Vol. 65, April 2026

MITCHELL INSTITUTE
Policy Paper

Key Points

The United States and China are in a race to dominate space. Winning this new space race is not characterized by any singular achievement, but by successfully fostering the long-term use and exploration of space and a sustained human presence, particularly on the Moon. Positional advantage in this competition gains the ability to set positive norms, standards and legal frameworks.

Competition for control of lunar resources and territory will likely reach a tipping point, at which time the modern-day space race could turn into conflict. The anarchic nature of the Moon combined with China's record of belligerent use of hard power yields a predictable future where United States lunar interests are put at risk.

China's consistent lunar ambitions and human spaceflight programs, all led by the People's Liberation Army (PLA), stands in stark contrast with the United States' propensity for inconsistent vision and traditional civil-military divide. This disparity could contribute to China gaining a significant advantage in the modern-day space race.

U.S. national security, strength, and prosperity are dependent on securing space dominance in ways that require Title 10 authorities, to include space and lunar habitation.

Consequently, the U.S. Space Force should establish a military human spaceflight program within its Space Test Course graduate program to counter PLA space activities and enforce positive norms and standards. These Guardians will provide the seed to grow the body of knowledge on skills, tools, and concepts needed for future space superiority.

Low Earth orbit space station proving grounds and partnerships will be critical to establish a military human spaceflight program. Future military skills, tools, and concepts for defensive operations on the Moon must serve as the touchstone. On-orbit operational advantages from manned spaceflight may also be pivotal as military space operations evolve.

Guardians are best suited for this program as they are space-minded operators: their military planning considers complexities that are only associated with the space domain.

Military Human Spaceflight: A Key Component to U.S. Space Superiority

By Col Kyle Pumroy, USSF (Ret.)

Senior Resident Fellow for Space Studies, Mitchell Institute Spacepower Advantage Center of Excellence

Abstract

The United States and China are engaged in an enduring competition for leadership in space. Leadership in space is no longer defined by singular achievements but by the ability to sustain a human presence from low Earth orbit (LEO) to the lunar surface and beyond, establish favorable norms and standards, and enforce them. The anarchic nature of space habitation, particularly on the Moon, dictates that the nation to first secure and defend LEO-to-lunar human presence will be able to set norms, standards, and legal frameworks to their advantage.

China's military-led space habitation and lunar ambitions have maintained a consistency of purpose with goals that execute on schedule. Their plans for manned lunar stations and control of lunar territory must be viewed as credible. In contrast, the U.S. human spaceflight and Moon programs have been marred by inconsistency in vision, policy, and funding, allowing China to gain steady ground over time. This disparity, paired with China's consistent use of belligerent force to assert territorial dominance, is concerning. On the present trajectory, China is poised to achieve positional advantage in setting norms, standards, and legal frameworks for lunar habitation and lunar economy. This condition is unacceptable for U.S. national security.

A U.S. military human spaceflight program delivers the ability to ensure that national investments in lunar habitation and economy are underpinned with Title 10 empowered defenders in the future. Such a program will take decades to build. Thus, now is time to begin placing Guardians in space to develop the skills, tools, and concepts necessary to build a future capacity to defend core U.S. interests and instill credibility into norms and standards. A Space Force-led military human spaceflight program is a national security imperative for sustaining strategic focus on U.S. spacepower. Charging the Space Force with this leadership role promotes Title 10 warfighting authorities and a national defense mindset in the advancement of human spaceflight.

A pragmatic pathway for developing Guardian spaceflight capabilities is essential for longterm space superiority. It should center on leveraging the Space Test Course (STC) and advancing partnerships with NASA and the growing commercial market. LEO space stations will serve as the proving ground for Guardian development of national defense requirements related to space habitation. Embarking on such a program will accelerate industrial innovation and preserve American leadership in the space domain.

Introduction

The United States and China are competing in a modern-day space race. The results will portend generational strategic impacts in space and on Earth—and China is currently on a trajectory to dominate. It is time for the United States to commit the time, consideration, actions, and resources needed to prevail in this contest. Unlike the space race of the Cold War, this race has no defined finish line. Rather, the modern-day space race is characterized as an enduring competition for long-term strategic positional advantage in space. This will go to the nation that can execute and defend its on-orbit activities, such as routine, unimpeded human transportation, sustainment of logistics lines ranging from low Earth orbit (LEO) to deep space, control of critical resources on lunar poles, and the establishment of secure, long-duration lunar-surface habitats and power systems.[1] The first player to solidify strategic positional leadership and secure these conditions will have the advantage of defining the rules and norms of humankind's economic, explorative, and security interests in space. Collectively, assuring these interests will play a major role in positioning the leader of the space race as a dominant power here on Earth and beyond.

When competition to establish lunar habitats and control of lunar resources reaches a tipping point, the modern-day space race risks a breakout into overt conflict. The anarchic nature of lunar territory, combined with China's record of belligerent use of hard power to assert territorial dominance, yields a predictable future where U.S. lunar interests are put at risk. Although The 1967 Outer Space Treaty (OST) prohibits claims of lunar sovereignty and militarizing the Moon, China's habitation plans are closely aligned with their military and are inconsistent with the provisions.[2] Moreover, China's record of territorial aggression and ignoring treaty agreements must drive a strategic vision unconstrained by the OST. While upholding the OST should be the United States' desire and priority, pragmatically, it must prepare otherwise.

A military human spaceflight program will be crucial to establish and secure a strategic positional advantage in space, particularly as it pertains to the Moon. This follows the example set by every other form of human exploration throughout history. When territorial conquest, the potential for economic gain, and national interests overlap, societies seek to establish favorable norms and standards and do so using various degrees of hard power. Accordingly, hard power will ultimately matter in this new space race. The United States must anticipate one day deploying Guardians into space, with Title 10 authorities, to underpin norms and standards with credible enforcement. This requires the U.S. space security strategy to include a formal military human spaceflight program.

Why Space Force Operations Need Title 10 Authorities

Title 10 of the U.S. Code establishes the statutory framework for the organization, responsibilities, and authorities of the U.S. Armed Forces. It defines how military forces are structured, trained, and employed, and it provides the legal basis for conducting combat and other defense-related operations. Actions carried out under Title 10 authority are considered overt military activities, executed through the Department of War chain of command and subject to the law of armed conflict. This contrasts with other authorities, such as intelligence activities, which operate under different legal frameworks and oversight mechanisms. The significance of Title 10 lies in its clarity: it ensures that military actions are legally attributable to the United States and governed by established rules of engagement and accountability standards. This clarity becomes increasingly important in contested or ambiguous domains, where the distinction between civilian, intelligence, and military actions can blur.

Similarly, the United States should not underestimate the threat simply because it is not yet a highly visible one. China is a burgeoning space power, so much so that they stand a very real shot at winning the current race.[3] They have created an aggressive strategy and are achieving their stated goals on time. The United States, by comparison, has repeatedly slipped schedules by several years for key space exploration objectives. Given China's demonstrated success, the United States must re-double its efforts to remain competitive and retain an advantage over China in an enduring competition for national spacepower.

Chinese leadership considers access to and habitation of space, particularly the Moon, as an extension of their territorial ambitions.[4] They are pursuing these objectives with dual-use military-civilian technologies and programs, meaning all technology and programs are either operated by or can quickly transition to the Chinese military. Thus, from a national security standpoint, the United States should consider all China's "dual use" systems as simply "military" systems, including their crewed efforts.[5]

The prospect of China exercising hard power projection on the Moon is a reasonable extension of China's clear track record of terrestrial territorial expansion though military means. The PLA has continually increased the frequency of its air and maritime incursions around the Taiwan Strait, including a number of military exercises.[6] China's sovereignty claims in the South China Sea are reinforced though the harassment of civilian fishing vessels from other nations by PLA Navy and Chinese Coast Guard vessels and the deployment of military air patrols to challenge established boundaries. Moreover, China has continued to seize disputed areas in the Spratly and Paracel Islands for over 20 years through the formation of artificial, militarized reefs. These activities will predictably extend to space habitation and lunar exploration. Countering or preventing China's violation of norms and hostile boundary pushing in space must similarly be seen as a long-term national security imperative. China must not be allowed to secure its territorial aims in space with hard power.

Unlike China's completely military-led space program, the United States has long maintained separation between its military and civilian space enterprises, with the U.S. Space Force pursuing space superiority using remotely operated, unmanned systems. Meanwhile, NASA oversees human spaceflight. While this has benefits, such as promoting international scientific and research partnerships, it presents a distinct challenge for the Department of War in the event that, one day, Chinese Taikonauts attempt to challenge American interests by, for example, endangering civilians on the Moon or elsewhere extra-terrestrially. The U.S. Space Force currently has no intentions for building properly trained, organized, and equipped personnel to physically operate beyond Earth to protect American interests or enforce norms and standards.[7] Legal authorities also matter. Even if NASA astronauts are present in a future conflict, they will not be empowered with the Title 10 authorities necessary for defense. This would be akin to asking the merchant marines to execute the duties of a warfighting Navy—the lack of training, equipment, and legal authorities would impair the necessary actions for national security. As such, the United States is almost solely reliant on projecting power in space through unmanned systems; a solution that may likely prove inadequate to meet both effects and deterrence needs in the domain.

Importantly, from China's perspective, might makes right in the establishment and enforcement of norms and standards for human spaceflight and habitation, and the Space Force has no means of contradicting that belief. If the Chinese military initiates hostile activities in space with Taikonauts, the U.S. Space Force will find itself in a highly reactionary position. Establishing

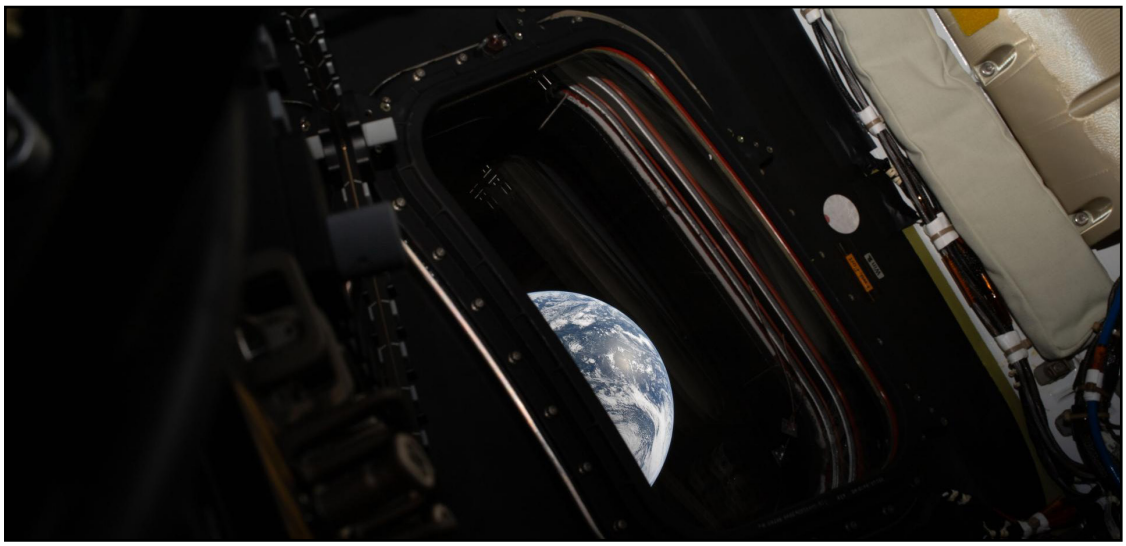

Figure 1: Artemis II crew view of Earth from the Orion spacecraft after conducting the translunar injection burn.
Credit: NASA.

norms and standards from the terrestrial realm will prove ineffectual without on-orbit enforcement mechanisms. This is why it is essential that the U.S. Space Force begins developing a military human spaceflight program as a foundational component of America's defense of its national security interests in space, including human presence and activity on the Moon. Whoever first establishes a durable, defendable LEO-to-lunar infrastructure will gain the right to establish and enforce norms and standards. The United States must ensure it wins that right, but it will demand properly trained, organized, and equipped Guardians in space who are empowered with Title 10 authorities.

Creating the capacity and capabilities needed to cement leadership in the new space race is not something that can be executed rapidly. It requires a deliberate, iterative path of mission development. If the United States can reasonably expect China to execute routine lunar activities at a lunar research station by 2040, then the time to begin this journey is now. Guardians will need to begin by developing the anticipated skills, tools, and concepts necessary to drive norms and standards on the Moon with LEO as a proving ground. Taikonauts will likely seek to do the same. This proving ground must be distinct from the International Space Station (ISS), as Title 10 tactics, techniques, and procedures (TTP) cannot be studied and explored in the presence of Russian adversaries on a platform slated for decommission in the next four years. Iterative mission progress is exactly how U.S. space programs progressed in the original space race, with Mercury, Gemini, and then Apollo. A Space Force spaceflight program should follow a similar progression.

The United States must tackle specific national imperatives to sustain global leadership in human space exploration through the end of the 21st Century. Foremost, the United States must begin the development of initial requirements and tasks for a military human spaceflight program within its space security strategy, assigned to the Assistant to the President for National Security Affairs (APNSA) within the President's Executive Order on Ensuring American Space Superiority.[8] NASA support for the U.S. Space Force in creating this national security imperative will be critical to its success given the Agency's expertise and proven track record in human spaceflight. With a potential "in person" lunar conflict with China as the contextual touchstone, the U.S. Space Force

must begin a pragmatic multi-decade effort, leveraging its Space Test Course (STC), as well as partnerships with NASA and commercial space companies, to deliver the skills, tools, and concepts needed for future Title 10 activities to enforce U.S. spacepower-enabling norms and standards. These efforts will require additional funding from Congress for both U.S. Space Force human spaceflight opportunities and residencies at commercial space stations.

The Modern-Day Space Race: Gaining Positional Advantage

China Steers Human Spaceflight with Consistency of Purpose & Military Programs

Make no mistake, China is playing to win in this new space race. Their greatest advantage in human spaceflight is not technological superiority. It's consistency of purpose. They have displayed remarkable discipline in meeting their space exploration and habitation objectives. Over the 30 years between 1992 and 2022, the Pacific superpower achieved all its stated human spaceflight goals within or close to objective timelines.[9] Their accomplishments include operating a crewed spacecraft, mastering rendezvous and docking, and building a space station.[10] China has continuously retained at least four Taikonauts on the Tiangong space station since June 2022, a standard that will persist and increase. Chinese leadership declared a goal of doubling the Tiangong's physical size by 2035, allowing continuous presence of eight Taikonauts.[11] Furthermore, China is making considerable progress toward a credible plan to put Taikonauts on the Moon by 2030.[12] Importantly, these Taikonauts are not civilians operating under a civilian-led program, but members of the Chinese military operating under military authorities. Meanwhile, the custom in the United States for NASA to maintain a civil purview over all national human spaceflight initiatives persists.

China has secured these achievements through focusing its efforts on a consistent national vision and a committed set of objectives. As described by China's former General Director of lunar exploration missions, Ye Peijian, "The cosmos is an ocean, the Moon is the Diaoyu Islands…If we can go, but don't go, future generations would condemn us. Once others…have occupied, no matter how much you wanted to go you couldn't."[13] Said more directly, China views success in the space race, including lunar habitation, as a means to control territory and corresponding logistics routes—a Chinese silk road through space.[14]

These activities are conducted within the Chinese military, which allows operators the strategic flexibility, tactics, techniques, procedures, technologies, and authorities to advance and protect their space interests with force. This defined purpose and military integration stands in stark contrast to the United States' space program, which has often struggled with articulating a clear national purpose, maintaining schedules, and achieving goals. Additionally, NASA continues to execute its space exploration programs within the scope of civil parameters, without consideration for Title 10 requirements.

The United States Struggles for Human Spaceflight Vision & Consistency

If the United States is competing in this space race, the results to date are concerning. America's current manned space program has been defined by inconsistency for decades, and consistency matters in strategic competition. It is worth mentioning that consistency and vision have begun to take shape under NASA Administrator Jared Isaacman's leadership. During NASA's Ignition event in March 2026, he portrayed space exploration within the context of peer competition, affirmed commitment to LEO presence, and unveiled a multi-phased Moon base strategy.[15] If this

vision endures, the U.S. competitive edge in space exploration is bolstered. However, for it to endure, the United States requires consistent, tangible national security "thrust" for the vector to take shape. Without national security at the core, human spaceflight's national purpose roots in prestige, which the public and decision makers may inaccurately view as a luxury rather than a necessity for future investment. As such, China will gain a unilateral lead absent a major U.S. attitude shift regarding what it takes to win a competition in space—one where the results will likely have strategic implications far into the future.

The U.S. understood it was in a major, must-win national security competition in its first space race with the Soviet Union. While the Soviet Union's launch of Sputnik and additional early LEO achievements propelled them ahead of the United States, the nation engaged in a whole-of-nation effort to win the bigger contest—one focused on the Moon. Thanks to a deliberate, focused set of initiatives via the Mercury, Gemini, and Apollo programs, the American space enterprise built increasingly more sophisticated technologies, operational concepts, and skills. These efforts culminated with an on-time Moon landing in 1969 and five subsequent lunar landings.

However, in the wake of this tremendous achievement, the nation quickly lost interest in the space program, and the Nixon administration canceled the last three Apollo lunar missions. The fact that the Soviet Union abandoned its manned lunar ambitions removed the risk of losing an existential competition. Since then, despite NASA's successful Skylab space station, the Space Shuttle program, the International Space Station, and a host of other space-related endeavors, the United States struggled to articulate consistent vision and desired objectives for space. There have been few if any overtly tangible consequences that put national interests, economic consequences, or prestige at risk, given the lack of a strong spacepower competitor. Stated visions, schedules, and funding lines have shifted without apparent impact to core U.S. interests. However, this indecision and inaction opened an opportunity for China's rise in space to go largely unchallenged, a reality underappreciated by many.

As an example of floundering vision and American ambivalence toward space exploration, the ISS is slated for retirement in 2030 (perhaps 2032 if recent Congressional proposals take hold) without a firm vision of what comes next.[16] The station is the United States' only operational option for supporting moderate-to-long-duration human spaceflight. Future manned space habitation efforts are still under development. As of 2025, NASA dropped the original goal of having a permanently crewed space station. The agency has pursued a Commercial Destinations—Development and Demonstration Objectives (C3DO) strategy, which could develop multiple commercial space station destinations no later than 2030 as part of the Commercial LEO Destinations (CLD) program. Even then, these commercial stations are only required to support four-person crews for one-month stays.[17] Meanwhile, changes to NASA's CLD program continue and solicitation schedules have slipped, leaving companies in limbo and waiting for a call for proposals for the next phase.[18]

Furthermore, NASA has added a second approach toward the next space station, utilizing a core module, initially reliant on the ISS for power and life support.[19] This approach continues a muddy path of uncertainty, which makes the national space enterprise reliant on vague and malleable space habitation standards and goals. Time will tell if this approach competes well with China's laser-focused objective of establishing a durable space silk-road. History suggests otherwise.

U.S. human-led lunar objectives have similarly lacked focus, purpose, and drive. For example, President Bush announced in 2004 that the United States would return to the Moon by 2020. Since that announcement, the lunar landing date has shifted on numerous occasions, and it was even dropped as a firm policy objective from 2010–2016 during the Obama administration.[20] The first Trump administration attempted to reinvigorate Moon exploration with an objective of lunar landing in 2024, but during Trump's second administration, the inherited "mid-2027" delayed objective has slid even further to "by 2028."[21]

Notably, NASA's Artemis program, built to advance humans throughout the solar system, has met considerable criticism stemming from a reliance on complicated shuttle-era technologies that are difficult to control and more susceptible to unplanned errors.[22] The complexity and fragility of the Artemis lunar mission makes the U.S. ability to achieve the current goals and timeline uncertain.[23] While the recent successes of the Artemis II mission shows promise for continued lunar transportation, a Moon landing with Artemis IV will involve significant mission complexity to be resolved over 2 years. Notably, President Kennedy laid down the lunar landing objective in 1962, and Apollo 11 secured this goal in 1969—an incredible achievement in an era of slide rules. America can succeed in space, it just takes committed focus, funding, and drive.

In contrast with the United States' jumbled path, space habitation from LEO to lunar has been a national security imperative for China. China's focused expansion of LEO and lunar space habitation, exclusively executed by military Taikonauts, illustrates their comparative edge. U.S. views have ranged from science project to high-end tourism—not security. Thus, when evaluating the U.S. ability to achieve success in this modern space race, two truths that must be addressed stand out:

1. **The failure of the United States to articulate a consistent and focused national security imperative in space habitation has allowed China to make steady gains over time in the modern space race.**
2. **China's military-led approach to space creates the strategic ambiguity and flexibility to rapidly militarize their human spaceflight program's "scientific" activities for power projection and other military objectives.**

Military Human Spaceflight is a National Security Imperative

The existing status quo is unacceptable in the context of the U.S. space security strategy. Space is a mostly anarchic system without laws or norms, so the most present and powerful player on the field wields the ability to define and dictate norm-setting and legal-political frameworks. Human presence will be an essential element of national strength as order takes shape in the anarchic system. Nations that gain a foothold and establish these rules become both the pioneers and guardians of the resulting architecture.[24] Without a change in strategy, the predictable endgame of these truths is Chinese dominance of lunar resources and access, protected and defended by military Taikonauts. Consequently, the U.S. will be left conceding to China's desired norms and standards for lunar habitation and resource access. These worrying facts should drive a new focus for the U.S. human spaceflight program, one tied to gaining and maintaining a spacepower advantage in the new space race, underpinned by a military service organized, trained, and equipped to execute Title 10 authorities.

Chinese military space exploration in Earth's orbit and enduring human presence on the Moon are a growing inevitability. For the United States to contest China's positional advantage for setting positive norms and standards in the domain, human spaceflight advancement must become a focused national

Figure 2: Artemis II crew conducting various activities in the Orion spacecraft on mission day 3.

Credit: NASA.

security imperative. Title 10 forces ensure American and commercial spaceflight and settlements may proceed with confidence that the nation provides protection for those interests, underwritten by hard power. Title 10 human spaceflight missions thus become the center point around which American human spaceflight endeavors are built. Furthermore, a military human spaceflight program demonstrates that human spaceflight is indeed an American national security imperative.

In the context of history, the contest to institute norms and standards in newly inhabited regions is well established. Consider the heritage of the North American continent, where military conflict and conquest are a dominant part of the narrative. However, because such experiences are so distant from current memory, they seem abstract and part of a bygone era of humanity. Yet, the world is on the verge of seeing a return to these realities as opportunities tied to new territory, potential economic gain, and territorial control emerge. That is why a military backbone is necessary to successfully empower U.S. space exploration and habitation endeavors, especially as they occur in proximity to those of China. While the United States hopes for peaceful habitation of space and an alignment of values, historical case studies clearly show that when global powers expanded their economic and territorial interests, hard military power was a necessity to dissuade malfeasance and protect these priorities.

U.S. Space Force senior leaders must, therefore, be ready to provide national leadership options for the application of military power in space. While some functions can be done remotely through purely technical means, there is a distinct value to human presence. It is why the U.S. military still employs humans in every terrestrial domain. They bring certain unique skills and raise the threshold for engagement. Furthermore, that presence displays credible power. There is a difference between destroying a machine versus holding a human life at risk. As the saying goes, "drones do not have mothers." Defense by machines alone shows weakness, as the defenders are considered disposable and incur few ramifications if disrupted or destroyed. This will be especially important

in a lunar context, where military forces, private companies, and a combination of government and civil exploration entities will be present. Setting and enforcing norms and standards in that environment will ultimately require actual presence.

When norms come into dispute, for instance between competing nations' access and perceived rights to mineral deposits on the Moon, diplomatic resolution is desired. However, should diplomacy fail, the nation able to enforce their desired norms with hard power wins the game. Unfortunately, if such a conflict occurs, the PLA-led nature of the entire Chinese space habitation program makes a transition to a military posture an easy option. The United States must evaluate the implications of not having a similar capability. NASA and private industry astronauts will not be equipped with the proper training, technologies, or legal authorities to execute national security functions. It would take Title 10 military personnel, who should reside in the Space Force given their domain expertise and, and centralized space operations—the original goal in creating the Space Force.

Given China's clear vector and their use of military Taikonauts, the United States may not have a choice if it seeks to maintain a leading role in space. The United States must understand the implications if it does not establish and maintain a credible hard power option to protect space habitation and its infrastructure. A Title 10 human spaceflight program to defend core interests in space, especially the Moon, are key to a positive future.

Closing the Civil-Military Human Spaceflight Gap: Delivering the National Security Imperative

Establishing Strategic Direction

The President's Executive Order (EO) on Ensuring American Space Superiority includes significant directives to outpace Chinese space superiority advantages. It defines American superiority in space as "contributing substantially to the Nation's strength, security, and prosperity."[25] The unique value of the EO is that it creates a national space policy that aligns instruments of national spacepower (NASA, the Department of Commerce, and the Department of War) in support of national objectives.[26] For the EO objectives to be effective and enduring, these space-facing organizations must prioritize space superiority missions, build collaborative relationships, and mutually support goal-oriented research and operational programs.

While the EO cites the importance of excelling in manned spaceflight, a crucial and unfortunate omission in the plan is that the DoW is not explicitly assigned as a partner in these efforts.[27] This maintains the precedent of separation between military and civil presence in space. Continuing to cling to this paradigm endangers the future ability of the U.S. Space Force to protect Americans and other national interests in the domain—the exact opposite of the Chinese approach. If the United States continues to eschew a human spaceflight program within the U.S. military, it will yield a brittle foundation moving forward for all U.S. human space habitation, lunar exploration, and beyond.

While NASA's human spaceflight contributions are critical, security must be at the core of the American plan as the world sees increasing competition in the domain. Additionally, while the EO's space exploration objectives are tied to American strength and prosperity, the plan, as written, fails to directly connect to American security interests. A constant throughout America's space history is that national space objectives falter without a clear national security imperative. Administrator Isaacman has amplified this sentiment, recently stating that "NASA's mission and national security are inseparable," and highlighting collaborative partnership with DoW.[28]

Increased collaboration is a welcome start, but competing in the modern-day space race requires a step beyond.

Starting from now, a military human spaceflight program must pragmatically aim to achieve the strategic flexibility to protect American human spaceflight and habitation interests from LEO to the lunar surface. A more balanced approach would harness the spirit of the EO by charging the U.S. Space Force as the service responsible for leading a military human spaceflight program focused on understanding and developing the skills, tools, and concepts needed to defend American human endeavors in space as those missions grow. A U.S. Space Force human spaceflight program would not overtake the responsibilities of NASA nor duplicate NASA missions. Rather, its existence could underpin the entire whole-of-government approach to human spaceflight in an era of great power competition with China, providing a strong foundation and serving as an enduring purpose to maintain momentum toward achieving American space superiority.

Resurrecting the Human Element in Military Space

A military human spaceflight program is not a new concept. From the beginning of the first space race in the 1960s, astronauts were members of the military. Some served as part of NASA under civilian authorities, but there were military-specific efforts. Programs like the X-20 Dyna-Soar and the Manned Orbiting Laboratory sought to achieve space-based military advantages on Earth by Title 10 human-controlled space systems. In 1979, the Air Force created the Manned Spaceflight Engineer program, also known as the "Blue Shuttle," to "develop expertise in manned spaceflight and apply it to Department of Defense space missions."[29] During this era of competition with the Soviets, operationalizing space capabilities and transport were national security imperatives. Because the remote unmanned technologies used today were not yet mature, humans were necessary to achieve mission outcomes. The military manned spaceflight program went dormant following several advancements in remote and automated technologies, events like the 1986 Challenger disaster, and the overall decline of space's national security imperative following the fall of the Soviet Union.

Given China's rise in the domain, a military human spaceflight program empowered by Title 10 authorities is more than relevant, but more necessary every day. However, it is important to recognize that this is not a call to resurrect Cold War military human spaceflight constructs. New mission objectives now exist given new technological baselines and China's ambitions to dominate space as a warfighting domain germinate new mission objectives. China also seeks to establish a space silk-road from LEO-to-lunar echelons of space and beyond. The methods to achieve these goals consist of military-led technologies and programs. This matches the historic norms of civil-military territorial settlement observed on Earth for centuries. A military human spaceflight program must seek to understand and meet these requirements before hostilities occur. Warfighting skills, tools, and concepts cannot be quick-turned after a conflict in space has emerged. It takes years to develop complex terrestrial warfighting skills—activities in space will be no different.

U.S. Space Force Will Gain & Maintain Space Superiority Through Unmanned & Manned Missions

As the nation wrestles with major questions regarding the role of Title 10 activities in space, it is important to recognize that the Space Force finds itself straining to meet a broad range of new warfighting requirements. With a service 1/17th the size of the U.S. Marine Corps, the Space Force is rapidly developing leading-edge kit to counter Chinese weapons in space, modernizing U.S. space

capabilities that enhance the lethality of joint warfighting, modernizing antiquated satellite control networks, proliferating new space architectures, increasing launch cadences, and advancing many other missions and tactics. In short, a lot is being asked of America's newest and smallest service. For the U.S. Space Force to successfully adopt an additive mission of putting Guardians in space, it must receive the resourcing, manpower, and authorities to match this increase in mission scope.

Thus far, unmanned technologies are the service's emphasis when it comes to modern space superiority weapon systems. This makes complete sense, given the nature of the domain and the fact that China has also deployed numerous unmanned threats on orbit, which the U.S. Space Force must counter. This is the machine-versus-machine element of the new space race. The United States must win this competition, but it is only one side of a multi-faceted challenge. Ultimately, the Space Force must be able to achieve superiority in all elements. Therefore, developing the mission of Guardians in space must be an additive function and not compete with resources and competencies needed to develop remote systems to counter Chinese space activities in the near-term. This is a very serious contest with national security implications—and may make the difference in winning or losing a future war.

Though human conflict in space may not occur for decades, norms and standards are being created at a rapid rate today as the scale and scope of space activities evolve. The possibility for practices that run counter to U.S. interests to take hold increases the more that humans, especially Taikonauts, operate in the domain. The point at which this will become consequential is most likely when cislunar operations, lunar resource and territorial competition, and lunar economic exploitation become the norm. Preparing for such an eventuality will require substantial skills, tools, and concepts to secure national interests. That eventuality will require an evolution which begins with in-domain skill and concept development at LEO space stations serving as proving grounds.

These U.S. Space Force proving grounds cannot be on space stations where adversary nations cohabitate like the ISS. New space station options under the purview of Title 10 authorities must be leveraged. Over time, skill and technology development may lead to LEO manned military missions if operational advantages are discovered. Ultimately, these activities will expand to the lunar surface and deeper into space as mission requirements unfold.

Human Military Roles in Space

U.S. civil and commercial human space activities are already in LEO. The U.S. Space Force should anticipate that these interests will expand to include deep space, lunar resource extraction, or even lunar surface habitation. Securing these activities will not be possible if attempted through entirely remote means. There is only so much a machine can do to secure territory, and humans bring unique skills and abilities to operational challenges. The presence of soldiers, sailors, marines, airmen, and guardians will remain relevant globally and extra-terrestrially. In that vein, the U.S. Space Force must prepare for the requirement for human defenders in space, with an eye towards nearer-term operational advantages and future Moon operations as the touchstone.

Examples of nearer-term missions for a military human spaceflight program to study, experiment, and develop requirements for include space-medical evacuation and rescue, as well as in-domain persistence and resiliency operations. These missions or scenarios may seem implausible now, but indications of the need for a U.S. Space Force human space presence are emerging.

Although medical evacuation and rescue is not wholly a military function, the high-risk aspect of space rescue, coupled with the transferability of such specialized, low-density skills to future Title 10 space missions, lends itself to becoming an initial core competency of military human spaceflight. Said differently, the core mental, physical, and tactical skills needed in space rescue will serve as baseline skills for a more distant future in which military members may be expected to conduct direct action, covert action, or special reconnaissance in orbit or on the Moon.

There is little doubt there will eventually be a demand for a cadre of space rescuers. The considerable growth in space exploration and tourism expected over the coming decades will inevitably result in scenarios where backup plans are inadequate, and humans must be rescued. Human spaceflight is fraught with danger. Recently, the Chinese Shenzhou-20 crew delayed their reentry to Earth's atmosphere due to a damaged return capsule. Having the redundancy to use the arriving crew's capsule served as a last resort, allowing China to overcome the issue.[30] However, had there been a medical emergency prior to the new crew's arrival, this solution would have been unavailable, and China would be left with only the high-risk option to return the Taikonauts home in a defective capsule. As commercial human spaceflight matures, commercial space station habitation could increase exponentially, leading to a possibly exponential increase in these types of crises. The mission to rescue humans, provide medical assistance in a micro-gravity environment, and adapt in highly dynamic, life or death situations is one best suited for humans. Furthermore, such a program encourages space faring nations to adopt technical standards established by the United States to ensure interoperability. It is another part of establishing norms of behavior in space.

While the United States stands to gain global leadership through the development of credible high-risk rescue skills, a rescue mission capacity also establishes a long-term spacepower advantage. Every global space habitation program will carry risks to humans. If China maintained the world's only viable space rescue force, the United States would lose its position as a world power and leader in space. Imagine if China saved American lives via a rescue program that the United States failed to create. Allies and partners would predictably gravitate toward China for human spaceflight partnerships, build interoperable systems, and entrench China as the world leader in space exploration and commerce. The United States can either wait and see what China does, or it can be the world leader in advancing this concept. The latter is most consistent with the EO on Ensuring American Space Superiority.

As space warfare concepts and capabilities develop, there must be analysis and consideration for how humans might provide operational flexibility to fight through a contested space environment. On Earth, weapons systems, like aircraft and ships, have designs based on the assumption that they will have to operate in communications-denied environments. They harness data links and collaborative connectivity when possible but ensure mission execution can still occur when communication is denied. For most of these missions, human operators remain necessary. China, in the meantime, has invested heavily in space superiority capabilities designed to disrupt remotely commanded space systems by attacking command links and disrupting ground stations.

Manned military space stations may provide limited capacity to control space objects when networks are broken, offering some redundancy and survivability. Additionally, human presence on orbit would enable superior decision-making by leveraging persistent

domain awareness and persistent command and control access. This degree of persistence is unachievable today through terrestrial control. Conceivably, Guardians on a military space station in the proper LEO orbit could maintain constant space domain awareness of a national security threat and make decisions immediately upon threat criteria being met. Additionally, these warfighters could maintain persistent access to space superiority weapons and send timely commands to systems untethered from Satellite Control Network access windows and schedules.

This example of redundancy and decision speed stemming from in-domain human presence are the types of concepts a military human spaceflight program should explore during its initial stages. Whether they evolve into mission requirements for the future or not, analysis and development must occur decades in advance to vet these concepts. The U.S. Space Force should begin by sending Guardian astronauts to space stations to conduct research or test military capabilities and concepts. Regardless of the initial simplicity, this activity affirms to adversaries that the United States is treating human spaceflight as a national security imperative underpinned by hard power it can and will employ if needed.

Additionally, setting a standard of continuous military space station habitation is another show to the world that the United States is committed to remaining the strongest space-faring nation through sustained presence. Right now, that mantle is assumed by China, which ensures four military Taikonauts are always in space. Surpassing this standard would help accelerate the U.S. industrial base's development of human spaceflight launch systems, space stations, environmental controls, and life support systems. A military spaceflight imperative gives the industrial base the predictability it needs to advance and speed capability development. A strong human spaceflight industrial base is crucial in maintaining global leadership in the modern-day space race and future lunar habitation.

Beyond the nearer-term concepts of space rescue and in-domain manned military missions, there will possibly come a time when control of lunar access to mine ice and minerals, as well as the logistical transportation infrastructure to and from the Moon, become contested between nations. A future lunar economy already represents a high-risk, high-reward commercial investment opportunity by virtue of the physics of space travel alone. Without a Title 10 trained, organized, equipped, and empowered cadre of Guardians to set norms and defend interests real time, that risk raises to an untenable level. Even if diplomatic efforts establish norms and standards, they must be enforced. Given China's record of violating norms on Earth, the United States must be prepared to counter similar behavior in space. If the United States is wholly represented by commercial entities or unmanned systems while China's activities are backed by Taikonaut presence with military infrastructure and defenses, the U.S. ability to explore and compete in the lunar economy will be at the mercy of the Chinese. Title 10-empowered Guardians provide the necessary counterbalance to ensure U.S. interests are not infringed upon and decrease risk.

History proves out the need for military forces that are organized, trained, equipped, and have the authority to defend newly explored, under-developed territory. For example, the creation of the U.S. Navy's Seabees was in response to the vulnerability commercial companies (Pan American Airways specifically) experienced at the onset of World War II. In the days following Pearl Harbor, Wake Island employees of Pan Am, civilians with no training or authorities, were asked to help fortify and defend the island. These civilians initially repulsed the Japanese landing force, but, after 12 days of fighting, they were ultimately either killed or captured and sent to POW camps.[31] Following this catastrophe,

the Navy required a militarized construction force that could build and defend infrastructure in combat zones armed with Title 10 legal authorities, culminating in the activation of Navy Seabees. Building a capability for space habitation in a similar, highly reactive manner would be difficult and likely take decades instead of months due to the complex skills, tools, and concept development necessary. This drives the national imperative to be proactive rather than reactive in space. The defense of U.S. interests in cislunar space and on the Moon by humans must be examined and then resourced through a multi-decade strategy.

It bears mentioning that, in theory, any branch of the military could stake claim to these future missions. There are no direct historical examples on how to organize joint military forces for competition and combat in orbit or on other celestial bodies. The Army and Marine Corps could feasibly vie to conduct manned missions beyond Earth. However, the U.S. Space Force is the only service which builds space-minded warfighters from their first day of military service. Guardians are imbued with a space mindset in which operational planning necessarily considers the complexities of orbital dynamics, micro-gravity, multi-body problems on orbit, the interplay of electromagnetic energy on space objects in motion, and the extreme space weather and habitation environment, for example. Additionally, the U.S. Space Force's theory of success, termed "competitive endurance," establishes the U.S. Space Force as the only service entirely focused on the goal of ensuring the nation's ability to achieve space superiority. It is likewise the Space Force's prerogative to maintain the safety, security, and stability of the domain.[32] If the nation requires warfighters to physically protect its critical interests in space, it will then also require those warfighters to fully understand the domain for the entirety of their military careers. The space environment is far too complex to be a military service's side gig.

The Objective Force 2040 Roadmap

Objective Force is a Space Force analysis of the capabilities and forces it must develop and field over the next 15 years to meet national strategic objectives. As an important foundational blueprint, Space Force intends to update it annually and republish it every 5 years to keep up with changing operational demands. The first iteration of U.S. Space Force's Objective Force does not address a human spaceflight program or human presence in space in its 15-year vision, but for understandable reasons.[36] The multitude of space superiority requirements to counter China's rise in space weapons must be today's main focus: unmanned capabilities will deliver warfighting solutions in the near term. Nevertheless, the nation must protect its human space equities and compete with China's military-led programs in the long term. For this reason, a future strategic objective for human spaceflight must be a consideration in subsequent updates to Objective Force. Congress and the DoW will need to provide additional resources to initiate a Space Force human spaceflight program. The U.S. Space Force will ultimately need to execute both manned and unmanned mission functions; the capabilities are complementary. One should not be pitted against the other in budget battles. The costs needed to build a military human spaceflight program do not negate unmanned requirements, and vice versa. The U.S. Space Force needs a pragmatic, methodical, and resourced approach to develop and evolve a military human spaceflight program without impeding efforts to defeat current threats to space superiority.

Guardians are the world's leaders for space-minded Title 10 operations, and their deep understanding of the domain is critical in developing a winning spacepower advantage over the coming decades. The examples of space rescue and in-domain manned operations are not all inclusive but serve as concepts which provide insight into a predictable progression of military activities extending from a military human spaceflight program. If the U.S. Space

"It's on the to-do list; we haven't got there. Do we need to put human Guardians in space? It would be tragic if that didn't happen someday… We owe work on that."

-Vice Chief of Space Operations, Gen Shawn Bratton[37]

Force develops the technologies, capabilities, and human capital over the next 10–20 years to meet the challenges of basic, building-block capabilities in human spaceflight, the United States will then be postured to task Guardians with more demanding missions like protecting American mining operations on the Moon in 30–40 years. Certainly, China will explore and develop national security missions in the same vein. Thus, a multi-decade, pragmatic approach must begin development immediately in the U.S. Space Force.

Where to Start: Cultivate a Human Spaceflight Program with Space Test Course Graduates

The bulk of the U.S. Space Force's resources and attention will naturally focus on near-term mission activities, especially space control. However, the service must also consider how it can initiate the development of a human spaceflight program that involves sending a limited number of Guardian astronauts to space annually. Such practices would allow Guardians to concurrently learn from ground control operations which support spaceflight and space station activities. Meeting these two criteria would build the necessary foundation for Space Force human space operations. Additionally, it kickstarts the work Gen Shawn Bratton acknowledges the service owes its warfighters.

The U.S. Space Force's Space Test Course (STC) is the perfect place to start its spaceflight effort. As the service's element of the DAF Test Pilot School, it trains and graduates adaptive test leaders and critical thinkers who understand the space environment and implications in developing new technology.[33] The year-long program builds some of the Space Force's most technically capable Guardians. If given the ability to routinely place these Guardians in space with test payloads after graduating STC (akin to NASA Payload Specialists), the service can begin the necessary analysis to cultivate the body of knowledge to formulate a human spaceflight program. This program would be centered on understanding and developing the skills, tools, and concepts needed to conduct national security missions decades in the future. Planting these seeds allows the Space Force to secure future space superiority advantages.

Annual spaceflight opportunities should form the basis for a notionally year-long (or longer) STC follow-on program in which a small number of Guardians complete astronaut training (either with NASA or commercial spaceflight companies) and subsequently assume a seat on a human spaceflight launch as well as space station residency. By minimizing the scope to military requirements and preparing Guardians for shorter-term space missions, an accelerated training program could provide more rapid advancement in military spaceflight.

An STC follow-on program must ground itself in a long-term end state, one that envisions the U.S. Space Force using humans to deter and defend against belligerent actions meant to dislodge, disrupt, or destroy U.S. spacepower advantages. The day will come when Guardians in space will need to be prepared to secure and defend national interests such as logistics lines from LEO to deep space, lunar resources, surface habitats,

and power systems. Those missions will likely call for a mix of conventional military operations conducted in what one might consider science-fiction conditions. While this end state should inform preliminary STC graduate tests and experiments, STC testers should also anticipate a nearer-term intermediate step.

Before this end state can be achieved, the U.S. Space Force must be prepared to develop Guardians that are trained and equipped for high-risk missions, such as space rescue and in-domain space operations. LEO space stations can serve as the proving ground for STC graduates to analyze these future concepts, explore and analyze the capability and skill gaps in conducting such missions, develop requirements, and develop test plans and test priorities to build toward credible Space Force missions. Thus, this intermediate phase and end state concepts provide the necessary vision for early space experiments to build a formative body of knowledge. Ultimately, this body of knowledge must capture lessons on the skills, tools, and concepts necessary for an operational unit to conduct military missions for the U.S. Space Force.

Cultivating this new discipline also requires ground control experience for Guardians to learn the intricate Command and Control (C2) requirements for human spaceflight. Career broadening opportunities exist today in which a few Guardians serve as liaisons with NASA to gain this experience. The U.S. Space Force should support more Guardians serving with NASA to hone these skills. Similarly, the Space Force should create further opportunities to embed Guardians within commercial organizations and companies to gain deep learning of commercial human spaceflight operations, commercial space station operations, and their ground support missions, either through employment or fellowships.

Notably, with the sunsetting of the ISS and the dawn of commercial space stations, Guardians can seize the initiative to learn these cutting-edge space station C2 missions as they are created. Commercial space station companies will begin operations starting in 2026, and their presence will rapidly increase over the next few years. These partners must be seen as critical national security enablers supporting the development of military skills, tools, and concepts for long-term U.S. spacepower. Such experiences will be critical in building a human spaceflight program that can endure and grow over decades.

Considerations & Recommendations

A military human spaceflight program led by the U.S. Space Force is needed for the United States to sustain an ability to defend its national security interests in space over the long term. This goal must be established within the U.S. space security strategy. To avoid Chinese dominance in LEO-to-lunar habitation in the 21st Century, specific actions must be taken by the U.S. Space Force, Congress, and the Executive Branch to realize the benefits gained from on-orbit and ground control operations. The following considerations and recommendations are designed to establish such a program in a realistic manner that enables the United States to maintain an advantage and the flexibility to adjust to evolving priorities and conditions.

Considerations

The nation faces a crucial decision, one which will have far-reaching consequences regarding the DoW's ability to secure America's long-term interests in space. China's own aggressive disposition on Earth and in space and the militarization of their human spaceflight programs make it clear that Guardians, under the purview of the U.S. Space Force, must seek to understand and cultivate its own spaceflight operations.

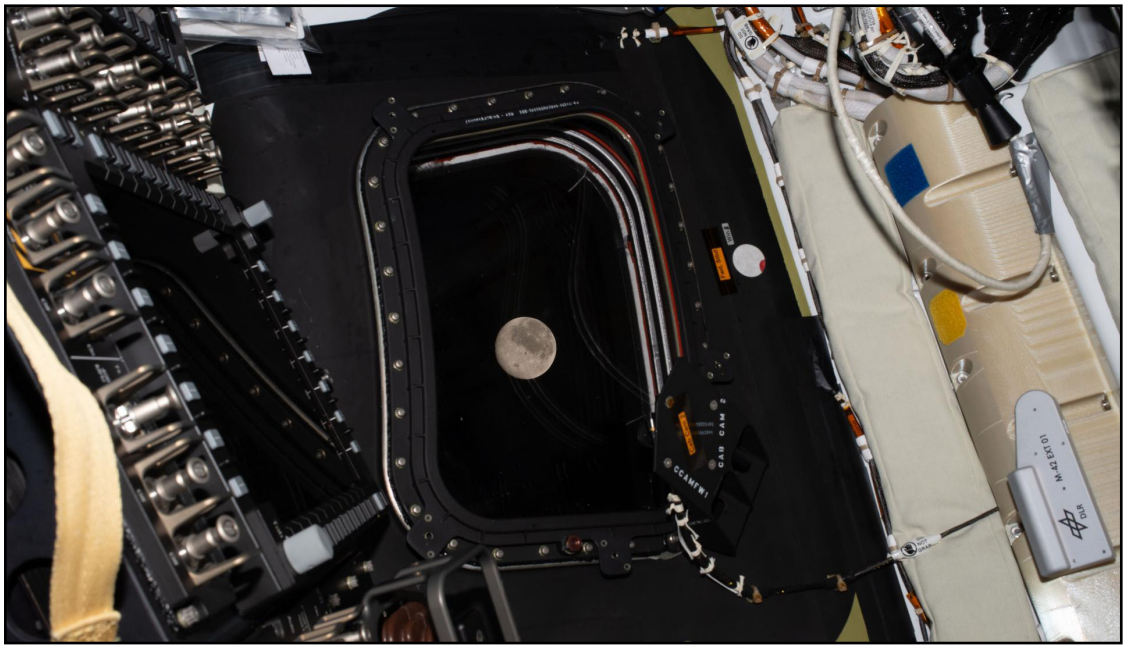

Figure 3: Artemis II mission on day 5 at the point the moon's gravitational pull become a stronger force on the Orion spacecraft than Earth's.

Credit: NASA.

The United States once maintained a military human spaceflight program, although it fell dormant in the 1980s. This program must be reimagined and resurrected as the strategic environment has changed. The convergence of a U.S. national security reliance on vulnerable space assets and access to the domain, burgeoning space habitation opportunities, Chinese intent to establish a space silk-road, China's history of belligerent assertion of territorial control, and the growing likelihood of a high-stakes competition for control of lunar access and resources demonstrate why a military human spaceflight program is a 21st Century imperative.

China's greatest advantage in human spaceflight is not technological superiority. It is consistency of purpose. The United States must demonstrate similar persistence if it intends to remain the leading space power through the 21st Century. Fortunately, the national security space enterprise has a strategic opportunity as U.S. leadership seeks to refine U.S. strategy, the military's mission focus, and future challenges in the space domain.[34] The EO on Ensuring American Space Superiority provides focused purpose and policy to ensure spacepower delivers national strength, security, and prosperity. Seizing the initiative now will fortify the U.S. spacepower advantage and Space Force's credibility through the rest of the 21st Century. A Space Force-led human spaceflight program must be considered within the EO's many tasks for the Assistant to the President for National Security Affairs (APNSA) to issue guidance, propose revisions to Presidential Policy, deliver plans for achieving policy objectives, and implement a space security strategy. This presidential guidance supplies the muscle necessary to create new national programs to meet these objectives and scale them.

While there are existing human spaceflight exchange programs that afford members of the military the opportunity to serve as NASA astronauts, the training they receive is not inclusive of unique Title 10-focused activities designed to protect and defend U.S. interests in an increasingly contested space domain. Commercial

spaceflight and commercial space station companies provide a first-of-its-kind Title 10 opportunity for the U.S. Space Force to access and inhabit space, as well as learn how to manage the complex operations associated with expanding them.

At the same time, U.S. Space Force must receive additive resources for a human spaceflight initiative to guard against hollowing out its current space superiority efforts. A call for human spaceflight resources comes with the caveat, "do no harm" to unmanned space superiority requirements. Maintaining today's priorities in space and remaining mindful of future ones will require significant budget increases for both the U.S. Space Force to build a program and NASA to provide any required training and mission support through program development. The United States cannot build a modern unmanned space superiority warfighting capability complemented by an ambitious military human spaceflight mission without a substantial increase in resources directed toward these goals. Targeted budget allocation and government agency unity of effort toward creating a military human spaceflight program will fuel American space superiority for generations to come.

Recommendations

A multi-decade effort to form a U.S. Space Force-led military human spaceflight program is needed to counter the PLA's own human spaceflight efforts. China's national focus and their military-led space infrastructure give them an advantage in the modern-day space race, particularly with respect to lunar access and development. The following recommendations aim to lay the foundation for enduring U.S. space superiority advantage in this competition.

1. The Assistant to the President for National Security Affairs (APNSA) must direct the development of initial requirements and tasks for a military human spaceflight program in the space security strategy as assigned in the EO on Ensuring American Space Superiority. This acts as a forcing function to bridge gaps between civil and military space and establishes an enduring national security imperative for space in the 21st Century.
2. The U.S. Space Force should assume ownership of a military human spaceflight program in subsequent versions of its Objective Force roadmap. While there may only be a rudimentary program available after the 15 years of Objective Force's outlook, inclusion brings persistence over time, setting an expectation for the multi-decade vision to maintain course. Space Force establishing this leadership prevents multiple military services from attempting to take ownership of their own disparate and unfocused military human spaceflight missions, avoiding ambiguity in joint operating relationships.
3. The U.S. Space Force should establish a year-long or longer STC follow-on program where select Guardians are able to design experiments and personally conduct test campaigns in space. This program builds momentum toward longer-term space superiority advantages by training Guardians and codifying the skills, tools, and concepts necessary for Title 10 operations in space. The STC schoolhouse (or an alternative organization assigned by STARCOM) should maintain program continuity, cultivate the body of knowledge gained as participants flow through the program, and ensure activities are nested within end state objectives. Academics related to such a program should be included in STC curriculum quickly.
4. As the U.S. Space Force doubles in personnel, STC student throughput and infrastructure must also scale.[35] STC must produce enough graduates to field

a follow-on spaceflight program as well as man test squadrons. This action will ensure that test campaigns of unmanned space superiority requirements sustain steady progress as a human spaceflight program comes together.

5. The U.S. Space Force should expand the current NASA career broadening program and allow for an additional number of Guardians to spend an assignment embedded with NASA. Similar opportunities with commercial space launch and commercial space station companies should also be explored. This enables building the necessary expertise and attributes needed within the Space Force for future service-led command and control of human operations.
6. Congressional funding for NASA should be sufficient to give the Agency the ability to support the U.S. Space Force in establishing a military human spaceflight program. This NASA priority should be second only to the Artemis Moon missions. As a partner organization, NASA must also provide opportunities ranging from astronaut training to seats on Artemis missions as determined by U.S. Space Force requirements analysis. NASA expertise and experience allow the speed in which a military human spaceflight program must take shape.
7. Congress should fund an STC follow-on spaceflight program in which Guardians have routine access to civil or commercial spaceflight opportunities. This program could act as the cornerstone from which a multi-decade program is built and ensure the strategic flexibility of national human spaceflight endeavors. This program must be additive growth and not be offset by existing Space Force programs.
8. Congress must either fund commercial space station residency opportunities or authorize the purchase of a Space Force-dedicated space station in the NDAA out-years. This program would serve as a credible stage in developing military spaceflight tools, skills, and concepts. Space station-based operations provide Guardians a trailblazing opportunity for the realistic testing and experimentation of future military concepts. Nothing compares to in-domain, first-hand experience to inform the development of future military requirements. Furthermore, taking this decisive step will send a strong message about the commitment of the United States to maintain space superiority.

Conclusion

Virtual presence is actual absence. Human spaceflight is the crux of leading the future space economy and extraterrestrial exploration. This core capability will grow and evolve in a competitive environment that currently holds few rules or laws to guide behavior. The fact that Chinese human spaceflight is solely conducted by their military isn't happenstance, it's deliberate. China has consistently sought control of territory with belligerent force on the ground, sea, and air, and they are building the means to do so in space. They understand the future implications spacepower has on national prosperity and underpinned their architecture with military hard power. Should China establish its space silk-road, built and sustained by the PLA, the influence and relative control the United Stated currently enjoys in space will become obsolete in the eyes of the world. The United States must act now to achieve a spacepower vision that embraces human spaceflight. Only Guardians can ensure human spaceflight dominance and maintain the strategic flexibility to conduct Title 10 operations in defense of U.S. interests in space. ✪

Endnotes

1 Rick Tumlinson, "America must stop treating China's lunar plans as a footnote," *Space News*, December 9, 2025.

2 Oliver Holmes and Alastair McCready, "The tortoise and the hare: will China beat the US in the race back to the moon?" *The Guardian*, April 26, 2026; and Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (OST), October 10, 1967.

3 Michael D. Griffin, witness statement for the hearing, "Strategic Trajectories: Assessing China's Rise and the Risks to U.S. Leadership," U.S. House of Representatives Committee on Science, Space, and Technology, December 4, 2025.

4 Griffin, "Strategic Trajectories: Assessing China's Rise and the Risks to U.S. Leadership."

5 Olivia Bary, "Dual-Use Satellites and the Concerns to U.S. National Security," *Boston Political Review*, December 7, 2025.

6 China Power Team, "Tracking China's Increased Military Activities in the Indo-Pacific in 2025," *China Power*, February 5, 2026, updated May 7, 2026.

7 Guy Taylor and Vaughn Cockayne, "'There are threats in orbit': Space Force chief sounds alarm over Chinese, Russian space assets," *The Washington Times*, January 22, 2026.

8 The Executive Order on Ensuring American Space Superiority assigns the Assistant to the President for National Security Affairs (APNSA), in coordination with Secretary of War, the DNI, and the Assistant to the President for Science and Technology (APST), the task of "implement[ing] a space security strategy that accounts for United States interests in, from, and to space; addresses current and projected threats to United States space interests from very low-Earth orbit through cislunar space, and incorporates a technology plan for detecting, characterizing, and countering potential adversary placement of nuclear weapons in space." President of the United States, Executive Order on Ensuring American Space Superiority, The White House, December 18, 2025.

9 The Information Office of the State Council, "China's Space Activities, a White Paper," via *SpaceRef*, November 22, 2000; Information Office of the State Council of the People's Republic of China, "China's Space Activities in 2006," via *SpaceRef*, October 17, 2006; China National Space Administration, White Paper on China's Space Activities in 2016, December 27, 2016; and The State Council Information Office of the People's Republic of China, "China's Space Program: A 2021 Perspective," *In Their Own Words*, via China Aerospace Studies Institute, January 2022; Katie Holland, "Chinese Lunar Exploration Program," National Space Centre, April 29, 2024; and Marissa Martin, "China is going to the Moon by 2030. Here's what's known about the mission – and why it matters," *The Conversation*, November 11, 2025.

10 Clayton Swope, witness statement for the hearing, "Strategic Trajectories: Assessing China's Space Rise and the Risks to U.S. Leadership," U.S. House of Representatives Committee on Science, Space, and Technology. December 4, 2025.

11 Matthew Williams, "China Releases its First Roadmap for Space Science and Exploration Through 2050," *Universe Today*, October 15, 2024.

12 Griffin, "Strategic Trajectories: Assessing China's Rise and the Risks to U.S. Leadership."

13 Griffin, "Strategic Trajectories: Assessing China's Rise and the Risks to U.S. Leadership."

14 Zhang Ming, "The Space Silk Road and China–Arab States Space Cooperation: A Chinese Perspective," Middle East Institute at the National Universtiy of Singapore, June 11, 2024.

15 Keith Cowing, "Ignition At NASA," *NASA Watch*, March 24, 2026.

16 Mike Wall, "Congress wants the International Space Station to keep flying until 2032. Here's why," *Space.com*, March 9, 2026.

17 Jeff Foust, "NASA releases details on revised next phase of commercial space station development," *Space News*, September 6, 2025.

18 Jeff Foust, "Industry navigates NASA's start-and-stop approach to commercial space stations," *Space News*, April 8, 2026.

19 Jeff Foust, "NASA proposes new strategy for commercial space stations," *Space News*, March 25, 2026.

20 "The Administrator of NASA shall set far-reaching exploration milestones. By 2025, begin crewed missions beyond the moon, including sending humans to an asteroid. By the mid-2030s, send humans to orbit Mars and return them safely to Earth." President of the United States, "National Space Policy of the United States of America," June 28, 2010, p. 11. See also Office of the Press Secretary, "President Bush Announces New Vision for Space Exploration Program," The White House, January 14, 2004; and Miriam Kramer, "NASA chief says US manned moon landing is not in cards," April 8, 2013.

21 "Remarks by Vice President Pence at the Fifth Meeting of the National Space Council," The White House, March 26, 2019; Executive Order on Ensuring American Space Superiority; and Brendan Cole, "US Going Back to the Moon in 2026—Sean Duffy Explains Why," *Newsweek*, November 8, 2025.

22 Abinav Atreya, "The Artemis Program: Will It Stay Plagued by Delays Forever?" *Witherly Heights*, April 23, 2025.

23 Griffin, "Strategic Trajectories: Assessing China's Rise and the Risks to U.S. Leadership."

24 Griffin, "Strategic Trajectories: Assessing China's Rise and the Risks to U.S. Leadership."

25 Executive Order on Ensuring American Space Superiority

26 Peter A. Garretson, "Trump's New Executive Order on Space Has the Right Stuff," *Real Clear Defense*, January 5, 2026.

27 Executive Order on Ensuring American Space Superiority, Sec 3(b)(i) directs "a plan from the Administrator of NASA, in coordination with the Director of OMB and Assistant to the President for Domestic Policy (APDP), for achieving the policy objectives in this order regarding leading the world in space exploration and expanding human reach and American presence in space."

28 Courtney Albon, "NASA Administrator Eyes Greater Collaboration with Pentagon," *Air & Space Forces Magazine*, Februrary 11, 2026.
29 Roger Launius, "NASA's Space Shuttle and the Department of Defense," blog, November 12, 2012.
30 Andrew Jones, "China to launch Shenzhou-22 spacecraft Nov. 25 to provide lifeboat for astronauts," *Space News*, November 17, 2025.
31 Tina D. Aguon, "WWII: CHamuros/Chamorros Caught in Wake Invasion," Guampedia.
32 Office of the Chief of Space Operations, Strategic Initiatives Group, "White Paper on Competitive Endurance: A Proposed Theory of Success for the U.S. Space Force," January 11, 2024.
33 "United States Air Force Test Pilot School."
34 Hope Hodge Seck, "Space Force likely to double in personnel within a decade, vice chief says," *Aerospace America*, January 22, 2026.
35 Courtney Albon and Chris Gordon, "Space Force, Aiming to Double in Size, Blows Past Recruiting Goal," *Air & Space Forces Magazine*, February 12, 2026.
36 U.S. Space Force, "Objective Force 2040," April 15, 2026.
37 Hodge Seck, "Space Force likely to double in personnel within a decade, vice chief says."

About The Mitchell Institute

The Mitchell Institute educates broad audiences about aerospace power's contribution to America's global interests, informs policy and budget deliberations, and cultivates the next generation of thought leaders to exploit the advantages of operating in air, space, and cyberspace.

About the Series

The Mitchell Institute Policy Papers present new thinking and policy proposals to respond to the emerging security and aerospace power challenges of the 21st century. These papers are written for lawmakers and their staffs, policy professionals, business and industry, academics, journalists, and the informed public. The series aims to provide in-depth policy insights and perspectives based on the experiences of the authors, along with studious supporting research.

For media inquiries, email our publications team at publications.mitchellaerospacepower@afa.org

Copies of Policy Papers can be downloaded under the publications tab on the Mitchell Institute website at https://www.mitchellaerospacepower.org

About the Author

Col Kyle Pumroy, USSF (Ret.) is a Senior Resident Fellow for Space Studies at the Mitchell Institute's Spacepower Advantage Center of Excellence (MI-SPACE). He has over 27 years of active duty in both the Space Force and Air Force, finishing his career as the Department of the Air Force's Deputy Inspector General for Space. Prior to that, he was the first commander of Space Delta 11 at Schriever Space Force Base, and he served as the Deputy Commander of the Combined Space Operations Center at Vandenberg Space Force Base. He also commanded the 527th Space Aggressor Squadron. Col Pumroy received his undergraduate degree from the U.S. Air Force Academy and earned Masters Degrees in Aerospace Studies from Embry-Riddle University and Strategic Studies from Air University. His career achievements include award of the Bronze Star Medal during Operation Enduring Freedom and the National Space Club's Schriever Award.