision-making. Future years will require additional resources to accomplish all of this, and to ensure the U.S. can adequately address the evolving and expanding cyber threats posed by our strategic competitors and adversaries.

Integrating Commercial and Interagency Organizations

USSPACECOM provides mission assurance for interagency and commercial space operations

The rapidly accelerating interest in space and associated growth in the technically oriented industrial base is a key part of continued U.S. economic prosperity. U.S. commercial space growth aids our mitigation efforts against threats. One example includes the effort with commercial partners to design and field a U.S.-built engine to power our largest space launch

vehicles, thus decreasing our need for reliance on the Russian RD-180 to propel our Atlas V launch vehicle. In our interagency space mission assurance role, USSPACECOM supported NASA and SpaceX for contingency rescue operations for both the Demonstration Mission Two launch in August and the SpaceX Crew-1 launch in November – the first crewed space launches from U.S. soil in nearly a decade. USSPACECOM is committed to assuring the safe exploration of space and is supporting the planned lunar missions. USSPACECOM is preparing to provide crew and spacecraft recovery for the upcoming Artemis missions and associated training events to begin late 2021.

Conclusion

USSPACECOM plays a crucial role in guaranteeing the American way of life through the delivery and defense of U.S. and allied space capabilities and services. We make daily gains in our ability to protect and defend our assets from our adversaries, and we stand ready to provide advanced space-based capabilities to our warfighters. Under the direction of the President and Secretary of Defense, and with the support of Congress, USSPACECOM is prepared to safeguard our access and operations outside our atmosphere so that there is never a day without space.