

Making Space Safe Again: National Security Space Policy in the Trump Era

By Robert Shields



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The space age was born out of war. On Sept. 8, 1944, Nazi Germany launched the world's first ballistic missile, the V-2 rocket, from The Netherlands, striking London. Thereafter, Germany launched thousands more V-2s against England until surrendering to Allied forces in May 1945. Recognizing the vast potential of this technological marvel, the United States and Soviet Union raced to develop their own ballistic missile programs in the years following World War II. After failed attempts to launch and reenter an intercontinental ballistic missile, yet determined to demonstrate technological superiority over the US, the USSR launched the world's first man-made satellite, *Sputnik*, on Oct. 4, 1957. Soon after, on Jan. 31, 1958, the US military responded with the successful launch of *Explorer*. The space age had begun.

Despite the military roots of the space age, the US enjoyed peace and freedom of action in space in the decades following 1958. The US and a limited number of other nations operated satellites for civil applications (communications, weather tracking) and to enhance military operations on the ground (intelligence collection, missile warning, and positioning, navigation and timing (PNT)). Overall, the space domain itself remained a benign and uncontested environment.

Over the past several years, however, China and Russia have begun developing weapons systems that can strike US space assets. Anti-satellite weapons (ASATs), directed-energy weapons, and even cyber weapons now threaten US satellites. A 2007 Chinese ASAT demonstration against one of its own weather satellites served as a “wake up call” to the US and its allies that the threat of conflict in space was real and growing. Space policy experts and military

strategists now agree that space will be a contested environment in future wars.

The administration of President Donald Trump has built upon the efforts of the previous administration of President Barack Obama to defend the US against emerging threats to its space enterprise. Over the past year and a half, the Trump administration has framed its space strategy around recognition that space is now a warfighting domain, has increased the national security space budget, and has championed efforts to collaborate with industry and allies to promote more resilient and defensible space architectures. Above all, key leaders within the Department of Defense (DOD) and the Trump White House have prioritized national security space efforts, in recognition that the space domain is now an integrated component of modern warfare.

A Warfighting Domain

Seventy-three years after the first V-2 was launched in Europe, the DOD under the Trump administration declared that space had become a warfighting domain. In their joint written testimony for a May 17, 2017 Senate Armed Services Subcommittee on Strategic Forces hearing on military space policy, Air Force Secretary Heather Wilson, Air Force Secretary David Goldfein, Air Force Space Commander (AFSPC) John Raymond, and Space and Missile Systems Center (SMC) Commander Gen. Samuel Greaves stated unequivocally that space is now a warfighting domain, similar to the more familiar air, land, and maritime domains. The “benign” space environment, in which the US had previously enjoyed virtually “unimpeded freedom of action”, no longer exists. Space will be contested in any future conflict and potential adversaries will seek to exploit US vulnerabilities in space.

Space, however, is not an isolated warfighting domain. It is also becoming an integrated component of the multi-domain warfare environment. The recognition of this new-age interconnected, multi-domain battlefield in which space has become a vital aspect has guided national security space strategy during the first year and a half of the Trump administration.

Revival of the National Space Council

On June 30, 2017, Trump signed Executive Order 13803 reestablishing the long-dormant National Space Council. The revived Council is chaired by Vice President Mike Pence and represented by several Cabinet-level officials. It has held two public meetings (in October 2017 and February 2018) where it explored space policy issues ranging from the regulatory environment to exploration efforts



Photo: The White House

President Donald Trump signs executive order reestablishing the National Space Council on June 30, 2017.

to national security challenges.

During its first public meeting in October 2017, the Council discussed challenges confronting the US with respect to the protection of its space assets. The former NASA administrator under President George W. Bush and current undersecretary of defense for research and engineering, Michael Griffin, stressed to the Council that space is part of US critical infrastructure, requiring resiliency and enhanced cybersecurity. He also highlighted the importance of US allies to national security space, as they provide added flexibility to the US space defense strategy. Fellow witnesses retired US Navy Adm. James Ellis and former Space Shuttle Commander Pamela Melroy echoed Griffin's call for closer alliances in the space domain.

Despite some discussions on space defense, most of the Council's actions so far have been directed toward civil regulatory reform and space traffic management (STM). On Feb. 28, 2018, the Council sent Trump a set of recommendations to streamline and improve civil space regulations within the Department of Transportation and Department of Commerce. Later, on April 19, 2018, Pence announced that the Council would soon send Trump another set of recommendations proposing the Department of Commerce's Office Space Commerce lead the US government effort in STM.

Although the reinstated Council has not yet made recommendations specific to national security space policy, this issue will likely receive a more prominent focus in its future deliberations.

Space in National Security Strategy & National Defense Strategy

Every US presidential administration has the opportunity to shape US national security space policy, usually through two key documents: National Security Strategy (NSS) and National Defense Strategy (NDS). The Trump administration published its NSS and NDS in December 2017 and January 2018, respectively, providing important insights into how the space domain fits into the Trump administration's broader national security and defense priorities.

The NSS outlines a space deterrence strategy for the new era of a contested and increasingly militarized space domain. It acknowledges that the US is increasingly dependent on space for vital functions such as communications, finance, military, weather monitoring, and navigation. At the same time, it notes that other countries are developing ASAT capabilities to threaten US space assets. In response to US dependence on — and growing vulnerability in — space, it declares: "Any harmful interference with or an attack upon critical components of our space architecture that directly affects this vital US interest will be met with a deliberate response at a time, place, manner, and domain of our choosing." This deterrent statement provides significant ambiguity. For example, what space assets are critical to the US? Will the US military respond to attacks on commercial entities? Will the response be proportional? This vagueness is designed to conceal US response plans and thus deny an enemy the ability to make a well-informed risk assessment when planning an attack.

Furthermore, the NSS promotes expanded partnerships with the commercial sector to improve resiliency of the US space architecture. The US will also "consider" extending national security protections to private sector partners. Once again, this statement is meant to obscure US response plans to a space attack and, in turn, increase enemy

uncertainty when considering an attack.

Similarly, the NDS makes a short — but telling — statement on space defense: "*Space...as warfighting domain*[:]. The Department will prioritize investments in resilience, reconstitution, and operations to assure our space capabilities." Once again, the DOD unequivocally declares that space is a warfighting domain, and that investments should prioritize capabilities to ensure US space warfighting superiority. In many ways, the NDS's focus on resilience and reconstitution is an extension of Obama-era space defense policy, which promoted similar concepts such as space domain mission assurance.

"America First" National Space Strategy

On March 23, 2018, the White House unveiled its "America First" National Space Strategy outlining four "essential" pillars for US space strategy. Two of these pillars relate directly to national security: transform to more resilient space architectures; and strengthen deterrence and warfighting options.

These two pillars offer a roadmap to warfighting supremacy in space. First (and again much like the Obama-era space defense policy), resilient space architectures improve overall mission assurance for vital space operations such as PNT and communications. Second, a strengthened deterrence posture and conflict readiness demonstrates US willingness to fight in space — only if provoked.

The National Space Strategy also highlights the Trump administration's support for NASA's upcoming human exploration missions to the Moon and Mars. While exploration is typically viewed as a scientific activity, these missions also have strategic value. In particular, the US can establish international norms and rules in outer space if it is the first to return to the Moon and then to reach Mars. Simply put, the US will "make the rules" in outer space if it arrives first. This may include updating the 1967 Outer Space Treaty or creating new treaties or norms that would protect US military and strategic interests.

Growing Budget for Military Space

Translating these policies into practice, the Trump administration has worked with the US Congress to increase national security space funding. While a significant portion of the US military space budget is classified (and thus unavailable for public review), the budget documents for FY 2018 and FY 2019 offer insights into the administration's unclassified space funding priorities.

The DOD's FY 2019 Budget Request introduced a new accounting figure called the Major Force Program (MFP)-12, which calculates the total obligation authority (TOA) — the total budget authority for a program that is appropriated by Congress, transferred from another program, and left over from the previous year — for all unclassified national security space programs. The MFP-12 funding is projected to increase from \$11.87 billion in FY 2018 to \$12.73 billion in FY 2019. Over the next four fiscal years, DOD projects MFP-12 funding levels to fluctuate, but remain above \$12 billion.

Moreover, space programs within the US Air Force — which comprises approximately 90% of the DOD's overall space budget —

TABLE

MFP-12: Unclassified national security space TOA (\$ billions)

Fiscal Year	MFP-12 Funding
2018	11.874
2019	12.729
2020	13.071
2021	12.221
2022	13.088
2023	12.478

Source: National Defense Budget Estimate for FY 2019, Office of the Under Secretary of Defense (Comptroller), April 2018

are expected to receive steady funding increases in the coming years. In her March 20, 2018 testimony before the House Armed Services Committee, Wilson stated that national security space is one of the top budgetary priorities for the Air Force. Notably, the FY 2019 defense budget calls for an 18% increase in Air Force national security space funding over the next five years.

However, budget requests are just that — requests. Every year, Congress reviews the budget requests and then passes appropriations bills to fund national security space programs. Congressional appropriations usually differ from the funding levels requested by the DOD. Indeed, recently, Congress has opted to appropriate *more* funding to national security space programs than requested. For example, Congress's FY 2018 "Omnibus Bill", passed in March 2018, appropriated \$600 million in unrequested funding to procure two Wideband Global SATCOM (WGS) satellites to bolster the US military's satellite communications capabilities.

In terms of FY 2019 funding, the specifics of the budget request are under debate in Congress, which is required to pass a budget by Sept. 30, 2018 — the end of the US government's fiscal year. If history is any guide, however, Congress will likely not pass a new budget before the end of its fiscal year (the US Congress has not passed a budget on time in decades) and will therefore rely on Continuing Resolutions to keep DOD funding at existing levels until at least after the US midterm elections in November 2018, when there will likely be greater political will to pass a budget.

Regardless, recent funding increases demonstrate that national

security space is a budgetary priority for the Trump administration. Moving forward, the Air Force and related defense offices will continue to prioritize national security space funding.

Resilient & Defendable US Space Architecture

For years, US leaders have sought to create a more "resilient" space architecture. High-level policy documents and statements have called for a shift from large, aggregated, and expensive satellites to more distributed constellations of less expensive satellites that can more quickly and effectively "bounce back" from an attack.

The Trump administration's FY 2019 budget request introduced a relatively new concept for its space enterprise in addition to resiliency: "defendable". This term implies that the US Air Force is more willing to use military force to defend its space assets. In other words, while US policy under the Obama administration focused on the passive concept of resiliency, the Trump administration is emphasizing a more aggressive space posture that deters, recovers, *and* defends against space attacks. However, specific programs to better defend space assets are likely to be classified and thus unavailable to the public.

A deeper look into Air Force funding priorities for the FY 2019 budget request reveals that the Air Force is beginning to prioritize a more resilient space architecture. One key example is the space-based early-warning system for US missile defense called the Space-Based Infrared System (SBIRS). The Air Force had originally planned to procure eight large, aggregated SBIRS satellites. However, the FY 2019 budget request proposes that the Air Force discontinue procurement of the last two satellites and instead shift funding to development of a more resilient and survivable program called the "Next Generation Overhead Persistent Infrared" (or Next-Gen OPIR). While the parameters of the new system won't be finalized for several years, the constellation will one day offer persistent missile warning capabilities for ground forces with enhanced mission assurance. Additionally, the Air Force is improving its anti-jam capabilities for the Global Position System (GPS) and communications satellites to provide assured access in contested environments.

Space Defense Partnerships Improve Resiliency

The DOD is soliciting industry support in developing a more resilient space enterprise. In particular, the DOD research-wing, the Defense Advanced Research Projects Agency (DARPA), is working with industry to develop two key space capabilities: rapid launch capabilities and a distributed low-earth orbit (LEO) constellation.

In February 2018, DARPA announced that it is holding an industry launch competition that will award companies for successful demonstrations of short-notice launch capabilities. DARPA's vision is to help build a space launch industry that can conduct frequent launches from multiple locations. Ultimately, such on-demand launch services would help the US military more quickly replace satellites damaged or destroyed by enemy attacks. DARPA will hold the competition in late 2019 and award competitors up to \$10 million for demonstrating rapid launch capabilities.

In April 2018, DARPA released a solicitation for innovative proposals for low-cost space payloads and/or commoditized satellite buses that provide military utility from a distributed LEO constellation. This

Photo: US Air Force



Secretary of the Air Force Heather Wilson and Air Force Chief of Staff Gen. David Goldfein testify before the Senate Appropriations Committee for Defense on June 21, 2017.

project seeks to enable “highly networked, resilient, and persistent” DOD payloads in LEO. Ultimately, this program is intended to help the DOD shift from large, aggregated satellites that are “high-value” targets for enemies to constellations of smaller, cheaper satellites that can be quickly replaced if attacked.

The DOD has also expanded partnerships within the US government interagency. For example, the Air Force and the National Reconnaissance Office (NRO) have partnered to develop the National Space Defense Center (NSDC), a highly classified operations center located at Schriever Air Force Base in Colorado that serves as the US’s space threat detection and warning center. The NSDC transitioned to a 24/7 operations center in January 2018.

Additionally, the US military is increasing space collaboration with international allies. During an April 17, 2018 speech, Air Force Space Command Commander Gen. John Raymond said that the US military’s Joint Space Operations Center (JSCPOC), which is responsible for the DOD’s space situational awareness, is improving operations and coordination with ally partners. The JSCPOC will soon transition into the Combined Space Operations Center, which is meant to better integrate space operations with US allies. In addition, US space forces are collaborating with allies via joint exercises, such as the annual Schriever Wargames.

Reorganizing Space Forces & Reforming Space Acquisitions

Despite increased funding and prioritization of national security space in the Trump era, key challenges continue to plague national security space leadership. At the top of the list are a slow and inflexible acquisition process, a lack of unified leadership, and insufficient training and development opportunities for US space personnel. The acquisitions process remains the top concern among DOD space leaders, as space system procurements typically experience severe delays and dramatic cost overruns. This system is untenable in an age of rapid technological development and could leave US space forces woefully unprepared to face the latest threats. Moreover, national security space leadership is fragmented across the Air Force, US Strategic Command, and smaller space organizations in the US Army and Navy — lacking a unified leadership hierarchy.

Recently, a few initiatives have given the DOD the opportunity to enact substantive organizational reforms. For example, the FY 2018 National Defense Authorization Act, signed into law by Trump on Dec. 12, 2017, requires that the deputy secretary of defense provide recommendations to reorganize the national security space components of the DOD by Dec. 31, 2018. As such, the office of Deputy Secretary of Defense Patrick Shanahan is conducting a study dedicated to delivering recommendations to address these pressing issues. An interim report sent to Congress on March 1, 2018 stated that the DOD is looking to reform the two largest space acquisitions offices — the SMC and the Rapid Capabilities Office — and add more agility and innovation to the procurement programs. These reforms, however, will not take place until after the final report is sent to Congress in December and after Congress authorizes the DOD’s proposed changes.

Finally, and somewhat surprisingly, Trump has inserted himself into the space reorganization debate, as he has on two occasions called for



Photo: Twitter (@VP)

Vice President Mike Pence issues a command to a GPS satellite at the National Space Defense Center on June 23, 2017.

a US “Space Force”, described as something akin to another branch of the US military. While Trump’s “off-the-cuff” remarks are not formal policy proposals, his comments may add pressure on the DOD leadership to pursue organizational reforms, as this issue has now reached the “ears” of the top echelons of government. In other words, the president’s personal interest in space reorganization efforts may be the “spark” needed to enact real organizational change that can create a unified leadership hierarchy, better streamline acquisitions, and improve training and leadership opportunities.

Toward a Defendable Space Enterprise

The first space launch technology was originally created for 20th century warfare. Today space has become a domain for 21st century warfighting. Military space commands are now critical components of joint military operations for the US and a growing number of allies and competitors. Future great power wars will be fought not only on land, air, sea, but also increasingly in space and its “sister” domain, cyberspace.

The Trump administration has continued Obama-era efforts to ready the US military for future space conflicts. It has also released high-level policy documents outlining national security space strategy, increased funding for space forces, and engaged in discussions on reorganizing space forces and reforming space acquisitions. Overall, the US national security space enterprise is transitioning from defensive, resilient architectures to a more defendable enterprise — where the US is willing to fight in space to defend its assets. Championing industry technologies and forging closer ties with allies, the US military will continue to build a defendable architecture to prepare for emerging threats in the 21st century.

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