VIEW

A Plan for a US Space Force

The What, Why, How, and When

Lt Col Jonathan Whitney, USAF
Maj Kai Thompson, USA
Maj Ji hwan Park, Republic of Korea Marine Corps (ROKMC)*

> *We are going to have the Air Force, and we are going to have the Space Force—separate but equal.*
>
> –President Trump
> National Space Council press conference, 18 June 2018

(Source: United Launch Alliance/DoD Image Library)

Introduction

The president's direction emphasizes the ongoing, status-quo mentality that our current strategy for the national security of space cannot hold and that in the coming decade the US's reliance on space-enabled capabilities will be challenged. In 2010, USAF Gen C. Robert Kehler, then the commander of the US Air Force

*The authors wish to express their gratitude to their Joint Forces Staff College faculty advisor, Lt Col James Pochopien, USA, for the help and guidance he provided on the article.

Space Command (AFSPC), noted that our strategic approach has not changed since the collapse of the Soviet Union, and we need to safeguard our military, intelligence, and commercial space assets against China, Russia, and other state actors' (i.e., Iran or North Korea) space and counterspace capabilities that will threaten de facto US superiority in space, effectively how the US wages war.[1] As the US's space war-fighting capabilities continue to be challenged by near-peer countries, we must reestablish the US Space Command (USSPACECOM) as a unified combatant command (CCMD) to coordinate our efforts to avoid and prepare for conflicts in space.

Current US Military Space Organizations

To justify why a dedicated organization for the space domain is needed, we need to understand the current space military organizations of the US and its nearest competitors—Russia and China. As the US military's tactical exploitation of space grew in the 1950s, the needs for an organizational entity to develop, train, and equip the military with space capabilities and expertise became more apparent. In 1982, AFSPC was created under the USAF, followed later by the separate joint force USSPACECOM CCMD in 1985 (see fig. 1).

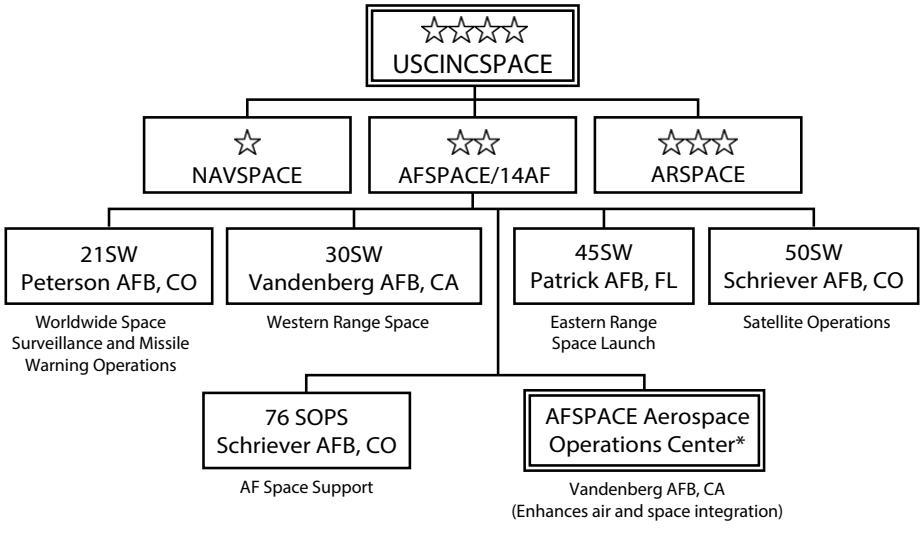

Figure 1. USSPACECOM organization in 1985
(Source: Air University Space Reference Guide, Second Edition, August 1999)

To meet its function to conduct war fighting as a CCMD, USSPACECOM developed the first doctrine for the military for the integration of space capabilities into conventional military operations as the dependence on such systems by

our military, and increasingly among our closest allies, grew exponentially. As part of Secretary of Defense Donald Rumsfeld's initiative to transform the US military, USSPACECOM was merged under US Strategic Command (USSTRATCOM) in 2002 in the unified command plan, which aimed to improve combat effectiveness by speeding up information collection and assessment for strategic decision making.[2] The joint force space component commander now acts as an unofficial subunified CCMD headquartered at Peterson AFB, Colorado. Its core missions are space-lift operations and to develop, acquire, deploy, operate, manage, and maintain satellite constellations of 77 satellites and their respective ground (control and user) segments. As the primary service responsible for military satellites, it is fundamentally important to the US military, our national security interests, and commercial customers for the USAF (through AFSPC) to conduct these space operations to have assured and free access to space.

The US Army's (USA) space mission is organized under the Space and Missile Defense Command (SMDC) and Army Forces Strategic Command (ARSTRAT) as component commands to USSTRATCOM. They provide satellite communications (SATCOM) by conducting satellite space control and support operations and missile defense operations for the Army, joint force, allies and partners, which enable multidomain combat effects, and the detection of strategic attacks.[3] As the DOD's SATCOM system experts, the Army's 53rd Signal Battalion ensures access through five distributed broadband SATCOM operations centers located worldwide for active payload management for all military users in joint operations. By integrating SATCOM with positioning, navigation, and timing support, the SMDC provides critical friendly force tracking capability to the combatant commanders, support agencies, allies and multinational partners for the execution of location functions such as emergency message alerts, notifications and tagging, tracking, and positioning.

The US Navy (USN) integrates space capabilities through their network of Marine Operations Headquarters. Space Support Working Groups provide support to space systems and services such as data encryption, signals intelligence, information operations, cyberspace, and electronic warfare impact operations.[4] As the DOD's lead service for narrowband SATCOM, the USN operates, manages, and maintains three satellite constellations of 12 satellites through their Navy Satellite Control Network in support of US forces, international partners, and allies. The USA and USN services represent the biggest users of space systems and have the largest numbers of user equipment.

The US Marine Corps (USMC) integrates space capabilities and effects for use in decentralized combined arms operations conducted by a Marine air-ground task force and joint forces by having billets assigned to joint land force compo-

nents, various services, and joint commands.[5] Marine Expeditionary Forces also receive space support directly from the Army's space support elements and ARSTRAT assets.

Although each service brings specific capabilities to the fight, it is important to understand our adversaries' capabilities as well. China and Russia, our near-peer competitors, have increased their military space emphasis from their organizational structure and investment in kinetic physical and nonphysical kinetic threats to counter the US in the space domain. This article will now explore the steps China and Russia have taken to change their space warfare capabilities. Our adversaries' changes must drive the US to explore ways to counter this emerging threat and posture it to maintain our necessary combat power projection dominance.

Chinese Military Space Organization

Traditionally China's armed forces have been modeled in the same Soviet-era, top-heavy command structure that remained a fundamentally ground force–centric organization. Besides lending itself to a single-service operation, Chinese space forces were hindered in their development of a force capable of conducting modern joint operations by the People's Liberation Army's (PLA) bureaucratic resistance to changing their outdated command and control structure (C2) in which the services, rather than theater commanders, possessed operational authority during peacetime (see fig. 2).

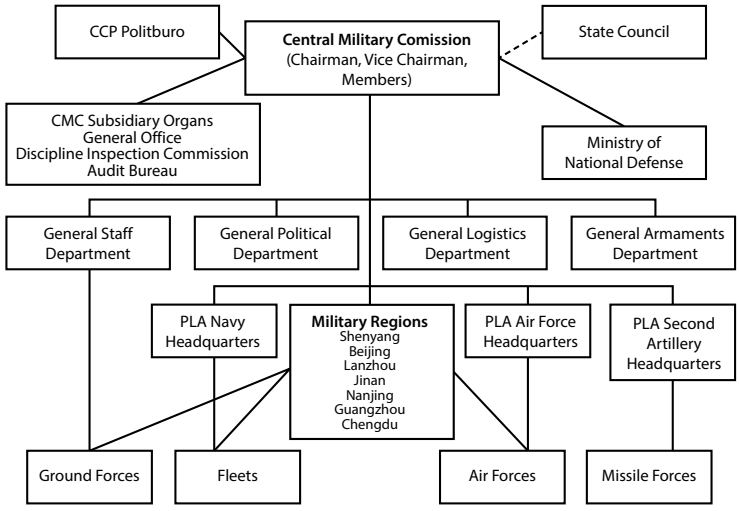

Figure 2. The PLA prior to 2015

(Source: Phillip C. Saunders and Joel Wuthnow, *China's Goldwater-Nichols? Assessing PLA Organizational Reforms*, *Joint Force Quarterly* 82 [July 2016]: 68–75).

In late 2015 and early 2016, Central Military Commission chairman and Chinese Communist Party General Secretary Xi Jinping announced the most wide-ranging restructuring of the PLA since 1949 (see fig. 3).[6] The reforms included the establishment of the Strategic Support Force (SSF) charged with overseeing Chinese military space, cyber, and electronic warfare capabilities.[7] Rather than treating space as a standalone military domain, the SSF focused on how space, along with electronic warfare and cyber, can be used to increase jointness for military effects. The SSF is organized with four subsidiary departments: General Staff, General Armament, Network Systems, and Space Systems. The Space Systems department is responsible for the launch and operation of satellites to provide the PLA with C2, communications, computers, intelligence, surveillance, and reconnaissance capabilities. However, what is less certain is the scope of the force's counterspace mission. Based on its launch and satellite operations functions, the SSF's Space Systems Department would be responsible for the co-orbital counterspace mission. The SSF's Network Systems could use radio frequency signals to jam satellite communications and Global Positioning System signals, and the use of malicious software would be capable of disrupting computer network operations in satellite tracking and control ground systems.[8]

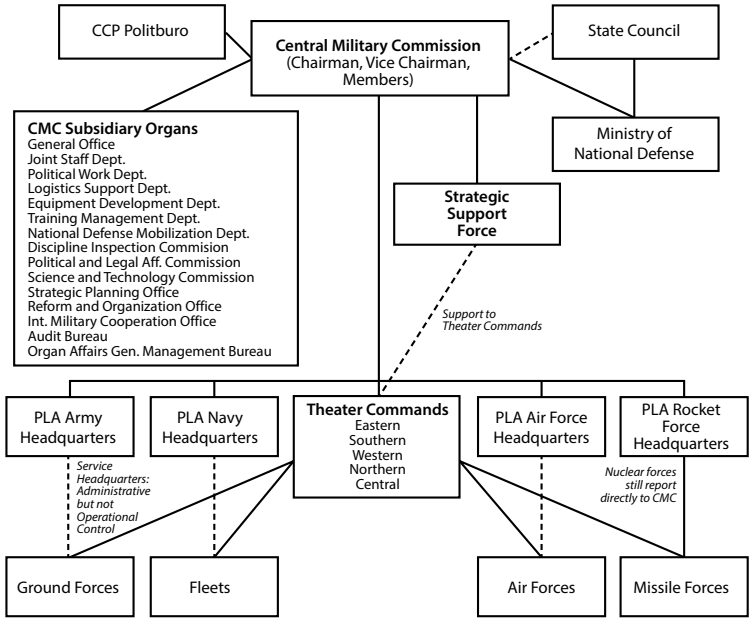

Figure 3. The PLA since reform in 2015
(Source: Saunders and Wuthnow, *China's Goldwater-Nichols?*, 68–75)

China's counterspace capabilities, like their successful demonstrations of direct-ascent antisatellite (ASAT) capabilities, may have been retained by other parts of the PLA, although it is also possible that such capabilities have been transferred to the SSF without public announcement. Another kinetic physical weapon was identified in December 2016 when China released a white paper detailing its plans to expand the "strength and size" of its space program by increasing its investment in space activities by an estimated $6 billion to fund additional space capabilities.[9] The plan has a robotic lunar program made up of several missions that will accumulate with China becoming the first country to soft-land the Chang'e 5 lunar probe on the far side of the moon to collect samples, return to a satellite in orbit, and return to Earth (planned for this year). On the surface, these peaceful space missions appear largely scientific and improve China's capacity to explore deeper into space. This complex, precision maneuvering in space beyond satellite location maintenance has military implications as a dual-use technology to apply a co-orbital kinetic kill capability that would work to exploit the US and its partner's vulnerabilities in space.

Russian Military Space Organization

Russian space forces were subordinated under the Russian Aerospace Forces in 2015 with the stated missions of monitoring space objects for the identification and prevention of potential threats to the Russian Federation in and from space, spacecraft launches, controlling and managing their satellite systems (including integrated ones intended to be used for both military and civilian purposes,) and a number of other tasks.[10] In contrast to President Trump's direction, Russia is following the current USAF organizational model of keeping a majority of its space forces integrated with the air force (see fig. 4). Maxim Shepovalenko, an analyst at the Moscow-based Center for the Analysis of Strategies and Technologies, attributed this unified aerospace theater structure to the evolving aerospace technologies and its decision to move away from maintaining an operational dividing line for fighting in the air and space theaters. This strategic viewpoint of their offensive and defensive strategic goals requires a unity of effort and command to adapt to the changing nature of war.[11]

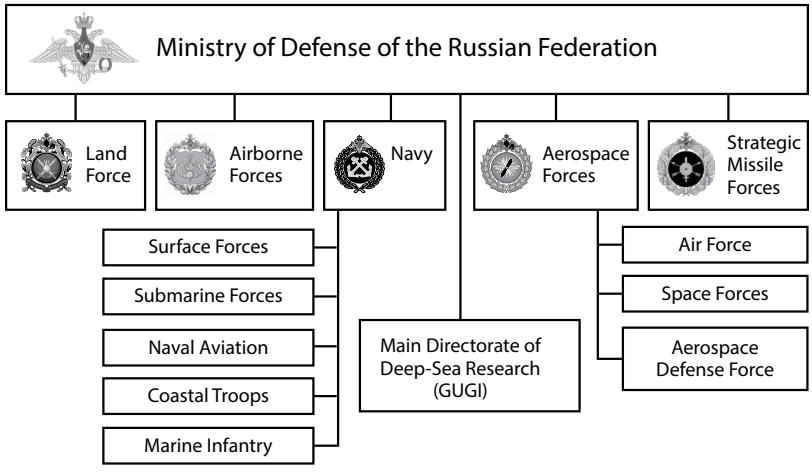

Figure 4. Current Ministry of Defense of the Russian Federation
(Source: Ministry of Defence of the Russian Federation, "Space Forces")

To counter the US in the space domain, Russia has focused on both kinetic and nonkinetic physical weapon capabilities. The Soviet Union conducted multiple successful destructive ASAT test using the Istrebitel Sputnikov missile system between the late 1960s and early 1980s.[12] While the Russians are not believed to have an operational kinetic ASAT capability right now, they continue to develop their PL-19 Nudol missile that is capable of striking a satellite in low-earth orbit (LEO) and is expected to be operational within the next several years.[13] Similar to the Chinese, Russia is also raising the threat level by advancing the development of high-maneuverability or "killer" satellites. Most notably, in September 2014 Russia's Olymp-K satellite reached orbit and then undertook a series of irregular maneuvers, which came within seven miles of a pair of Intelsat communications satellites.[14] While this on-orbit technology demonstration of proximity operations could have peaceful applications such as satellite refueling or repair, it can just as easily be used against an adversary.

Ground-based antennas have been able to jam Global Positioning System signals and communication transmissions. Directed-energy or lasers, high-powered microwaves, and either aircraft-mounted or ground-based electromagnetic pulse weapons would target LEO satellites. Lasers would be used to temporarily dazzle or permanently blind optical sensors while microwave weapons can disrupt or disable electronics on LEO remote-sensing and missile defense satellites.[15]

As we have outlined throughout, our near-peer space capable countries have invested heavily in their force structure, tactics, and weapons capabilities to deny, degrade, disrupt, destroy, and manipulate the US military's asymmetric advantages in space. We need a proportional, funded, and consolidated organization to

coordinate our efforts and maintain dominance in the future conflicts while reducing overhead costs and integrating joint war fighting functions.

How the Future Space Organization will be Created

Constitutionally, only Congress has the authority to "raise and support armies" like the Space Force and to cover the cost of such realignment under Title 10 of the US Code.[16] The Pentagon has already been working a response to the 2018 National Defense Authorization Act (NDAA) mandate to study to how best to organize the space missions. The response was to be completed with the interim report delivered in June 2018 and a final report to Congress delivered in August 2019.[17] The final report reviewed four major focus areas: 1) research, development, acquisition, and sustainment, 2) organization and governance, 3) joint war fighting, and 4) workforce development. Most recently, the 2019 NDAA language requires the DOD to develop a plan by year's end to establish a separate, alternative process for defense space acquisitions, with respect to space vehicles, ground segments, and terminals to expedite the current unresponsive, bureaucratic acquisition process.[18] However proactively, the Air Force had started an uncoordinated major overhaul of the acquisition, development, and deployment of military space and ground control segments processes at the Space and Missiles Systems Center at Los Angeles AFB, California and will be completed later this year.

While it will take the Pentagon many years to lay the groundwork for a future new organization regarding its objective, staffing, and funding levels, there are multiple options for how the management of the space war-fighting domain could be organized. Whether the Space Force is a separate branch, a corps resting under the Department of the Air Force, or a separate CCMD, it should address the basic functions of a military service: to provide, integrate, and employ the forces. As Gen (ret.) Anthony Zinni, USMC, retired, explained during a 2018 Joint Forces Staff College seminar, the focus here should be on the integration portion.[19] The US military has been successful with centralizing control into a single organization like the US Transportation Command, US Special Operations Command or US Cyber Command (USCYBERCOM) by eliminating multiple stovepipe organizations and increasing interoperability of mission assets. These commands also demonstrated the need for a focal point as the sole leader that speaks for and is responsible for implementing the mission's future organization, resourcing (budget), capabilities requirements, and employment strategy. To make sure space war fighting gets the priority it needs, a focused and separate command and commander must be established. This need was further highlighted by Gen John E. Hyten during his 26 February 2019 Senate hearing when he clearly stated he cared desperately about space but as a commander of US Strate-

gic Command, space will never be his number one priority.[20] The joint integration of space operations is accomplished by having dedicated space personnel proportionally staffed in all aspects of Joint Force Headquarters and the Joint Staff in addition as a service component to each CCMD.

The most effective way to keep the US ahead of our adversaries in providing, operating, and defending space capabilities is the re-establishment of USSPACECOM. The model to create USCYBERCOM should be used again as the Air Force, Army, Navy, and Marine Corps all have space experts that can be pulled to draft the mission theory, doctrine, and strategy. Using the CCMD structure would eliminate the immediate bureaucratic minutia required for creating a new organization and would build on the existing integration and jointness of multiservice operations. This would also give the organization the opportunity to determine how, if when, intelligence (e.g., National Reconnaissance Office), governmental (e.g., National Aeronautics and Space Administration or the National Oceanic and Atmospheric Administration) or commercial (e.g., SpaceX or the United Launch Alliance) space entities will be integrated with this organization.

The other organizational options would distract from the need for a warfighting focus with space now. As the former Secretary of the Air Force, the Honorable Deborah James explained in a 30 July 2018 Brookings Institution panel, a service branch organizes, trains, and equips the military force but it doesn't conduct the war fighting, which is the CCMD's function.[21] The last time an independent branch was created was when the Air Force separated from the Army in 1947. But the USAF relied on the almost two decades that the leadership had between World War I and II to develop their airpower strategy and technology. We have the opportunity to form a force without an extreme crisis like a space or regional conflict to drive its implementation but instead based on our ability to anticipate. While more progress still needs to be made on the theory of space domain-specific war fighting (doctrine, strategy, operational concepts/principles, and tactics),[22] the technology required to be effective is still very much in the developmental phase. The DOD needs the structure of a CCMD to outpace real and present threats to America's reliance on space for defense and commerce.

General Hyten made a series of space organization recommendations to Congress in 2017 and a number of them were part of the 2018 NDAA.[23] Specifically, the following authorities, capacities, and capabilities must be designated to the focused and empowered space domain lead:

- Oversee the acquisition, development, and deployment of military space and tactically employed and strategic-level ground control segments.

- Act as the single authority for enterprise-wide defense system architect and integrator for the overall space architecture to ensure all service's requirements were adequately addressed.
- Create a rapid space capabilities office with its mission to quickly design and acquire major, new, affordable space capabilities. This mission has been demonstrated by USSOCOM to leverage rapid prototyping to field experimental technologies into acquisition programs.
- Serve as the executive agent for space requirements in Joint Requirements Oversight Council deliberations.
- Establish national space security executive committee to provide strategic and policy guidance for all DOD space acquisitions.

The creation of a separate space corps or branch (AKA Space Force) is only a question of time. The DOD should follow a top-level change process in conjunction with an analysis tool like the McKinsey 7S management model (see fig. 5).[24] The McKinsey 7S model (with the 7S being structure, strategy, systems, skills, style, staff, and shared values) assesses and monitors changes in a proposed future organization to help identify what needs to be realigned. Once the military can ensure an effective space mission execution and demonstrate capability and capacity to produce direct combat effects in and from space to US military operations, the necessary bureaucratic actions should be taken in a defense authorization bill.[25]

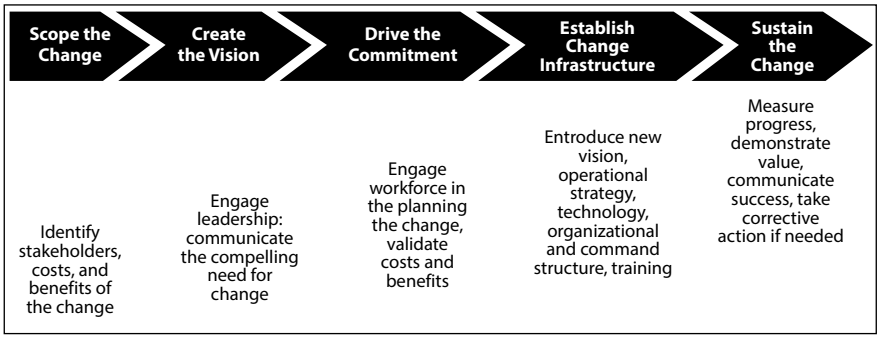

Figure 5. Space Force Organizational Change Process

(Source: Hayes, Theory and Practice of Change Management, 137)

The current DOD proposal for standing up a Space Force (nicknamed the 1601 report after the congressional provision in the 2018 defense policy bill) includes creating the US Space Command as a new unified combatant command, building a cadre of space officers called the "space operations force" to provide space expertise to the combatant commands, establishing the Space Development Agency as

a joint space procurement effort to leverage prototyping and experimentation to rapidly field new capabilities, and the creation of a dedicated space staff in the Pentagon, led by an Undersecretary of the Air Force for Space (see fig. 6).

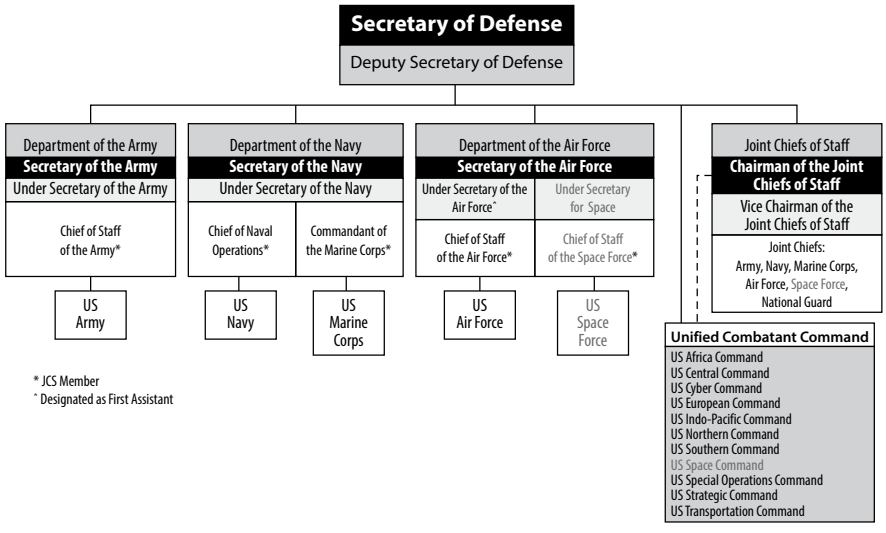

Figure 6. Space Force Organizational Alignment within the Air Force.

(Source: Senate Armed Services Committee, "Space Force Hearing, HON Heather Wilson, Secretary of the Air Force")

The initial space staff will be established in October 2019 with the Space Force resources—personnel and budget authority—transferred from the existing military services and phased in over five years (2020–24). Full operational capability is projected in Fiscal Year 2024. This proposal is expected to balance the benefits of elevating, unifying and providing additional focus to space as a war-fighting domain, yet does so in a cost-effective way.

Moving forward with our national space security strategy that is already being challenged by near-peer competitors, Pentagon officials have prepared the request for legislative action that would allow for the creation of a new CCMD (USSPACECOM) as the combat arm for space. Increased coordination among all of the US combatant commanders, the National Reconnaissance Office, and the intelligence community is needed to ensure USSPACECOM has the insight to integrate the space domain with other DOD strategic capabilities. USSPACECOM must be positioned to field capabilities to deter our adversaries from attacking our vital on-orbit space systems and should deterrence fail, defend our vital national military and commercial interests, and prevail against competitors who challenge them. ✪

Notes

1. Gen C. Robert Kehler, USAF (remarks, 26th National Space Symposium, Colorado Springs, CO, 13 April 2010).
2. Cynthia Watson, *Combatant Commands: Origins, Structure, and Engagements* (Washington, DC: ABC-CLIO, 2011).
3. DOD, *Joint Publication (JP) 3–14 Space Operations* (Washington, DC: DOD, 10 April 2018), http://www.jcs.mil.
4. JP 3–14, III-5.
5. JP 3–14, III-4–5.
6. Phillip C. Saunders and Joel Wuthnow, *China's Goldwater-Nichols? Assessing PLA Organizational Reforms*, *Joint Force Quarterly* 82 (July 2016): 68–75, https://ndupress.ndu.edu.
7. House Armed Services Committee, "Worldwide Threat Assessment of the U.S. Intelligence Community, HON Daniel R. Coats, Director of National Intelligence (DNI)," 115th Congress (Washington DC, 13 February 2018).
8. Kevin Pollpeter, Michael Chase, and Eric Heginbotham, *The Creation of the PLA Strategic Support Force and Its Implications for Chinese Military Space Operations*, Rand Corporation, 2 May 2016.
9. Nayef Al-Rodhan, "China Aims for the Moon—and Beyond," *Diplomat*, 14 February 2018, https://thediplomat.com.
10. Saunders and Wuthnow, *China's Goldwater-Nichols?*, 68–75.
11. Matthew Bodner, "As Trump Pushes for Separate Space Force, Russia Moves Fast the Other Way," *Defense News*, 21 June 2018, https://www.defensenews.com.
12. Bart Hendrickx, "Naryad-V and the Soviet Anti-Satellite Fleet," *Space Chronicle 69 Supplement 1*, 2016.
13. Parker Tucker, "Pentagon Intelligence Chief: Russia and China Will Have Weapons in Space 'In the Near Future,'" *Defense One*, 27 June 2018, https://www.defenseone.com/.
14. Sandra Erwin, "U.S. Intelligence: Russia and China Will Have 'Operational' Anti-Satellite Weapons in a Few Years," *Space News*, 14 February 2018, https://spacenews.com/.
15. Steve Lambakis, *Foreign Space Capabilities: Implications for U.S. National Security*, *National Institute for Public Policy*, September 2017, http://www.nipp.org/.
16. U.S. Constitution, *Article I.8.12*, "Powers of Congress," accessed 14 May 2019, https://www.usconstitution.net.
17. Joe Gould, "No Space Force for Trump in Big Pentagon Policy Bill," *Defense News*, 24 July 2018, https://www.defensenews.com/.
18. National Defense Authorization Act (NDAA), Fiscal Year (FY) 2018, 250, https://www.congress.gov.
19. Gen Anthony Zinni, USMC, retired (presentation, Joint Forces Staff College, NAS Norfolk, VA, 2018).
20. Marcia Smith, "Hyten Enthusiastic about USSPACECOM, But Wants Some Operations to Remain in Omaha," *Spacepolicyonline.com*, 26 February 2019, https://spacepolicyonline.com.
21. "Space Force: The Pros and Cons of Creating a New Military Branch," Brookings Institution Foreign Policy panel, 30 July 2018, https://www.brookings.edu.
22. Lt Gen David Deptula, USAF, retired, "Space Force: Go Slow, Learn from Army Air Corps," *Breaking Defense*, 22 June 2018, https://breakingdefense.com.

23. House Armed Services Committee, "Thoughts on National Security Space Organization, Gen John E. Hyten, Commander, USSTRATCOM," 115th Congress, 1st sess. (11 January 2017); and NDAA, FY 2018, 436–38.

24. John Hayes, *The Theory and Practice of Change Management* (London: Palgrave MacMillian, 2014), 137.

25. Deptula, "Space Force: Go Slow," *Breaking Defense*.

Lt Col Jonathan Whitney, USAF

Lieutenant Colonel Whitney (BSE, Texas A&M University; and MBA, Pepperdine University) is currently serving as the acting chief, Space Control Division, for the Principal Assistant of the Air Force for Space in the Pentagon, Washington, DC.

Maj Kai Thompson, USA

Major Thompson (BS, Central Connecticut State University; MS, Embry-Riddle Aeronautical University) is an Integrated Joint Special Technical Operations Force Modernization Proponent Branch Space Operations officer in the Headquarters, Department of the Army Deputy Chief of Staff (Operations and Plans) in the Pentagon, Washington, DC.

Maj Ji hwan Park, ROKMC

Major Park (BS, Cheju National University; MS, Ajou National University) is a military instructor in the ROKMC Education Training Group.