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UNITED STATES SPACE COMMAND

PRESENTATION TO THE  
SENATE ARMED SERVICES COMMITTEE  
U.S. SENATE

Subject: Fiscal Year 2023 Priorities and Posture of United States Space Command

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## **Introduction**

Space is vital to our modern way of life and our people remain our most critical asset. China and Russia are developing new space and counterspace capabilities to achieve national goals and deny the United States, our allies and our partners the advantages from space. United States Space Command (USSPACECOM) is focused on providing support to warfighters from space as well as defending the space domain as a necessary part of our national security, especially in light of the rapid evolution of the threats we face, and the importance of deterring potential adversaries from challenging or attacking U.S., allies', and partners' space systems.

In August 2021, I informed the Secretary of Defense and publicly announced that USSPACECOM had reached Initial Operational Capability (IOC). My IOC declaration represents a measured assessment that USSPACECOM is able to execute key Unified Command Plan-assigned tasks, including normalizing USSPACECOM's command and control of Operation Olympic Defender; successfully demonstrating at Combatant Command-level exercises our warfighting acumen; and adding to the Command's space data sharing agreements that now total more than 100. Today we are capable of delivering strategic effects, providing the National Command Authority with space domain options for achieving national objectives. We are ready to address threats and take advantage of opportunities across the spectrum from competition to conflict.

However, there is much more work to be done to build capacity as USSPACECOM continues driving toward Full Operational Capability (FOC). We are increasing our capacity within the framework of the President's Interim National Security Strategic Guidance and the U.S. Space Priorities Framework. In line with this guidance, the Unified Command Plan, and the Secretary of Defense's approach to Integrated Deterrence, we are implementing USSPACECOM's strategy. Our strategy sets the conditions to deter, and to win when compelled

to fight. It does this in three ways: (1) Countering Competitor Influence; (2) Strengthening Relationships and Attracting New Partners; and (3) Building and Maintaining a Competitive Advantage. My focus on these three efforts within our strategy will achieve our desired end state: a team of professionals, active, guard, reserve, civilians and contractors, who outthink and outmaneuver our adversaries, operate with our allies and partners, and when necessary, win through space combat power.

### **Countering Competitor Influence**

The challenges to maintaining a safe, secure and sustainable space domain are increasing. On November 15, 2021, Russia tested a ground-based Direct Ascent Anti-Satellite (DA-ASAT) missile and successfully intercepted and destroyed one of its own defunct satellites. While Russian aggression remains visible on the global stage, we must also keep our eye on the pacing challenge – the People’s Republic of China (PRC). Both the PRC and Russia continue to develop and test sophisticated anti-satellite weapons to hold U.S. and allied and partner space assets at risk. In 2007 the PRC, similarly, conducted their own destructive ASAT test. These debris-creating events threatened the lives of those onboard the International Space Station (ISS), and other commercial and space-faring nations’ satellites in low Earth orbit. Additionally, the PRC conducted the first fractional orbital launch of an ICBM with a hypersonic glide vehicle from China on July 27, 2021. This demonstrated the greatest distance flown (~24,850 miles) and longest flight time (~100+ minutes) of any PRC land attack weapons system to date.

These events demonstrate how the PRC and Russia have tested counterspace weapons across multiple domains as a way to blunt U.S. influence, deter, and counter a possible U.S. response during conflict or crisis, and across the board reduce U.S. and allied military effectiveness in the future. Our competitors are also developing and proliferating satellites and

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satellite attack capabilities to hold our space and strategic capabilities at risk. These counterspace capabilities include cyber, electronic warfare (EW), directed-energy weapons, anti-satellite missiles, and space-based weapons, which enables our competitors to achieve a range of effects. These effects range from degrading space services temporarily to damaging or destroying satellites permanently in and through space that jeopardize our capabilities in other domains.

To negate the growing EW and cyber threat, we are partnering with the U.S. Intelligence Community to explore a testbed to assess new jam and spoof resistant waveforms for all satellite telemetry, tracking, and command. The PRC has operational ground-based missiles in their fielded forces intended to destroy spacecraft in low-Earth orbit, and ground-based lasers likely created to blind or damage sensitive space-based optical sensors on satellites in low Earth orbit. Our competitors have counterspace capabilities and operational military doctrines that extend warfighting to space. They are continuing to modernize their space attack capabilities. Today, space is a warfighting domain because our competitors have made it so.

Consequently, the number one need for the Command is to enhance our understanding of the congested and complex space operational environment, to include what is occurring and when, and the intent behind those engaged in such actions. This critical task requires a deep understanding of space objects and capabilities regardless of their national origin. This is why my priority request to Congress is to authorize and fund Space Domain Awareness (SDA) programs that enable us to monitor the domain effectively and provide combat-relevant indicators and warning of potential threats to U.S. government, allied, and partner space systems. SDA encompasses identifying, characterizing and understanding objects to enable real-time assessments of potentially threatening activities in space and developing appropriate options for

a response. Through SDA, USSPACECOM can better protect and defend our vital space assets when there may be only minutes to respond.

Our SDA capabilities will be part of a broader, resilient space architecture that enables command and control and provides the tools to sustain freedom of action in the space domain. Within this broader, resilient space architecture, SDA remains my top priority. Our space posture must not be predicated on a static defense. Domain awareness enables us to observe, orient, decide, and act. SDA is foundational to effective and proactive maneuver; this is essential to ensuring proliferated architectures are resilient architectures. This Command depends on the SDA capabilities fielded by all of the military Services as well as the commercial sector.

### **The Pacing Challenge—The People’s Republic of China**

The PRC poses a major security challenge and remains a long-term strategic competitor to the U.S. Its government views the international environment and the PRC’s relationship with the U.S. as increasingly contentious. The PRC continues its decades-long military modernization campaign in order to build what it terms a "world-class military" by the end of 2049. Chinese Communist Party (CCP) leaders characterize their long-term military modernization program as essential to achieving great-power status. In 2020, the CCP’s People’s Liberation Army (PLA) added a new 2027 milestone to accelerate the integrated development of “mechanized,” “informatized,” and “intelligentized” armed forces to provide CCP leadership more credible military options. The PLA believes the fundamental precepts for modern "informationized" and future “intelligentized” warfare—including their use and advancement of machine learning and artificial intelligence (ML/AI)—include space superiority, the ability to control the information sphere, and denying adversaries the same.

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In the next 5-10 years the PLA's Strategic Support Force (SSF) will field a range of counterspace weapons with a mature space and counterspace infrastructure to directly challenge United States' space superiority and threaten the United States in all orbital regimes. PLA modernization focuses on improvements in long-range precision strike, cyberspace, electronic warfare, counterspace, and a modern, effective nuclear deterrent that collectively make the PLA a combat-capable global joint force. To enable this transformation, the PRC's Central Military Commission established the SSF in 2015 to integrate cyberspace, space, information operations, psychological warfare, and EW capabilities into joint military operations. The SSF's space activities focus primarily on satellite launches and operations to support PLA intelligence, surveillance, and reconnaissance (ISR); navigation; and communication requirements. An increasingly capable and lethal PLA joint force will almost certainly be able to hold U.S. and allied forces at greater risk.

The PRC's rapidly growing space program is second only to the United States in the number of operational satellites it maintains. The PRC completed 55 launches throughout the year, surpassing the United States' 51 launches. At the end of 2021 the PRC had 508 assets on-orbit, an increase of 27% from the end of 2020. In the last five years the PRC has placed over 350 satellites into orbit.

The PLA owns and operates about half of the PRC's ISR systems, which support monitoring and tracking of U.S. and allied forces worldwide, especially throughout the Indo-Pacific region. Moreover, the PLA is making improvements to existing systems, including space launch vehicles and satellite navigation constellations. To that end, China's Beidou navigation system is now globally operational. Operated collectively, these capabilities provide their

military the ability to command and control their forces globally, enhance their situational awareness, and monitor and track force movements.

The PRC has developed robust and capable space services, including space-based ISR. Today, the PRC's ISR satellites are capable of providing electro-optical and synthetic aperture radar imagery, as well as electronic intelligence and signals intelligence data. From September 2020 to September 2021, China placed 26 Yaogan-series Earth observation satellites into orbit, bringing the number of orbiting Yaogan-series satellites to 84. Beijing claims the Yaogan-series satellites are for remote sensing and electromagnetic environment detection services; however, these satellites could also be used for reconnaissance.

The PRC actively seeks space superiority through space attack systems and is developing a broad complement of jamming and cyberspace capabilities, directed energy weapons, on-orbit capabilities, and DA-ASAT missiles that can achieve a range of effects. PLA analysis of U.S. and allied military operations states that "destroying or capturing satellites and other sensors" would make it difficult for the PRC's opponent to use precision guided weapons. Moreover, PLA writings on doctrine and strategy suggest that reconnaissance, communications, navigation, and early warning satellites could be among the targets to attack, a strategy designed to "blind and deafen the enemy." Notable PRC counterspace programs include their DA-ASAT. In 2021, the PRC continued development and testing activities to advance the DN-1 and DN-2 DA-ASAT weapons to further refine their space attack capabilities. Other potential counterspace capabilities include Shijian-17 and Shijian-21, which are satellites with robotic arm technology. Space-based robotic arm technology could be used in a future system for grappling and disabling other satellites. The PRC also has multiple ground-based laser systems of varying power levels that could blind or irreversibly damage satellites. On July 16, 2021, the PRC conducted a suborbital

test of a reusable space vehicle that can land in a similar fashion as an airplane. The PRC's space plane could carry a payload designed to disable or capture a satellite while in orbit. In October 2021, the PRC launched the SJ-21, which the PRC Ministry of Defense described as a space debris mitigation technology, but its dual-use capability could have military applications.

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

Russia is an advanced and persistent threat to the United States, and its military is designed to maintain Russia's influence over the states within its sphere of theater and strategic influence. In 2021, Russia conducted a kinetic, DA-ASAT weapons test, exhibiting unsafe and irresponsible behavior in space. Further emphasizing our need for adequate space domain awareness capabilities, the November 15, 2021 Russian DA-ASAT missile demonstration created nearly 1500 additional pieces of trackable space debris we must now monitor to ensure the safe operation of satellites and the ISS in that orbital regime. In partnership with the other Combatant Commands, their assigned Component Commands, the services (U.S. Army, U.S. Navy), and the Missile Defense Agency, USSPACECOM was able to rapidly characterize the nature and extent of the Russian DA-ASAT weapon and notify civil and commercial partners via standing reporting agreements for the safety of human life and satellites in low earth orbit. After admitting to the test, Russia received condemnation from the United States and our allies and partners in the United Kingdom, Australia, Canada, France, Germany, the Republic of Korea, Japan, the North Atlantic Council, the European Union, and the European Space Agency.

Russia believes space is integral to winning modern wars, and it consequently reorganized the Russian 15th Aero Force in 2015 to incorporate space operations and counterspace capabilities. This new force is the Russian military command that conducts space launches and operates the ballistic missile early warning system, the satellite control network,



and the space surveillance network. Russia's defense minister stated that the change was prompted "by a shift in the center of gravity...toward aerospace sphere" and to counter the U.S. Conventional Prompt Strike doctrine. Moscow concluded that gaining and maintaining space superiority has a decisive effect on the outcome of future conflicts and is developing space attack systems to hold U.S. and allied space assets at risk.

Russia considers the U.S.'s dependency on space that enables our military and economic power as an exploitable vulnerability. As a result, Moscow has developed a suite of counterspace capabilities including electronic warfare and directed energy weapons that can deny, degrade, and disrupt communications, navigation, and space-based ISR. These counterspace capabilities enable Russia to 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 has several ground-based, low-power lasers designed to blind U.S. missile warning and imagery satellites temporarily, as well as high-power lasers developed to damage other U.S. satellites permanently.

### **PRC-Russia Space Cooperation**

The PRC and Russia rapidly increased their space cooperation throughout 2021. In March, the PRC and Russia signed a memorandum of understanding to coordinate their moon exploration programs within the framework of a future PRC-Russian-led International Lunar Research Station. According to the China National Space Administration, the facility is intended for "multi-discipline and multipurpose scientific research activities, including exploration and use of the moon, moon-based observation, fundamental research experiments, and technology verification with the capability of long-term, unmanned operation with the prospect of subsequent human presence."

Russia possesses valuable experience from previous space program missions and operations. However, shortfalls in funding, qualified personnel, and other resource inadequacies have hampered continued Russian progress. Meanwhile, Beijing has a space program with ample financial and personnel resources, but lacks Russia's decades of operational space experience. Beijing and Moscow might try to combine their respective strengths on joint projects in some areas, especially as their relations with Western space partners wane and their common aversion of the United States drives them together. Consequently, while the PRC and Russia cooperate, the U.S. must continue to work with our allies and partners to protect our collective interests in space throughout all phases of strategic competition.

### **Building and Maintaining Competitive Advantage**

#### **Improving the Ability to Provide Domain Safety, Security, and Sustainability**

The PRC and Russia recognize the advantages afforded by our space systems and seek to change the dynamic by developing or refining their own space and counterspace capabilities. USSPACECOM is entrusted to protect and defend our nation's most critical space assets. The UCP assigns me the responsibility to "protect and defend U.S. and, as directed, allied, partner, and critical commercial space operational capabilities." Executing this responsibility requires acknowledging the space operating environment changed and that we cannot operate as in the past. Thus, in partnership with the Missile Defense Agency and the other Combatant Commands and Services, USSPACECOM is actively integrating non-traditional sensors such as the Army-Navy Transportable Radar Surveillance - 2, Sea-Based X-Band Radar, and Aegis radar platforms under our Global Sensor Management umbrella to provide improved domain awareness. With respect to a potential conflict in space, the strongest tool for deterrence is our competitors' knowledge that the U.S. possesses both the means and resolve to protect and defend its space

systems. A key component of reaching FOC for USSPACECOM is maturing Combined and Joint force solutions and appropriately posturing scalable combat capabilities to detect, attribute and respond to threats to U.S., allied, and partner space systems. This further enables a credible deterrence posture to preserve the full-range of options for the President and guarantee U.S. and allied freedom to operate in space.

Non-kinetic, reversible solutions—to include space electronic warfare and cyberspace capabilities are critical in achieving space superiority and controlling conflict escalations. They directly affect our ability to deter malign behavior, and to complicate our competitors' ability to threaten our space assets. Of particular importance, non-kinetic engagements do not create debris. Layered, non-kinetic effects are a critical force multiplier that directly affect the success of joint and allied forces.

Scalable joint warfighting options—and the underlying policies that allow for the strategic messaging of these capabilities—are inherent across the competition spectrum. USSPACECOM in collaboration with our mission partners, continues to pursue increased resources and capabilities to provide space domain awareness for warning, assessment, and attribution; to provide space domain environmental monitoring, missile warning and tracking; and to protect and defend U.S., allied, partnered, and commercial space capabilities. In full compliance with our international legal obligations and commitments, the U.S. needs to develop and field resilient capabilities necessary to shape the strategic environment and advance our ability to protect and defend our nation. Such capabilities are essential to accomplishing the full range of my UCP responsibilities effectively, from deterring conflict to winning that conflict if necessary.

## **Maintenance and Hardening of Critical Infrastructure**

Our Area of Responsibility (AoR) begins 100km above the surface of the earth, and extends outward from the planet indefinitely. Our operating domain, however, extends around the globe itself, and encompasses all three elements of our space systems: the on-orbit asset, the link, and the ground segment. Of particular concern is our ground segment. Our satellites cannot fly and provide mission critical information to our joint forces without fully-operational mission control and relay stations on the ground. Similarly, our Missile Warning mission relies heavily on ground-based radar systems. None of these missions would be possible without the talent our people bring along with proper facilities and infrastructure.

The facilities and infrastructure supporting USSPACECOM assets were not built when the command stood up; they were inherited, with many of the facilities and infrastructure reaching ages well beyond 60 years. It is becoming increasingly difficult to maintain the necessary power, heating, and cooling for our assets, let alone the resiliency, redundancy, survivability, and endurance required for our critical space missions. I am thankful for Congress's continued support to ensure these facilities can evolve to support USSPACECOM's no-fail missions.

Commercial space systems are an essential component of U.S. critical infrastructure and vital to our national security. USSPACECOM, through the Department of Defense, will work with interagency partners and commercial space system stakeholders through the Critical Infrastructure Partnership Advisory Council framework to improve the security, resilience, and cybersecurity of commercial space systems.

## Cyber Integration

Digital superiority ensures that USSPACECOM and its subordinate components have resilient, reliable, and secure systems to command and control its forces worldwide, throughout all phases of conflict and in all domains. Countries like the PRC and Russia continually advance their agendas by launching persistent cyberspace attacks against both government resources and our defense industrial base. There is no space operation that does not rely on cyberspace. These two domains are inseparably linked – a failure with cybersecurity will almost certainly result in a failure in space. Therefore, current and future cybersecurity efforts must have the ability to secure and defend both our intellectual property and the products of those advancements—namely space mission systems. As a result, cybersecurity funding is critical to maintaining dominance, not only in the space domain, but all domains.

We must maintain laser focus on implementing “zero trust architecture,” to shift toward a more comprehensive IT security model allowing us to restrict access controls to networks, applications, and environments without sacrificing mission capability and performance. It will also allow us to capitalize on industry advancements in ML/AI to cyber-harden current and future systems. This hardening will improve our cyberspace – secure and defend posture – which will increase our decision-making speed against time-sensitive asymmetric threats across all domains. Moreover, our close coordination with, and the coherence, speed, and agility of National Security Agency/U.S. Cyber Command integration is critical to our ability to operate freely in space. To facilitate this, I embedded a Joint Integrated Space Team (JIST) at U.S. Cyber Command to help synchronize our planning efforts. Future years will require a steadfast resourcing approach to accomplish these objectives in order to ensure the U.S. can compete and mitigate evolving and expanding cybersecurity threats posed by our competitors.

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Maintaining digital superiority is an enormous part of our ability to outthink and outmaneuver our adversaries, and if necessary, prevail through sustained & comprehensive military space power. To this end, we optimized the command to leverage our architecture, data streams, and ML/AI applications fully. We aligned our information-related capabilities, with our Joint Cyber Center to more efficiently and effectively provide the command with information assurance while also enabling our efforts to achieve and sustain information advantage throughout the continuum of competition. As part of our internal realignment, we established a Data Council that synchronizes the Command's data enterprise to focus our requirements, prioritize data as a strategic asset, in order for the Command to achieve decision advantage. By harnessing current and emerging technologies, leveraging commercial innovations, and applying interoperable and secure data, we created an integrated platform for success. Continuous innovation for competitive advantage and investing in game-changing technologies enables both digital and space superiority.

### **Cyber Resources**

USSPACECOM is pursuing a number of initiatives centered on integrative platforms that maximize artificial intelligence, modeling, and simulation to inform space domain awareness, planning development and assessments, requirements development and leadership support. In short, this entails achieving decision dominance for digital superiority and establishing a campaign analysis capability to inform operations, planning, and requirements. Specifically, through this modeling and simulation initiative, the Command will develop a cutting-edge lab environment to identify, analyze, and assess capabilities and requirements informing key warfighting processes and decisions through digital engineering tools. These tools will include visualization, analysis model management, model interoperability, workflow, collaboration, and

customization of modeling techniques to help execute the Command's unified command plan responsibilities. To help reach FOC for this capability, USSPACECOM needs an integrated platform with fully trained modeling, simulation, and analysis personnel, with in-place hardware and software tools, with resources required to provide high performance computing across all classification levels. This lab will help USSPACECOM perform unbiased and timely assessments.

### **Exercises**

USSPACECOM has successfully demonstrated our capabilities and processes through coalition-integrated global exercises such as GLOBAL LIGHTNING 21 and PACIFIC SENTRY 21. We do this through a multi-service, multi-domain, and globally integrated approach to national security objectives, nested within the Chairman of the Joint Chiefs of Staff's Joint All-Domain operations directive.

In 2022 and 2023, we will move from baselining the Joint Force's understanding of space capabilities to achieving a credible, globally-integrated deterrence posture for joint and combined space operations appropriate to contend with space threats that are growing in both scope and lethality. In particular, USSPACECOM will conduct exercises that integrate with coalition partners, multiple combatant commands, and the Joint force. Examples of these exercises include SPACE THUNDER 22, SPACE LIGHTNING 22 and SPACE CHALLENGE 22. In these exercises we will train with our Joint force, allies, and partners to protect and defend our space assets while providing effects in, from, and to space. Additionally in these exercises, USSPACECOM and its components will continue to develop and test capabilities to protect and defend on-orbit assets and provide support to terrestrial forces. In future exercises,

USSPACECOM will continue to integrate holistically across regions and domains to protect and defend U.S. and allied space interests globally.

### **Personnel**

USSPACECOM is a joint organization comprised of representatives from all military branches, Active and Reserve, the National Guard, Government civilians, and contractors. Currently, we have 45 percent of our authorized end strength in place, augmented by 50 Reserve and Guard personnel, and a 300-person contractor force to fill in the skill and capacity gaps.

### **Facilities**

As our workforce grows, so too do our requirements for dedicated facilities capable of hosting our command and control suites while providing the required level of physical and cyber security to protect our personnel and mission. I am proud to tell you that over the past year we have made significant progress thanks to strong Congressional support. Specifically, Combined Force Space Component Command moved into their new headquarters at Vandenberg Space Force Base. We will break ground on the new Combined Space Operations Facility at Schriever Space Force Base which will house the Joint Task Force Space Defense and the National Space Defense Center. Numerous other efforts to renovate and provide modernized facilities to the women and men of US Space Command have also been accomplished. I look forward to your continued steadfast support as progress continues on the Combined Space Operations Facility over the coming years.



## **Strengthen Relationships and Attract New Partners**

### **USSPACECOM's Role in Developing Tenets of Responsible Behavior in Space**

Interim National Security Strategy guidance calls for the U.S. to lead “in promoting shared norms and forge new agreements on ... space.” As the United States Space Priorities Framework states, “As space activities evolve, the norms, rules, and principles that guide outer space activities also must evolve. The United States will lead in the responsible, peaceful, and sustainable exploration and use of outer space.”

In this regard, U.S. national security space operations will continue to comply with applicable international law and demonstrate leadership in both the responsible use of space and stewardship of the space environment. To accomplish this, USSPACECOM is also working with key stakeholders across the Department of Defense to develop specific DoD behaviors that further define the Secretary of Defense's five Tenets of Responsible Behavior in Space. The intent of these behaviors is that all Department of Defense space operators will follow them under normal circumstances and throughout competition in order to enhance the security, safety, stability, and long-term sustainability of the space domain and reduce the risk of miscalculation and escalation.

USSPACECOM's efforts will enable Department leadership to inform broader U.S. positions regarding specific actions in space for upcoming interagency, commercial, and international engagements. As the Secretary of Defense has stated, “it is incumbent on the Department of Defense to continue space leadership through demonstrating and acknowledging responsible behavior in space.”

**USSPACECOM is strengthening alliances and attracting new partners, while improving coalition capabilities and space domain awareness**

Mutually beneficial alliances and partnerships provide a critical asymmetric advantage that our adversaries cannot match, contributing to our collective space security. Our partners bolster U.S. operational reach and increase our strategic flexibility in all domains.

USSPACECOM's alliances and partnerships are a key strategic edge in the competitive environment of space. Strengthening and expanding our relationships into mature space defense partnerships allows for burden-sharing that can decrease costs, accelerate coalition development, increase information sharing, and leverage partner capabilities to maintain a safe, secure, and sustainable space environment. To this end, we continue to expand our network of partner nations, international organizations, and commercial entities that bring situational awareness, mutual support, and technological innovation to the space enterprise. In the past year alone, we welcomed a General Officer from the United Kingdom as our Deputy Director of Strategy, Plans, and Policy, and added liaison officers from both France and the United Kingdom, and we have plans for more from several allied nations. Moreover, our allies and partners continue to prioritize the space domain, exemplified by both Germany and the United Kingdom establishing their own Space Commands in 2021.

Throughout 2021, USSPACECOM expanded space related data sharing agreements, including new partnerships with Colombia, Greece, and Ukraine. To date, USSPACECOM has agreements with 30 nations and two intergovernmental organizations. Last year, I also met with the Indian Chief of Defense and Chief of Defense Staff to discuss our relationship on space operations, exercises, and information sharing. Additionally, USSPACECOM established a security cooperation program that assists partner nations in developing space capabilities and capacities. Coordination between USSOUTHCOM and USSPACECOM delivered tangible

growth and development of the Brazilian, Chilean, Colombian, and Peruvian military space capabilities and produced strategic opportunities for the United States to counter problematic PRC influence and access in Latin America. USSPACECOM also reinforced and expanded partnerships through direct cooperation with more than 20 international partners through the Global Sentinel campaign series. Global Sentinel improves multinational collaboration in the domain to support shared space domain awareness, and posture core international space operations expertise for future combined missions.

Lastly, through the Command's Defense Personnel Exchange Program, we expanded agreements to support exchange and liaison personnel assignments with Australia, Canada, France, Germany, Japan and United Kingdom.

### **Global Integration with other Combatant Commands**

USSPACECOM continues to advance space integration with the other combatant commands and establish normalized relationships to coordinate, integrate, and synchronize operations extending beyond earthbound geographic areas of responsibility. To facilitate cooperation, interoperability, and unity of effort, USSPACECOM created Joint Integrated Space Teams (JIST) comprised of space professionals and intelligence planners working within every combatant command headquarters. These teams have evolved from a plans-focused effort to include operational integration, intelligence collaboration, and exercise support. These multi-functional JISTs provide space expertise to each Combatant Command's campaign plan and operation plans development, bolster security cooperation with space engagement activities, and integrate space capabilities to strengthen exercise planning activities. Additionally, JISTs coordinate, integrate, and de-conflict global space operations in direct support of each Combatant

Commander. To solidify this integration further, we also engaged in Warfighter Talks with United States Cyber Command and United States Space Force in 2021.

### **Integrating Commercial Interagency, and Academic Organizations**

USSPACECOM continues to support NASA's Commercial Crew Program for contingency rescue operations for crewed flights to and from the International Space Station as part of our Human Space Flight Support role. USSPACECOM is committed to assuring the safe exploration of space and is supporting NASA's planned lunar missions by providing crew and spacecraft recovery for the upcoming Artemis program and associated training events. To that end, USSPACECOM's space domain awareness capabilities also help support NASA's planetary defense mission to ensure we maintain space as a source of American innovation and opportunity.

USSPACECOM also has partnerships with four academic institutions and over 100 commercial satellite owners, operators, and service providers. By providing advanced information and services to space-faring partners, we display American leadership in the space domain, promote transparency in the responsible and professional use of space, and support the eventual transition of civil and commercial spaceflight safety services to the Department of Commerce.

To address new challenges for space traffic coordination, from proliferated low earth orbit mega-constellations to intentional debris-causing events, we fully support the Department of Commerce's immediate establishment of a space traffic management capability. This includes space situational awareness – understanding the proximity of space objects to other satellites, and warning of potential conjunctions. This partnership with Commerce will allow USSPACECOM

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to focus on the inherently military functions of our space domain awareness mission, especially characterizing objects and actions on orbit to identify potential threats.

Additionally, the Command must improve its ability to tap into research and development, both through our government resources and our FFRDC partners in particular. Ongoing efforts within the Office of the Secretary of Defense Research and Engineering modernization strategies as well as work within the service laboratories, the Space Development Agency, Missile Defense Agency, Strategic Capability Office, Rapid Capability Offices, NASA, National Laboratories, and many others are absolutely essential to meet our critical challenges in maintaining our technological lead. We need to increase collaboration with the domestic and international commercial space industry in order to leverage their technological advancements, entrepreneurial innovation and investments to enable new and emerging capabilities at a decreased cost and an accelerated pace to counter threats to U.S., ally, and partner capabilities. We also need to improve our ability to develop rapid commercial space launch capabilities from multiple locations and integrate commercial space capabilities that provide both near and far-term advantages.

### **Conclusion**

USSPACECOM preserves U.S. freedom of action and provides the National Command Authority strategic options in the increasingly competitive space domain. The Command strives to attain FOC as soon as possible and continues to accelerate the pace of its operations to deter aggression; defeat adversaries; deliver space power; and defend U.S., allied, and partner interests. To do so, we must begin with the first task of increasing our space domain awareness, and request Congress's support to ensure we have the best possible capabilities to sense and evaluate the critical and increasingly complicated space environment. The Command achieved

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IOC last year, and has developed our roadmap and strategies for getting to FOC, deepening our relationships, and continuing to provide the most advanced space capabilities in the world. On behalf of the most critical asset in our command, the Soldiers, Marines, Sailors, Airmen, Guardians, civilians, and families of USSPACECOM, thank you for your support in our mission to conduct operations in, from, and to space in order to ensure there is *never a day without space*.