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THE PROPOSAL TO ESTABLISH A UNITED STATES SPACE FORCE

THURSDAY, APRIL 11, 2019

UNITED STATES SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

The Committee met, pursuant to notice, at 9:30 a.m. in room SD–G50, Dirksen Senate Office Building, Senator James M. Inhofe (Chairman of the Committee) presiding.

Committee Members present: Senators Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Cramer, McSally, Blackburn, Hawley, Reed, Shaheen, Gillibrand, Blumenthal, Hirono, Kaine, King, Heinrich, Warren, Peters, Manchin, Duckworth, and Jones.

OPENING STATEMENT OF SENATOR JAMES M. INHOFE

Chairman INHOFE. The Committee meeting will come to order.

We want to welcome our witnesses: Secretary Shanahan, Acting Secretary of Defense; Secretary Heather Wilson, Secretary of the Air Force; General Joseph Dunford, Chairman of the Joint Chiefs of Staff; and General John Hyten, Commander of the U.S. Strategic Command.

Before we begin today’s hearing, I’d like to provide special recognition to Secretary Wilson. Today is likely her last appearance before this committee, as she’s transitioning to her new position of president of the University of Texas—El Paso. I spent about 20 years of my life down there, so I know what you’re in for. We’ll miss you dearly. Your service to our country has been commendable—first serving in the United States Air Force from 1982 on, and as Congresswoman from 1998 to 2009, and culminating as the 24th Secretary of the Air Force. We appreciate all of your service. We will miss you.

I’ve got to applaud and thank both President Trump and Vice President Pence for their renewed focus and cohesive approach to America’s resurgence in the space domain and the support to our National Defense Strategy, this document here, which is our blueprint.

The reestablishment of the National Space Council, chaired by the Vice President, has provided multiple Space Policy Directives, including the establishment of the Unified Combatant Command and U.S. Space Command, as well as standing up the Space Development Agency and providing us with the United States Space Force proposal we are discussing today.

(1)
Space is a warfighting domain, and future conflicts with Russia and China will invoke attacks from, in, and through space. This would profoundly disrupt our society, which is heavily dependent upon satellite communications, positioning, navigation, and timing, and other vital space-based technology. We must restore our margin of dominance in space over our adversaries. The President’s leadership and continued attention to this space domain protects the freedom of action these great-power competitors would like to disturb. The unwavering presidential support we have received ensures our warfighters we have the technology and ability to bring America back to greatness in space.

Today’s hearing will provide us with an opportunity to continue to gather facts, to fully explore the proposal, as presented to us. It was only 4 weeks ago, if you remember. That was right after our budget discussion. And talking with Members of the Committee and their Military Legislative Assistants (MLAs), we’re all open-minded on the plan, but are wrestling with different aspects of it. And this is one of those rare times when we’re having a hearing where people haven’t already made up their minds. So, we look forward to that.

When we first heard about the proposal, I asked two simple questions. What will the organization fix? And how much will it cost? Now, I was going to say, I have yet to get satisfactory answers on either one of these, but it’s come out of the Administration that this is going to be a $2 billion program. So, for my purposes, I’m going to assume that’s right, but I’m still waiting for the answer for the first question. So, I look forward to talking about the options, the considerations. Another option could be making the National Reconnaissance Office, the NRO, the space office. I consider that would be a viable alternative. We’ll be discussing these alternatives in the time to come.

Senator Reed and I have concluded that, since this is such a high visibility and that there’s so much interest in this, instead of 5-minute rounds, we’re going to have 6-minute rounds. And we look forward to dealing with our Committee Members.

Senator Reed.

**STATEMENT OF SENATOR JACK REED**

Senator Reed. Well, thank you very much, Mr. Chairman, for holding this hearing to discuss the Department’s proposal to establish a United States Space Force.

Again, I think that the timing is appropriate. The Administration understands the different challenging demands in space that have evolved very quickly over the last 2 years, and their proposal gives us something to work with. And I thank them for that.

Let me welcome our distinguished witnesses and join the Chairman in saluting and thanking Secretary Wilson for her distinguished service. Thank you, Madam Secretary.

All of us would agree that space is essential to the security and progress of the United States. It is a critical component of almost every aspect of everyday life, from communications, financial transactions, and navigation, to the weather. For decades, the United States enjoyed unfettered access to space. However, as near-peer competitors increase their space presence, space is becoming con-
There are legitimate concerns that the Department of Defense (DOD) is not effectively organized to address the threats posed by our near-peer adversaries in space. Congress has grappled with how to address these concerns. In fact, in 2017, we debated a House proposal on whether or not to create a Space Corps. Ultimately, due to strong opposition in the Senate and questions from senior officials within the Department of Defense, Congress did not create a Space Corps. But, we did strengthen the space cadre and space acquisition authorities within the Air Force, and specifically within the Air Force Space Command. Last year, Congress took an additional step and created a sub-unified command for space reporting to the U.S. Strategic Command. This year, the Administration has proposed to establish the U.S. Space Force as a new military service within the Air Force responsible for organizing, training, and equipping all forces who will fight in the space domain.

The proposal is essentially the same House proposal we debated in 2017. I fully agree that the threat is real and that changes need to be made to better address the threat. However, creating a new branch of the Armed Forces for the first time in 70 years is not a decision Congress should make lightly. Such a major reorganization would have long-lasting consequences, both intended and unintended, for how our forces will fight, the decades into the future.

While the Department’s proposal appears comprehensive, there are areas where I have questions and concerns that I hope we can discuss during today’s hearing.

My first area of concern is the creation of what seems to be a very top-heavy bureaucracy. According to initial estimates, the Space Force will be a military service of approximately 16,500 people. Roughly 1,000 personnel will serve in headquarters positions. Presently, the smallest force is the Marine Corps, with a total force of 246,000 military and civilian personnel, and a headquarters staff of 1,200. This Space Force would be in the Department of the Air Force, similar to the Navy/Marine Corps model. However, this proposal creates an Under Secretary of the Air Force for Space; whereas, the Marine Corps does not have a separate Under Secretary.

The proposal also creates two new four-star general officers in Space Force, one for the Chief of Staff and the other for the Vice Chief of Staff of the Space Force. The Chief of Staff of the Space Force would be a member of the Joint Chiefs of Staff. I hope our witnesses will explain why the Space Force requires a separate and dedicated Under Secretary, unlike the Marine Corps, and whether such a top-heavy bureaucracy is necessary for such a small fighting force.

The Department states that a new military service will significantly increase focus in leadership, expertise, personnel, and culture. With regard to the personnel actions requested, I have some concerns that this proposal may actually have the opposite effect. Of the 16,500 members of this force, 10,500 would be Active Duty servicemembers almost exclusively from the Air Force, and a significant number of Space Force general officers would be drawn largely from the Air Force. Therefore, the future pool of officers from which the Space Force would grow field-grade and general of-
Officers would be small compared to other Services, and predominantly from one Service. This raises question about the depth, breadth, diversity, and long-term quality of the officer corps.

While predominantly made up of Air Force personnel, the proposal seeks to consolidate much of the space activities of the other services into Space Force. The Department is specifically requesting authority for the Secretary of Defense to transfer military and civilian personnel, both voluntarily and involuntarily, and their associated budgets and billets to the Space Force. While it’s possible all these transfers could be done voluntarily, I believe that scenario is highly unlikely. The connection a servicemember has to their individual military branch is often deeply rooted and a part of their identity. Furthermore, the Department has not yet decided on what role the Guard and Reserve will play in this new service.

This proposal would authorize a new civilian personnel system exclusive to the Space Force that would be exempted from the statutory rules and protections applicable to most other Federal employees, including antidiscrimination laws and whistleblower protections. Most notably, the proposal would create a statutory exemption from collective bargaining rights for this workforce and would authorize the Department to involuntarily transfer civilian employees, stripping him of their collective bargaining rights in the process.

The Department’s initial cost estimate for Space Force in fiscal year 2020 is $72 million. However, the Department has provided only notional budget numbers for out-of-year budgets, with an estimate that Space Force will require approximately $1.6 billion over the Future Years Defense Program (FYDP), based on a flat $500 million recurring cost for personnel. It is highly unlikely that the bureaucracy of the Space Force will remain flat over time. I think providing the DOD with wide legislative authority to create a new bureaucracy without more robust budget details is risky.

On a final point, the National Reconnaissance Office is responsible for our Nation’s intelligence collection in space. It is a joint organization between DOD and the intelligence community. Clearly, it will play a critical role in space as a warfighting domain, yet it is not yet part of this proposal in any way. I understand there are difficult issues to address in both the Administration and Congress on any changes to the status quo, but I’m interested why this obvious seam in the organization of space was not addressed. And I’m interested in hearing from the witnesses on this issue.

Again, the threats we face in space are real and clear; they require action. I commend the Administration and the Department for taking such action. We will consider this issue very, very carefully.

Thank you, Mr. Chairman.

Chairman INHOFE. Thank you. Thank you, Senator Reed.

Well, we have four witnesses. All four will have opening statements. And we will ask you to try to keep your opening statement down around 5 minutes, because we have a lot of members here, and we’re going to have 6-minute rounds, so it’s going to take awhile.

So, we’ll start with you, General Dunford. You are recognized.
STATEMENT OF GENERAL JOSEPH F. DUNFORD, JR., USMC, CHAIRMAN OF THE JOINT CHIEFS OF STAFF

General DUNFORD. Chairman Inhofe, Ranking Member Reed, distinguished Members of the Committee, thanks for the opportunity to join Secretary Shanahan, Secretary Wilson, and General Hyten here today.

Last month, I testified before you that China and Russia have developed capabilities to contest our ability to operate across all domains. This includes space, which is now a fully contested warfighting domain, along with sea, air, land, and cyberspace.

As you know, we have conducted joint military net assessments, each in the last 2 years, to determine our readiness to execute the National Defense and Military Strategies. At the unclassified level, our assessment includes several observations that are relevant to our discussion this morning and highlight that our competitive advantage in space has eroded.

China and Russia have taken significant steps to challenge our traditional dominance in space. They have reorganized their armed forces and developed robust space capabilities, to include space-based intelligence, surveillance, and reconnaissance. These steps provide the ability to more effectively target United States and allied forces. China and Russia are also capable of searching, tracking, and characterizing satellites in all Earth orbits in support of space and counterspace operations. Their counterspace capabilities include jamming, cyberoperations, directed-energy weapons, on-orbit capabilities, and ground-based anti-satellite missiles. China and Russia clearly recognize the implications of space from both an economic and a warfighting perspective, and, as a result, they are adapting.

As Secretary Shanahan has in his written statement, Secretary Wilson has addressed, and both the Chairman and the Ranking Member have mentioned, space is no longer a sanctuary. Traditionally, the Air Force has been the principal driver of our efforts in space. And, because of airmen like John Hyten, who joins us here today, our capabilities today are second to none. But, our current organizational construct was developed before space was a contested domain. As a result of our analysis over the last few years, I have become convinced that we need change to maintain our competitive edge.

In the past, we have often effected change in the wake of failure. Today, we have an opportunity and, I would argue, an imperative, to change based on our ability to anticipate. We have an opportunity to look to the future and posture ourselves to seize and hold the high ground of space. We’ve already acted to establish United States Space Command, which will ensure we can most effectively operate in and from space. Taking a next step to create a Space Force will allow us to develop and maintain a singular focus on developing the people, the capabilities, the doctrine, and the culture we’ll need to maintain our competitive advantage in space. Together, I believe these steps will accelerate our efforts to develop, field, and operate the capabilities we’ll need for joint warfighting in the future.

Thank you, Chairman. And I look forward to taking questions.

Chairman INHOFE. Thank you, General.
Secretary Shanahan.

STATEMENT OF HONORABLE PATRICK M. SHANAHAN, ACTING SECRETARY OF DEFENSE

Secretary SHANAHAN. Chairman Inhofe, Ranking Member Reed, Members of the Committee, thank you for this opportunity to testify in support of the Department of Defense's U.S. Space Force proposal.

Before we begin, let me pay my respects to the families of the United States marines we lost this week in Afghanistan. While we will discuss elements of national security here today, we know it is America's young men and women who ultimately deliver that security for us and our families each and every day.

Let me open my comments on the Space Force by expressing my admiration for our U.S. Air Force. Because of our airmen, and Secretary Wilson's leadership, in particular, we are the best in space. This proposal is about maintaining the margin of dominance they have given us and accelerating the capabilities we need in this increasingly competitive domain. Establishing the Space Force within the Air Force lets us do just that.

It is all the more vital now, because our $19 trillion economy, our American way of life, and our American way of war all depend on space. Sixteen months ago, at your direction, in the National Defense Authorization Act (NDAA) for Fiscal Year 2018, I began a review to, quote, "identify and—a recommended organizational and management structure for the national security space components," end quote. We are here to respond to that direction, to address the problems Congress, multiple bipartisan commissions, the Government Accountability Office (GAO), and others have all characterized. DOD's space efforts are disaggregated, resulting in a slow bureaucratic approach. Today, DOD has five Senate-confirmed officials who are responsible for more than ten organizations developing bespoke space capabilities in a very federated fashion, failing to integrate across DOD and to capture the cost synergies of standards. The current approach has served its purpose. We are at an inflection point. Threats are increasing, and the importance of and the opportunities in space are growing.

Both China and Russia have weaponized space, with the intent to hold American capabilities at risk. Every member of this committee has access to the classified threat picture, but the bottom line is, the next major conflict may be won or lost in space. At the same time, an explosion in commercial space innovation is adding thousands of satellites and a new range of capabilities, unlocking a trillion dollars in economic opportunity.

There is widespread agreement the status quo is not sufficient. Change is required to stay ahead. Addressed correctly, this is an opportunity for a generational improvement. Future space capabilities should be system-engineered from the start, to include launch, commercial innovation, the network, the satellite, the ground segment, user equipment, and cybersecurity. Our military is organized around physical domains—Army on land, Navy on sea, Air Force in the air. Given the significant change confronting us, we now need a military service dedicated to space. Instead of coordinating across more than ten organizations, we will consolidate and con-
centrate into the Space Force so that we have clear lines of accountability and responsibility.

Two elements of the Space Force organize, train, and equip mission are worth elaborating on:

First, today’s space personnel go through a professional military education system focused on air, land, or sea. Space is an add-on. The Space Force will build a professional development system that recruits technical talent, educating our people in space from the beginning to produce the quantity and quality of leaders we need.

Second, organizing and equipping includes force design and force development. This means understanding the domain, the technology, and warfare deeply enough to design and deliver future capabilities, ensuring space power today and in the future.

The Space Force has two related components. First, a Unified Combatant Command for space, with a full-time commander focused on space operations. Second, the Space Development Agency will develop and deliver the next generation of space-based communications and Earth observation while existing organizations continue current efforts.

The status quo is not sufficient. We need to outpace threats in space, not simply keep up with them. Because our current system isn’t organized to move fast enough, the Space Force will consolidate, elevate, and focus our efforts for results. Our partnership with Congress is critical. Our proposal responds to your Fiscal Year 2018 NDAA direction. And we stand ready to work with you and resolve any questions or details. We ask your support in making the strategic initiative to establish the U.S. Space Force in fiscal year 2020 NDAA. America has enduring interests in space. And, just as the U.S. Navy ensures freedom of navigation of the seas, America’s Space Force must now ensure the freedom to navigate the stars.

Thank you. I look forward to our discussion.

[The prepared statement of Secretary Shanahan and General Dunford follows:]

In 2007, the Chinese tested an anti-satellite missile by kinetically destroying a Fengyun series polar orbit satellite. Furthermore, since 2014, Moscow has been experimenting with the orbital maneuvering of military spacecraft. We currently maintain an advantage relative to these competitors, but our space enterprise was built for a strategic environment that no longer exists and our margin of dominance is quickly shrinking.

We are in another interwar innovation period, and we can either remain stagnant or evolve to the changing operating environment. We have unmatched human capital and resources; our challenge now is to get the systems engineering right and accelerate transformation of our posture to space as a warfighting domain. The Department’s Space Force proposal is one of our proposed reorganizations to achieve greater integration, overcome paralysis of risk aversion, leverage our new technology base, and ultimately align our diverse space elements within the Department around strategic outcomes.

This is a complex and enduring undertaking; the transformation required to achieve it is a significant, multi-faceted endeavor. As unfettered access to and freedom to operate in space is a vital national interest, it demands a corresponding level of priority and focus.

Establishing the U.S. Space Force as the sixth branch of the Armed Forces will fundamentally transform our approach to space from a combat support function to a warfighting domain of competition and potential conflict. This action will institutionally elevate space relative to its role in national security; unify space missions, capabilities, and forces with clear responsibilities and authorities; and focus on the development and fielding of the personnel, culture, doctrine, and capabilities for a distinct, yet integrated, domain. The proposed U.S. Space Force within the Department of the Air Force, along with the associated elements of U.S. Space Command and the Space Development Agency, allows us to work on these challenges at speed, maximizing warfighting effectiveness while minimizing bureaucracy and additional costs.

**STRATEGIC ENVIRONMENT**

Space is essential to the American way of life; it also underpins the American way of war. From global communications networks to the physical movement of people and materials, space-based capabilities have allowed our economy to thrive and our military to project force with significant competitive advantage. Today, commercial entities worldwide are delivering new space technologies and capabilities at speeds never before seen. This rapid innovation also lowers the cost of accessing space and enables new services.

Strategic competitors China and Russia have observed the asymmetrical advantages afforded us by space over the last two decades. They now perceive space as a viable target to nullify our asymmetric advantages in other domains and gain a strategic foothold for future competition. Following this perception, they have adjusted their military strategies and organizations to neutralize the Joint Force’s ability to project power: China and Russia have developed, tested, and fielded counterspace capabilities to deny U.S. and Allied use of space-based systems during crises and conflicts. As a result, the United States cannot afford to develop or leverage space systems today without addressing vulnerabilities from our competitors’ counterspace capabilities. As a recent Defense Intelligence Agency report notes:

> Chinese and Russian military doctrines indicate that they view space as important to modern warfare and view counterspace capabilities as a means to reduce United States and allied military effectiveness ... Both states are developing jamming and cyberspace capabilities, directed energy weapons, on-orbit capabilities, and ground-based anti-satellite missiles that can achieve a range of reversible to nonreversible effects.¹

This new environment highlights the critical role of space in the changing character of warfare and presents new challenges and opportunities for our military forces.

Space systems do not simply support terrestrial forces—actions in space can also directly affect the outcome of future crises or conflicts. Space is also the connective tissue holding the other domains (land, air, sea) together in an era of multi-domain warfare. Therefore, the Department of Defense (DOD) must also be prepared to assure freedom of operation in space to deter attacks, and, when necessary, to decisively defeat space and counterspace threats.

CHALLENGES

The United States currently possesses a competitive advantage in space, but our existing Defense architecture is not designed to do so in a contested space environment. China and Russia are actively seeking to exploit our perceived vulnerabilities and are directly challenging us in areas of long-held strength. We must adapt our approach from one that views space principally as a support function to one optimized for a distinct warfighting domain.

The DOD space enterprise largely reflects strategic conditions created after 1991, when Operation Desert Storm demonstrated the asymmetrical advantages of space capabilities applied to conventional warfare and the Soviet Union’s collapse halted the only credible threat to United States space systems. Space missions, capabilities, and units proliferated across the Joint Force as each Military Service sought to enhance its core missions through space. Absent an extant threat, advances in mission performance of space systems were prioritized over defensive capabilities or warfighting doctrine to protect them. Consequently, few DOD space forces—across all Military Services—were designed or intended to gain and maintain space superiority in a contested environment. A U.S. Space Force would prioritize development of appropriate defensive and offensive capabilities and doctrine to match the current and future military threats in space, as well as enhancing resilience of our space capabilities.

Today, organizing, training, and equipping of space forces is spread across the Military Services as they enhance and enable operations for their respective domains. In short, the current organization of forces lacks sufficient unity of command, a fundamental principle of military organization and warfighting. If we do not correct this organizational fragmentation, nascent warfighting doctrine and insufficient doctrine now, America’s post-Cold War complacency in space will become the catalyst for our possible defeat in a future conflict with a peer competitor. The post-Cold War environment also gave rise to certain assumptions, which shaped the DOD space enterprise: space was a sanctuary; space superiority was assumed; gaining and maintaining space dominance was a logistical rather than a warfighting function; space capabilities and operations were strictly in support of the terrestrial fight; and space-based enablement and airpower were inextricably linked and could therefore be integrated under one doctrinal construct. These assumptions no longer reflect reality.

The erroneous assumption that space would remain uncontested resulted in processes and structures that have propagated multiple problems in the space enterprise. These problems have been documented for years. While some corrective action has been taken, the lack of institutionalized and centralized advocacy for the space domain has resulted in fragmented responsibilities within DOD; nascent space warfighting doctrine, expertise, and culture; and undue risk aversion resulting in laborious decision cycles in system acquisitions and operations.

Rather than attempt to address each issue in isolation, DOD recognizes the need for a paradigm shift based on a new set of assumptions that more closely reflect today’s realities: space is not a sanctuary—it is now a warfighting domain, similar to the air, land, and sea domains; space superiority is a condition that must be gained and maintained via a range of options, including resilient architectures, offensive and defensive operations; space doctrine, capabilities, and expertise must be designed to gain and maintain space superiority, and support operations in other domains; and spacepower and airpower doctrine and operating concepts are as distinct from one another as the air domain is from the land, and as the land domain is from the sea.

Separating spacepower from airpower and elevating this new warfighting domain allows for the independent development and advancement of strategies and doctrine for two physically and strategically distinct domains. In no uncertain terms, the U.S. Air Force (USAF)—and its current leadership in particular—have driven America’s efforts in space and delivered capabilities second to none. The USAF is the best in the world at organizing, training, and equipping for the air domain and advancing airpower for the Nation. DOD needs the USAF to retain that primacy to ensure the United States is postured to project airpower while deterring and defeating threats to the air domain posed by other great powers. The U.S. Space Force will do the same for space.

SOLUTION—A NEW APPROACH

Our challenges in space require dedicated leadership, advocacy, doctrine, equipment, and expertise. While our Military Departments and Services develop domain-centric doctrine, equipment, personnel and infrastructure necessary to attend to unique warfighting elements, no existing Military Service treats space as its number one priority.

Our reorganization will ensure the U.S. Space Force provides the dedicated leadership and advocacy that develops space forces capable of addressing our emerging security challenges. These forces will be presented to U.S. Space Command, which will bring day-to-day operational focus to competition and conflict in space, as well as to regional combatant commands. As these entities are established, the Space Development Agency will accelerate development and fielding of distinct space capabilities.

The United States Space Force

The U.S. Space Force would develop and field doctrine, equipment, and personnel with the responsibilities and authorities commensurate to the space domain’s needs, rather than conforming to another domain’s structures and processes. This will institutionally elevate space advocacy commensurate with its role in national security; unify DOD space forces to vest authority, accountability, and responsibility for organizing, training, and equipping in a single service; and focus on the development of doctrine, expertise, capabilities and culture for space as a distinct warfighting domain. A Military Service focused on generating and developing forces for the future is the right and necessary organizational construct to organize, train, and equip space forces.

To maximize warfighting effectiveness while minimizing cost and bureaucracy, the proposal establishes U.S. Space Force as a separate armed force within the Department of the Air Force, similar to how the U.S. Marine Corps is housed within the Department of the Navy. We assess this will enable the U.S. Space Force to focus on building space warfighting capacity without having to divest resources for non-space centric support functions. The U.S. Space Force will leverage existing support functions resident in the Air Force that are not directly related to the space domain (e.g., medical corps, chaplaincy, staff judge advocates, etc.), effectively minimizing overhead and cost. This will allow the new Service to prioritize limited resources and develop a lean and focused infrastructure.

DOD envisions consolidating the preponderance of existing military space missions and authorities under the U.S. Space Force, with those space capabilities, forces, and units that do not uniquely and exclusively support a single Military Service’s core domain-specific mission transitioning to the new Military Service. Current Service-specific entities that provide global space capabilities would become part of the U.S. Space Force. For example, the Air Force Space and Missile Systems Center, the Navy Mobile User Objective System, and the Army’s operations of wide and narrow band global satellite communications would all become part of the Space Force. As necessary, DOD Components would retain organic space capabilities uniquely required to support the core mission of that Military Service or Defense Agency.

Senior leadership is required to ensure that space is adequately prioritized within the Department. Establishing an Under Secretary of the Air Force for Space will ensure focused civilian oversight, advocacy for space resources, and alignment and integration of space program investments. A 4-star Chief of Staff of the Space Force, with full membership on the Joint Chiefs of Staff, will elevate the mission, strengthen the requirements process and drive spacepower advocacy and coordination with the Joint Force.

The Department is postured such that, should Congress grant its approval, the 200-member Initial Space Force Staff can be stood up within 90 days of enactment. The transition as a whole will take about five years. As the U.S. Space Force is established, the Department intends to build a lean headquarters with responsibility for developing, presenting, and advocating for space budgeting in the planning, programming, budgeting, and execution (PPBE) process. Additional organizations to deliberately build and advance space warfighting capacity and enhance professional development would also be required to focus on areas such as space education and training; operational testing and evaluation; tactics development, and threat replication; and space doctrine development; and promotions and assignments. The vast majority of initial Space Force resources—personnel and budget authority—would be transferred from the existing Military Services. We anticipate the standing up of U.S. Space Force would be phased over five years—fiscal year 2020 to fiscal year
2024—and would require $72 million in fiscal year 2020 to establish the headquarters.

As missions are transferred, existing personnel and budget authority for the aforementioned missions and forces would transfer into the Space Force from the existing Military Services. Here it is critical to note: this transfer does not necessarily mean physical movement of personnel and capabilities to a different geographic location. Rather, it means changing reporting, identifying clear roles and responsibilities, and establishing avenues for greater accountability for space missions.

At the conclusion of the transition period, more than 95 percent of the Space Force annual budget is estimated to consist of resources that will have been transferred from existing DOD budget accounts, along with an estimated 15,000 personnel. Additional resources will be dedicated to developing the Space Force headquarters and establishing and maintaining new support elements such as education, training, doctrine, and personnel management centers.

Once fully established, additive costs for U.S. Space Force are estimated to be $500 million annually. Approximately $300 million would be applied toward the military space staff and civilian personnel at headquarters responsible for organizing, training, and equipping; $200 million would be directed for developing space-specific education, training, doctrine and distinct space personnel management of the force. These costs come to approximately 0.07 percent of DOD’s annual budget. Total additional cost growth over the next five years is estimated to be less than $2 billion, or approximately 0.05 percent of DOD’s budget for the same period. Lean implementation costs mean the Future Years Defense Program topline is sufficient to fully fund the U.S. Space Force.

U.S. Space Command and Space Development Agency

Establishing a unified combatant command dedicated to space will focus joint warfighting on this vital domain. U.S. Space Command will plan and conduct space operations and employ space forces to deter, and if necessary, defeat threats to secure U.S. national interests. Establishing U.S. Space Command will bring full-time operational focus to securing the space domain and streamline command and control for operationally relevant timelines. While basing decisions have not yet been made, it is anticipated that initial personnel will be drawn from existing combatant commands and services that focus on space.

To fulfill its mission, U.S. Space Command will require doctrine and forces optimized to operate in a contested environment. The role of U.S. Space Force in developing and presenting that doctrine, equipment, and trained personnel is essential to the ultimate success of U.S. Space Command.

The Department is also establishing the Space Development Agency (SDA) to outpace our potential adversaries by streamlining development and fielding of advanced space systems and architectures that meet the demands of a dynamic warfighting domain. The new agency will be complimentary to ongoing space efforts within the Department and, where applicable, leverage emerging commercial technologies to field enhanced space capabilities on an accelerated timeline. SDA will deliver the advanced systems integration essential for activities such as artificial intelligence, which will enable low-latency data movement to connect sensor-to-shooter and otherwise enhance exquisite capabilities. The SDA will ultimately transition to the U.S. Space Force in support of its “equip” function.

Given the roughly 2,500 active satellites in orbit today, the thousands more projected, and the fact that potential adversaries have nearly doubled their space presence in recent years—China’s ISR and remote sensing fleet alone contains more than 120 systems, second only to the United States—the imperative for an agency that can outpace the threat and leverage the astounding advances of the private sector is obvious. Absent the SDA, our departmental inertia will perpetuate development of bespoke space-based capabilities and architecture by multiple DOD organizations. That resulting complexity expands our cyber vulnerabilities along the seams of those capabilities; it also drives up costs unnecessarily. The SDA is our opportunity to recapitalize our Department’s space architecture and integrate new solutions at scale.

CONCLUSION

The threat posed by China and Russia in space demands department-level action. For years, careful observers of our processes—including Congress, independent commissions, and even our peer competitors—have pointed out the limitations of our current approach. We must not wait until we experience conflict in space to adapt our posture. As other great powers become more competent and capable in space, America burdens increased risk because we will not have sufficient time to “hammer out” what will be needed and how to do it if contingencies arise. Rather than react
to their disruptive behavior, we should seize the initiative now to anticipate and influence changes in the character of warfare and deter potential adversaries’ aggression by establishing a Space Force that operates on doctrine created by fully trained space cadre members and equipped with resources and capability to defend the American way of life and U.S. national security.

Thanks to President Trump’s leadership and Vice President Pence’s consistent advocacy, this Department has identified a plan to maintain U.S. leadership in this key domain of competition and potential warfare. The Department’s partnership with Congress is and will remain absolutely critical to our success. We ask for your support in authorizing the establishment of the United States Space Force in the Fiscal Year 2020 National Defense Authorization Act so we can move out in this critical domain. As we proceed, we remain committed to the efficient and cost-effective enactment of our proposals in close partnership with this committee and Congress as a whole.

America has enduring interests in space. So does humankind. The world has benefited from American leadership in space these past decades far more than it can expect to benefit from coercive Chinese or Russian disturbance of the domain. Just as the U.S. Navy ensures freedom of navigation of the seas, America must now ensure the freedom to navigate the stars.

To that end, we encourage this committee’s strong support for this proposal to ensure our Nation’s military remains the most advanced and lethal in the world and above it.

Chairman INHOFE. Thank you, Mr. Secretary.
Secretary Wilson.

STATEMENT OF HONORABLE HEATHER A. WILSON,
SECRETARY OF THE AIR FORCE

Secretary WILSON. Thank you, Mr. Chairman. And thank you and Ranking Member Reed and this committee for this hearing and for your service.

I would just highlight a couple of points very briefly, in addition to what’s already been said.

The United States is the best in the world at space. And our adversaries know it. And they are seeking to develop the capability to deny us the use of space in crisis or in war. Our responsibility is to make sure that doesn’t happen.

Second, I would say that it is absolutely imperative that we change the system of acquisition that is modeled more for the Cold War. We have to buy things faster and smarter. The authorities that you have given to the Air Force and to the other Services and to the Department of Defense over the last 3 years are in the midst of being implemented, and we are stripping time out of programs, and increasing the performance of those programs. In respect to that, the on-time budget this year was absolutely critical, and the fiscal year 2020 budget proposal will be the third consecutive year of double-digit percentage increases proposed by the President and, I hope, supported by the Congress.

The third thing I would say is that the Air Force has stood up a planning cell underneath the Air Force that includes all of the Services and the relevant Defense Department agencies to do the detailed planning necessary so that, within 90 days of legislation, we would stand up the initial element of a Space Force. That planning cell is led by a two-star general and, as I mentioned, includes all members of the different Services. We want to be able to move out smartly when legislation is passed.

Thank you, Mr. Chairman. I look forward to answering your questions.

Chairman INHOFE. Thank you, Madam Secretary.
STATEMENT OF GENERAL JOHN E. HYTEN, USAF, COMMANDER, UNITED STATES STRATEGIC COMMAND

General HYTEN. Thank you very much, Chairman Inhofe, Ranking Member Reed, distinguished Committee Members. It is an honor to be here today, and a continuing privilege to represent the 162,000 Americans accomplishing the mission of U.S. Strategic Command.

I want to begin by thanking the committee for, rightly, approaching space as a warfighting challenge. And I very much appreciate the President weighing in, confirming space as a warfighting domain. Now we have to make sure we're ready for that challenge.

U.S. Strategic Command (STRATCOM) is a global warfighting command. Success in all our missions require us to maintain freedom of operations in space. And today, as the Secretary just said, I sit here fully confident in our Nation's superiority in space. Although we have a distinct advantage today, I fear that this will not continue unless we take action immediately, before our superiority begins to erode.

Space is fundamental to our economic vitality and the American way of life, including how we conduct warfare. Certainly, our adversaries understand this, and they're actively building and deploying weapons to threaten us in space. We must take these actions seriously.

As the Commander of USSTRATCOM, I am responsible for space operations in our military today, and I have been in space my entire career. It is my passion. And, as much as I'd like to focus on space, my priorities are, first, strategic deterrent; second, nuclear command and control. And space can never be higher than my third priority. So, the most important thing we can do in the near term is create a lean, new unified command, U.S. Space Command, separate from my command, STRATCOM, focused solely on warfighting in space. And we need a four-star commander to do that. It’s that important. The Department's already taken a step, as well as the President, to nominate General “Jay” Raymond for this position. He is the right person for that job, and I encourage the Senate to take up his nomination as soon as possible.

The second piece is to stand up a new Space Force inside the Air Force, focusing on organizing, training, and equipping forces for this Space Command and for the Joint Forces at large. This is the pathway that best gets us there. The President said we need a structure inside the Pentagon focused on space all the time, inside the Air Force, and I support this model. The force needs to be streamlined from inception. I understand your concerns about inefficiencies. I believe the creation of Space Force within the Air Force is the best way to reduce redundancies and bureaucracies by focusing on the most essential tasks. So, I pledge to continue to work with the Congress to develop the most efficient warfighting organizational structure possible.

So, thank you, again, for allowing me to be here today. I look forward to your questions, as well.

Chairman INHOFE. Thank you, General Hyten.
Now, we are going to have 6-minute rounds, and we're going to try to stay within that timeframe, I tell my fellow Senators. In my opening statement, I talked about a couple of questions that never have been answered to my satisfaction. Forgetting about the cost thing, because we've pretty much established at least an opinion as to what it's going to cost, I have, essentially, the same question, worded a little bit differently, to have each one of our witness answer. So, I'd like to ask you to respond to this question.

First of all, Secretary Shanahan, I agree with when you often say the United States' margin of dominance in space is diminishing. But, my question to you is, how will establishing a Space Force help the United States reassert its warfighting dominance? Yes, sir.

Secretary SHANAHAN. Sure. Thank you, Chairman.

The fix you're really speaking to is, you know, How do we expand that margin? Our proposal addresses all of the changes that are occurring simultaneously in space. And maybe just to set up the answer, these are the significant changes we have to address. The environment is contested. We are about to, for the first time in about 30 years, modernize the Department. So, how do we incorporate all the modernization and address this very different environment, which is a binary change from the past? And as we broke down the problem, we said the fastest way to do this—and it's all about speed to expand our margin—is to compartmentalize the problem into three areas. The first was, make sure we have warfighting operations so that we can operate in a contested environment.

Chairman INHOFE. Yeah, quickly, now.

Secretary SHANAHAN. The second was, make sure that we have the doctrine and the training so that we can equip our forces with the right space cadre.

Chairman INHOFE. Okay.

Secretary SHANAHAN. And lastly, how do we acquire and develop the right system?

Chairman INHOFE. So, you assume that we're going to do a better job with a Space Force than we're doing right now in those three areas.

Secretary SHANAHAN. Yes.

Chairman INHOFE. Thank you very much.

Secretary Wilson, given your experience—which is vast—can you provide your assessment as to how the proposal will better organize, train, and equip space forces, compared to the present mission of the Air Force Command today?

Secretary WILSON. Mr. Chairman, I agree with General Hyten, that the most important step that Congress has already taken and the President has put into action, is a Unified Combatant Command for warfighting. But, I do think that there is an opportunity to align defense space programs in a Space Force underneath the Air Force, including acquisition. And I think that that alignment will help.

Chairman INHOFE. Okay. That's a good answer.

General Hyten, through your role as Commander of the U.S. Strategic Command, you are currently the Nation's most qualified expert in space warfighting. Can you differentiate between the mis-
sion of the U.S. Space Command, a Unified Combat Command—and the service mission, as proposed in the hearing today?

General HYTEN. Yes, Chairman. The structure is, basically, built around the same structure we have in all our combatant commands. The way our military is organized is, we have combatant commands that fight our forces. They fight our battles, they win our wars, they conduct strategic deterrence. All the missions are executed through our combatant commands. The new U.S. Space Command will execute the space mission through the combatant command of U.S. Space Command. But, the Services organize, train, and equip forces for those commands. So, the Army, Navy, Air Force, Marines builds, organize, trains, and equip forces for the unified combatant commanders. The Space Force will do that for the Space Command and for the Joint Force at large.

Chairman INHOFE. I see.

General HYTEN. That's the difference between the two.

Chairman INHOFE. All right. Well, that's a very good, specific answer.

General Dunford, you're a warfighting marine, so you have a different perspective than some of the rest of them do on this panel. Do you believe establishing a Space Force will contribute to the development of a space warfighting ethos and culture that does not exist already today?

General DUNFORD. Chairman, first, I'd say I think we do have a good culture in the Air Force. And again, we are the best at space. But, I also believe that an organization that has a leadership team and people that are singularly focused on a single core competency—that being space—will contribute to culture, but, more importantly, will contribute to a focus in those areas that Secretary Shanahan, Secretary Wilson, and General Hyten highlighted.

Chairman INHOFE. That's good.

Thank you very much.

Senator Reed.

Senator REED. Well, thank you very much, Mr. Chairman.
And thank the witnesses.

Secretary Shanahan, as I mentioned in my opening statement, basically the Space Corps is roughly 16,500 personnel. What you will create is a 1,000-person, sort of, overhead. That is the highest overhead-to-operation ratio within the Military Services, by a great deal. For example, the Air Force has 2,300 personnel in its headquarters, and 320,000 airmen and airwomen. How do we avoid that? Why didn't we think harder about coming with a leaner structure?

Secretary SHANAHAN. Sir, let me start with—philosophically, as we consolidate, there should be a reduction in cost. That's how I'm approaching this. The basic proposal has been formulated from an Air Force estimate based on traditional constructs. And what I'd like to do is ask Secretary Wilson to speak to how that proposal was derived.

Senator REED. Madam Secretary?

Secretary WILSON. Thank you, Mr. Chairman.

When the Department went through this whole evaluation, we looked at a whole range of options, everything from a kind of Judge Advocate General (JAG) corps/medical corps model to a completely
independent, standalone department, and a lot of things in between. Where we landed was a Space Force underneath the Air Force so that you don’t have to duplicate all the acquisition, budgeting, finance, personnel kinds of functions, but with a member of the Joint Chiefs.

Now, if somebody’s going to be a Joint Chief, and they’re going to have the credibility in the building and be able to operate, they need to have the support of a member of the Joint Chiefs. Of the additional personnel, which I think is about 1,200, half of those are in the headquarters, which makes for a quite small headquarters for a member of the Joint Chiefs. The other half was proposed to be what is a professional development element to get after the business of developing people. So, it is recruitment, professional development, doctrine center kinds of things, which is not really a headquarters element. We did that costing, and that would be the concept.

Senator REED. Well, thank you, Madam Secretary.

And, Madam Secretary, your thinking about this proposal has matured over the last couple of years. In 2017, I think you raised some opposition to a Space Force. One of the points you made, which I thought was compelling, was you need a joint warfighting team, and this Space Force would, in your terms, be counterproductive in that respect. It would be, not a joint enterprise, but, essentially, an Air Force enterprise, given the distribution of officers and the fact it would be placed under the Air Force. I see a value to the jointness in everything we do. And are you concerned that we might lose that, that this might be more siloed out than a joint enterprise?

Secretary WILSON. Senator, each of our Services has our own identity, but we contribute to a joint team. I think that one of the most important things in standing up a separate Space Force will be to establish a warfighting culture within that organization that’s part of a Joint Force.

One of the things that really has surprised me when I came back to the Service, having been away—having served as a young officer, is just how much more joint operations really are today than they were 20 years ago, when I was a young officer. And it’s a real tribute to the decisions made under Goldwater-Nichols.

Senator REED. Again, I think—this is an issue that we’ll return to again and again, but there is this tension between creating a separate service, separate identity, and this notion of jointness, which I think you correctly stated emanated from Goldwater-Nichols and has been, I think, a very effective way to organize our military efforts.

One of the issues that has been mentioned several times, Secretary Shanahan, is the sense that, well, now we’re unifying our entire effort in space under the Space Corps, but actually we have the National Reconnaissance Office, which has a great role in space, and we also have military intelligence programs that have roles in space, and they’re outside this proposal, and there is no, at this point, explicit linkage to them, other than informal communications. So, are we missing something, here? I think, again, the intent that we suggested in setting up the unified command was it would be an agency that had all services focused on space and
with active participation with the civilian agencies that are in that realm, too. Can you comment?

Maybe one good analogy would be U.S. Cyber Command.

Secretary SHANAHAN. Sure. The bias in the proposal is toward speed. The proposal we submit really represents the stakeholders that we have control of. Early discussions were with the NRO. I continue to have discussions with Sue Gordon, principally at the technical level as we start to evolve these new architectures so that we can provision, at one point in time, to do the integration that, technically, I think, will be aligned from the start. The challenge, organizationally, is that when we look at the many stakeholders, there’s real work to be done there to negotiate. So, we thought of it as a multi-step process, that eventually there would be more alignment and integration, but not in the first phase.

Senator REED. Thank you, Mr. Secretary.

Chairman INHOFE. Thank you, Senator Reed.

Senator Fischer.

Senator FISCHER. Thank you, Mr. Chairman.

Secretary Shanahan, if I could just follow up on the NRO a little bit. Are you saying that, at the onset, now, of the Space Force, you didn’t feel a need to have that included, but, possibly down the line, you would? Did I understand that correctly?

Secretary SHANAHAN. There is a need. It was an issue of timing. So, if we could do it all concurrently, that would be ideal. I don’t think we can move that quickly. I don’t think we can move that quickly. So, rather than delay, we said, “This is what we can do immediately, provision for that integration and realignment in time.”

Senator FISCHER. Will that affect the need to unify the national security space activities? Do you see that as possibly a detriment in trying to unify? We keep hearing about unification. Obviously, you don’t think of that will be a detriment.

Secretary SHANAHAN. Well, I’d rather do more, sooner. I mean, this is really about, How do we move out quick—the proposal we’ve put together is really a threat-driven proposal, so as quickly as we can get after the threat, we want to move. If we could do more, we’d like to do that. I think this is really more about how to organize the equities of stakeholders. If we could resolve some of those more quickly, we would incorporate more.

Senator FISCHER. Okay, thank you.

Secretary Wilson and General Hyten, can you offer your views on the NRO and Space Force?

Madam Secretary, if we could start with you, please.

Secretary WILSON. Senator, the National Reconnaissance Office was a secret program established between the Air Force and the Central Intelligence Agency (CIA) a long time ago. In 1992, its existence was acknowledged. But, while it was a black program, it was headed by the Under Secretary of the Air Force, who was simultaneously the head of the NRO. That ended in 1992, and the NRO had its own director, who was not the Under Secretary of the Air Force. There remains a very deep connection between the Air Force and the NRO. About 40 percent of the people in the NRO are airmen. The rest are civilians or CIA employees. So, there is a deep organic connection there. And we have deepened the already close
connection between military space and space elements of the intelligence community over the last several years. And that’s because many of the things we’ll have to protect are actually NRO assets. So, deepening that connection is important. It may not require actual structural change in the organizational chart. And we’d be happy to work with you on kinds of things that might continue to deepen that already very close connection between the Air Force and the NRO.

Senator FISCHER. Thank you.

General Hyten, do you have anything to add?

General HYTEN. Yes, ma’am, just a couple of things.

I think, first of all, we should recognize that right now the partnership between the National Reconnaissance Office and the Air Force is as strong as it’s ever been. And I’ve been working with the National Reconnaissance Office for well over 30 years. And it’s very strong.

The second piece is that there’s no doubt that the Space Force of the future will have to have a very strong relationship with the National Reconnaissance Office. The administration recognized this in Space Policy Directive 4 that gave us 180 days, which I think is out to the middle of August, to come back with a report that said this is how we would partner with the National Reconnaissance Office and the broader intelligence community in the future. I hope we can do that faster than August, because that partnership is very important to the future.

Senator FISCHER. Okay, thank you.

General Dunford, there’s a tension between the desire for a streamlined effort unified under one roof and the desire for a joint integrated approach, here. This was Admiral Rogers’ concern and the reason he actually opposed the creation of a separate force for cyber. In our attempt to unify space activities, are we running the risk of creating another silo, here? We’re going to surround it with a silo, and we’re going to distance it from other services? How do we make sure that space is going to remain integrated?

General DUNFORD. Thanks, Senator.

You know, Senator, in my assignment, what I’ve kind of come to learn is that the real strength of jointness is actually diversity of perspective brought by different Services and organizations. But, what’s key is to leverage that diversity of perspective in processes that make sure we have coherent force development, force design, command and control, and planning. I think those three areas are how we bring the joint team together.

But, I’m not at all concerned about a silo of space. The key is to have individuals that are singly focused on space, and make sure we incorporate that perspective, that very healthy perspective, into the outcome, which is a Joint Force that can fight.

Senator FISCHER. Okay. Thank you.

Thank you, Mr. Chairman.

Chairman INHOFE. Thank you, Senator Fischer.

Senator King.

Senator KING. Thank you, Mr. Chairman.

Thanks, to all of you.

In Maine, there are certain basic principles of life. One is, you don’t drive on the ice after April 15th. Second is, you hate the Yan-
kees. Third is, if it ain't broke, don't fix it. My impression is, you all are doing a good job. We are getting the data that we need, we're getting the support from the Air Force, we're working together with the NRO and other agencies, and, as I think many of you, or all of you, have testified, we're dominant in space right now. I understand the threat, and I understand our adversaries are moving forward, but I don't understand how adding a box to an organizational chart is going to give us some kind of qualitative military edge, to use a term that we've heard in this committee.

General Hyten, I'm like the Chairman, I'm genuinely undecided, although, as you can tell, I'm skeptical. I don't think it's broken. I think you're doing a good job. Why are we going to fix it?

General HYTEN. So, Senator, I think we have been doing a good job, but we've been doing a good job in an environment where space has not been contested. What is changing is, we have adversaries that are building significant capabilities that can challenge us in space.

Senator KING. I understand that, but I don't understand how putting a new box in an organizational chart is going to help us to respond to the new challenge that we face.

General HYTEN. Well, there's two problems we have to fix. One, we have to have a commander focused on it all the time from an operational perspective. That's the Space Command issue we talked about.

Senator KING. I agree, I think that's the answer, frankly.

General HYTEN. The second piece, Senator, is, we have to have somebody in the Pentagon that focuses their total attention on space all the time. I've known every Chief of Staff of the Air Force for the last 20 or 30 years, and they've all carried space effectively into the tank. They've all cared about space. But, it is a secondary issue. As they've cared about space in the tank, the Pentagon has built a structure around them with dozens and dozens of people and organizations that are all in charge of space in many ways. I had one Chief of Staff tell me—well, I won't share the exact words that he told me, but—

[Laughter.]

General HYTEN.—it was very difficult to walk around the Pentagon and not bump into somebody who said they were in charge of space. So, the goal is to put one person in charge of space, a four-star Chief of Staff—

Senator KING. And I understand that, too, but one of the problems with this proposal is, it doesn't put one person in charge of space, because we've got NRO, we've got the National Aeronautic and Space Administration (NASA), we've got the private sector, which is very active in space—and, by the way, I am not suggesting that NRO and those other agencies—the National Geospatial-Intelligence Agency (NGA)—should be absorbed into this. That's the last thing I want to propose. But, again, if the argument is, we need a centralized authority, we don't have it here.

The other piece that I don't understand is, you talk about a Space Force. That implies people. Nobody's going to go up and fight in space. We're not talking about soldiers, here. We're talking about acquisition, design, and placement of hardware. That's an important function, but I just don't understand why this has to be
in a particular special box. I think Space Command makes sense. I understand that. But, to create a new bureaucracy that’s going to cost us half-a-billion dollars a year, I’ve got to be convinced that there’s some incremental value there.

Mr. Secretary, you want to tackle that?

Secretary SHANAHAN. I’d love to, thank you.

If the environment we’re going to be in is the same as it is today, going forward, I’d say don’t fix it. I’ve studied this problem for 18 months, so it’s not as though someone passed me a report. I’ve spent a lot of time on this subject. And the focus has been, what is changing? Do we have the capacity and the ability to make that change? When I break the problem down, the first is, How do we set up Space Command so we have operations that now can compete in a contested environment? So, that was one problem, and you need a dedicated leader whose attention is that.

Senator KING. But, isn’t that the combatant commander of the Space Command?

Secretary SHANAHAN. Correct. So, that’s one.

Then the second piece—and this is where I think you were headed—is, Why does that new box, called the Space Force, create a lot of value? There’s two major changes that we have to get after. One is, How do we professionalize the generation of this cadre of space specialists? Today, it isn’t a formal training and development program, a recruiting program——

Senator KING. But, again, couldn’t that take place in the context of the Space Command? It’s a combatant command. It’s going not have personnel and a mission.

Secretary SHANAHAN. It could. It could. This is what the Space Force is intended to do—man, train, and equip, like the other Services. The equipping part is the other major component, here. So, as we look to modernize across the Department—and this is an area where the Department has struggled over time, and this is the most significant modernization in 30 years—do we have the bandwidth and capacity, the focus, and the accountability to drive that? That’s what this really gets after, so that, when we do modernize, we execute to the schedule, we execute to the budget, but, more importantly, we deliver the technical capability at a department whole, not by Service.

Senator KING. I appreciate that. Thank you.
Thank you all. Thank you for your testimony.
Thank you, Mr. Chairman.
Chairman INHOFE. Thank you, Senator King.

Senator Cotton.

Senator COTTON. Thank you for your appearance today and for your work on this very important problem.

I want to share the sentiments of several Members of this Committee who say that space is, unfortunately, now a contested domain, and our enemies are putting weapons in space and they’re targeting our assets in space, and that we don’t really get a choice to whether we want to fight in space. We only get a choice of whether we want to win or lose in space. I know you’ve all put a lot of effort into thinking through that problem. As to the Members of this Committee, I think you’ll see it’s not really a partisan mat-
ter, either. But, it’s a major question, and I think we’re all committed to getting it right, not getting it fast.

I do want to continue on the line of questioning that Senator King started. And I want to start with your perspective on this, General Hyten, as a combatant commander. You said, rightly so, that space can never be more than your third priority, given your priorities of our nuclear strategic forces. You can imagine a world in which those nuclear strategic forces would have been their own service, you know, where we would have put our missiles and our ballistic missile submarines and our strategic bombers, in addition to our command-and-control functions, into a separate nuclear forces, if you will. We didn’t do that. We have Strategic Command to do that. Can you explain why we need to put all space assets, space forces, into a separate service, as opposed to a combatant command?

General HYTEN. Yes, sir. Thank you, Senator.

When you look back at the history of our nuclear forces, the three basic capabilities are the submarine-launch ballistic missiles, the Intercontinental-Range Ballistic Missiles (ICBMs), and the bombers. If you look at how those systems operate, the submarine clearly operates in the maritime domain. The bombers and the ICBMs operate in the air domain. So, the expertise you need to operate those weapon systems come from the domain expertise you achieve from the Air Force and from the Navy. When you look at the space capabilities that we operate—satellites, rockets to get us into space—the capabilities there require expertise in the space domain. That’s the difference between the legacy of Strategic Command, which then took domain-focused capabilities and put it together into one unified command, and a Space Force that will take another domain capability together and put it into another unified command.

Senator COTTON. Those capabilities, though do seem pretty Air Force-centric. I understand that the Marine Corps and the Army use space assets a lot to fight. It’s critical to our way of fighting. But, unless, as Senator King said, we’re going to have a large number of actual soldiers in space fighting, and they need a different set of skills, this is primarily going to be about technology and acquisitions and so forth. So, I think what a lot of us on the committee are trying to figure out is, What’s the incremental advantage of having a separate Space Force, like the Marine Corps is to the Navy, within the Air Force, as opposed to, say, the Air Force having the training and equipping function that the five services have for a combatant command like yours, for the geographical commands, and the Central Command or European Command or so forth?

Secretary Wilson, that may be a question for you to take.

Secretary WILSON. Thank you, Senator.

I would just add one thing to what General Hyten mentioned, which is the importance of the development of space professionals. I think that that’s an important thing for the committee to consider, particularly the potential advantage of separating out promotions for Space Force members, and particularly Space Force operators, that that would be a benefit, and to be able to promote to need rather than just take the chance that you will get the right
numbers of people. That’s particularly important for small career fields.

I also think that continuing to strengthen professional development around space and space warfighting is important. Obviously, we’re moving forward with this, irrespective of what decision is made by the Congress and the Administration on formal structures. But, the shift to warfighting, things like we’ve established the Schriever Scholars this year, which is a specific area of professional military education on space, opening undergraduate space training to allies, going to 4 months on the floor operating systems to 4 months of training in combat operations for a space operator. So, that shift of a culture to warfighting and professional development is actually an important element for your consideration.

Senator COTTON. Secretary Shanahan, I see you’re reaching for your button. You can respond, if you’d like. I had one question for General Dunford before the Chairman gavels me down. But, if you’d like to respond——

Secretary SHANAHAN. Five years from now is going to look much different. I think sometimes we look through the lens of today, and we extrapolate going forward. But, there’s going to be, literally, an explosion of thousands of satellites. You think of just the growth in space. You think about this contested environment, and then how quickly we need to be able to adapt commercial innovation, and then, the Army’s going to modernize its command and control (C2) system, the Navy’s going to modernize its C2 system. We have all this modernization going on concurrently. So, how do we organize ourselves to be able to accomplish this amount of change in an environment that’s getting increasingly dangerous? That’s really what we’ve tried to do, here, so we could dedicate the skill and the resources to be able to move quickly instead of bureaucratically trying to organize ourselves across so many different organizations.

Senator COTTON. General Dunford, you look like you’re about to push your button.

General DUNFORD. I was waiting for you.

Senator COTTON. Well, I think the Chairman’s going to gavel me down.

I will say this, though, before my time expires. Bob Gates, who I think is one of the finest Secretaries of Defense that we’ve had, wrote, in his most recent book, “Passion for Leadership,” that normally when you face a bureaucratic challenge, moving boxes around is not the right solution. That doesn’t mean it’s the wrong solution here, but he said that normally what you need is a cultural change from your leadership. Whatever happens in this year’s National Defense Authorization Act, I want to commend you, Secretary Shanahan, General Dunford, Secretary Wilson, General Hyten, for the cultural change you’ve driven inside the Department to recognize that we need to significantly increase the level of our capabilities in space, given what we face in Russia and China, because your leadership on this has been very strong.

Thank you.

Chairman INHOFE. Thank you, Senator Cotton.

Senator Peters.

Senator PETERS. Thank you, Mr. Chairman.

And thank you for all of your testimony today.
I just want to concur with what I'm hearing from my colleagues. I don't think there's any disagreement from folks on this committee that space is something that we need to focus a great deal on, that it is now a contested domain in ways that simply didn't exist in the past, and we need to do a better job of coordinating and integrating space into our overall defense strategy. But, I think our question is that this approach that we're looking at is just going to add a whole lot more cost. At a time when the Department of Defense needs to be a whole lot more nimble, has to be a whole lot more innovative, and has to be able to do more with less, because we can't just keep throwing money after dollars after dollars, when there are so many other needs that we have in our economy, here. But, I would like to have folks coming to the committee, saying, “We can do this, and we can do it more efficiently, and we can have more lethality, and we'll be able to defend American interests, and do it in a cost-effective way.” And I'm not hearing that.

Secretary Wilson, I hate doing this, but I think it's important, because I think you said this best of anyone. In 2017, after a meeting with the Senate Appropriations Subcommittee talking about the Space Force you said, “The Pentagon is complicated enough. This will make it more complex, add more boxes to the organization chart, and cost more money. If I had more money, I would put it into lethality, not bureaucracy.” Secretary Wilson, I think that's profound. I agree.

The Air Force Chief of Staff went a step further and stated, “If you're saying the word 'separate' and 'space' in the same sentence, I would offer you're moving in the wrong direction. That's why the Secretary and I are focused on how we integrate space. Every mission that we perform in the U.S. military is dependent on space. Now is not the time to build seams and segregate and separate. It's time to integrate.”

I couldn't agree more with those statements. I haven't heard any kind of refuting of those very strong statements.

If I think about growth of bureaucracy, all we have to do is look at the past of agencies. Inevitably, folks come and say, “We're going to do this efficiently, and it's going to be different this time.” I'm the Ranking Member on the Homeland Security and Government Affairs Committee, which, of course oversees the Department of Homeland Security (DHS), and when we stood up that Department—I mean, just look at what has happened in that Department over the years. Since 2005, the DHS's department management operations staff responsible for functions, including legislative affairs, public affairs, general counsel, has grown at a very large rate. What started at 723 employees now is close to 2,600 employees. Bureaucratic organizations always grow. I've never seen a bureaucratic organization that actually shrinks. And this one is particularly rank-heavy, which usually has its own bureaucracy that comes as ranks increase. Essentially, the proposal would have two 4-star generals and an Under Secretary in charge of the organization the size of a marine expeditionary brigade, which is usually commanded, as you know, General Dunford, by a brigadier general who is conducting operations in both the air and land domains, very complex, contested environments. And we're going to be add-
ing an incredible number of folks in what is being done officially in other places around the Department of Defense now.

So, my question is, What would happen to the end strength of the existing Services if personnel are transferred to the Space Force? Would the Air Force, Navy, and Army backfill those positions, or are we looking to reduce the end strengths of those forces as we create this new bureaucracy?

Secretary Shanahan?

Secretary SHANAHAN. We would not backfill the end strength.

It would be net zero.

Senator PETERS. So, we would see a reduction.

In those other areas, because we're removing them.

Secretary SHANAHAN. Yes.

Senator PETERS. We've talked about—and Senator Reed brought it up, which I think is important—the jointness factor. That certainly was one of the important and, I think, paramount achievements of Goldwater-Nichols, to make sure that we're fighting jointly. That's why I concur with some of the comments I've heard from my colleagues on having the joint command structure. But, if the creation of the Space Force is approved and we consolidate all of the Service space equities into one branch, the unified U.S. Space Command will only have one Service as a force provider, is my understanding.

General Dunford, how does this proposal fit into Goldwater-Nichols? How do you propose senior officers in the Space Force would broaden and gain joint experience if we're consolidating all space equities into a single Service providing force for a single functional combatant command?

General DUNFORD. No, Senator, I think it's a great question. For clarity, I would envision that each of the Services would still have expertise at the staff planning level to employ space capabilities, and then also the necessary tools to take advantage of space. So, ground systems, staff planners, and those kind of things would be in the other Services. But, Senator, from where I sit now, particularly as a former Joint Force commander, operational, and as the Chairman, I mentioned, a minute ago, the diversity of perspective actually brings strengths to the Joint Force. So, I don't have concerns about Space Command being a cylinder of excellence, if you will, because it's largely a single Service. I think it's imperative, on the Joint Force, to make sure that, in force development, force design, in command and control, and on our planning, we leverage that diversity that each of the Services brings.

My perspective is—and I was probably where many Members of the Committee are today, 2 years ago: skeptical that we're moving in the right direction. At the end of the day, I asked the question—we have a space domain now. It is a warfighting domain. What is the optimal organizational construct to make sure that we're positioned to fight in space? And that's where I've landed now on the Space Force. So, I do believe that the framework within which we develop joint capabilities will allow us to leverage both Space Command, the operational element here, as well as Space Force, the train, organize, and equip organization.

Senator PETERS. Thank you.

Chairman INHOFE. Thank you, Senator Peters.
Senator Rounds.
Senator Rounds. Thank you, Mr. Chairman.

First of all, let me just say, to all of you, thank you for your service to our country. I most certainly appreciate all of the expertise that you provide.

Once again, Secretary Wilson, it has been truly an honor and a privilege to be able to work with you, and we’re going to miss you.

I have to share with you all. I guess I’m openminded as to whether or not this is a good idea. But, at the same time, I think all of us have an obligation to come in, in a sense, to be skeptical, because as you’ve all indicated, we have the best with regards to our approach right now to space, compared to our near-peer competitors. What we’re trying to do is to make improvements for the long term based upon the issues that we see that we’re not able to do as well as we would like to. Having learned a lot from previous projects and so forth, the Air Force, right now, has a B–21 project which is not only on time, it’s on budget. It would appear to me that there are acquisition processes within the Air Force right now that are showing improvement, that we’re actually seeing that work its way through. I’m wondering what it is within the space processes that would be different, and why it is that space is a challenge.

I’m also trying to figure out what happens when we start talking about this new bureaucracy. We’ve actually considered the fact that we would actually have a general officer, a Chief of Staff, who would be a four-star, responsible for the Space Force, but we would also have another individual who would serve as commander of the U.S. Space Command.

Let me just start with this. Any possibility that we could follow the same guidelines as we found within U.S. Cyber Command (CYBERCOM), where we have a dual-hatted position? Has that been considered as one way to perhaps promote some efficiencies in this proposal?

I’ll start with Secretary Shanahan, and if you’d like to pass that off, you’re welcome to, sir.

Secretary Shanahan. No, let me start there, and add on to your comments about the B–21.

The first is, let’s say we did have the dual hat, and you just look at the work that that individual would be accountable to deliver. It’s too much work. If it were General Raymond, it would be too much work, given what’s taking place across the Department. So, it’s just a bandwidth issue. If we were to compare acquisition processes to the B–21, in our situation we have the opportunity to take advantage of innovation that’s taking place in the commercial sector. The B–21 is really indigenous. We’re going to have to make changes to our acquisition processes in order to be able to take advantage of all of this new technology and innovation.

Senator Rounds. Would not a Space Force have the same unfortunate bureaucratic problems that the Air Force has to deal with today?

Secretary Shanahan. That was the nature of the Space Development Agency. Carve the development portion out so that we can address the bureaucratic red tape of acquisition so we can really leverage the commercial innovation and the fact that how we de-
sign is going to be fundamentally different because it’s now a contested environment.

Senator Rounds. You know, this wouldn’t be the first time that we’ve made a change like this. I mean, this has gone through processes in the past. There is no such thing as a perfect layout. The one we have today is clearly not perfect. It could be improved upon.

And, General Dunford, I see that you were looking over as though you may have something to add to that particular thought.

General Dunford. Senator, do you mind if I address the dual-hat issue?

Senator Rounds. Yes, sir.

Go ahead.

General Dunford. When I look at General Nakasone, the benefit of the dual-hat arrangement up there is, he’s able to combine intelligence with cyber capabilities to quickly execute operations. We saw, combined with authorities, the benefit and the power of that last fall in protecting our democracy.

In the case of Space Command and Space Force, Space Command will be singularly focused on integrating the Joint Force for operations, so integrating capabilities and integrating across capabilities to conduct operations. The four-star which Space Force really is, in a train, organize, and equip world—and I see the benefit of having somebody singularly focused on developing the human capital, the doctrine, the capabilities, and the culture of a Space Force. But, that same individual, I don’t believe, can also be the one we count on day-to-day to conduct operations.

Senator Rounds. Let me just ask a couple of real quick questions. General Hyten, I’m going to come right to you with this, because clearly you have a number of these items under your responsibility right now, but let me just run this by.

Satellites are going to be separate right now, in terms of maintaining the NRO separate, number one. Number two, what about hypersonics? Whose role is this going to play, and how does that fit into this whole process? Are we going to find that under a Space Force or a Space Command, or is that going to remain separated out?

General Hyten. Well, you’ll organize the structure of the weapons that we’re building and the capabilities that we’re building based on the organization with the best expertise. I think the Space Force structure will likely build the sensors that will see hypersonics. But, I think the other Services will more likely build the hypersonic capabilities, because they will operate in their domains. The hypersonic capabilities we’re talking about right now are not space capabilities, they operate from the sea, from the land, from the air, through the air. That structure makes sense to go through there.

If I could just build on a little bit to the previous discussion, though, because I think it’s important for the committee to understand that—well, just look at the uniform I’m wearing. I am an airman at heart. When I bleed, I bleed blue. I love my Air Force, and I love the history of the Air Force in space. I mean, the term aerospace was created at this committee in 1958 by the Chief of Staff of the Air Force to talk about the integration of air and space. I
love that background. But, every physical domain we have, when it becomes contested, we create a military service to deal with that.

So, we're going to have a Space Force someday. I think what the committee has to decide is, When is that going to happen? I think now is the time to go to what the Chairman said, Do you want to get ahead of the problem, not trail it, not come in the response to a catastrophe, but get ahead of the problem?

But, I hope everybody understands, I love the uniform that I wear.

Senator Rounds. Thank you.
Thank you, Mr. Chairman.
Chairman Inhofe. Thank you, Senator Rounds.
Senator Jones.
Senator Jones. Thank you, Mr. Chairman.
Thank you all for being here today.

I hope you can understand that, while this committee seems to be open to this idea, we're still seeing a lot of generalities after being studied for awhile, and we're having a hard time grasping. Candidly, unlike some colleagues, my needle may be a little bit more inclined to create a Space Force, but I still got questions.

For instance, Secretary Shanahan and General Dunford, there was a statement that you issued that said, “Current service-specific entities that provide global space capabilities would become part of the U.S. Space Force. For example, the Air Force Space and Missile Systems Center, the Navy Mobile User Objective System, and the Army’s Operations of Wide and Narrow Band Global Satellite Communications all become part of the Space Force.” But, then you go on to say, “As necessary, DOD components would retain organic space capabilities uniquely required to support the core mission of that military service or defense agency.”

So, what, exactly, would and wouldn’t become part of the Space Force? Do you have a list of the entities that would have, and do we have that list, or can you get that list to us?

Go ahead, General.

General Dunford. Senator, I can start, and just give you an example. In my own Service, the Marine Corps, we don’t have space capabilities in the Marine Corps. We do have personnel that are trained in capabilities to take advantage of space. Where I see us going is that the preponderance of space capabilities would be in that single Service, the Space Force, but each of the Services, because space is integral to their warfighting capability, is going to have to have expertise inside those Services to make sure that space is properly integrated into their warfighting capability, and then they’re going to have to have some capabilities to take advantage of ground systems and so forth. But, this would move on order of 95 percent-plus of the capabilities in the department of space into a single force. So, what would be residual in the other Services would be minimal, and it would be designed specifically and only to make sure they can take advantage of space.

Senator Jones. Okay.

Secretary, you want to add anything?

Secretary Shanahan. Oh, absolutely. Senator, we can come brief you. We’ve done the architectural and programmatic analysis, service and agency, for over the Future Years Defense Program. So, I
could show you where, today, we have ten different organizations working on similar architectures. This is really not about the systems that we have in place. Wholesale, they stay in place. But, the Department is about to embark on new command and control for all the Services. We have an opportunity here to have all domain command and control at the Department of Defense level. That’s never been an opportunity. And why that’s such a big deal—and that’s what the Space Development Agency represents—is, we’re going to have common ground stations, common terminals. The infrastructure that’s necessary to really be able to strip out cost and be able to upgrade capability will finally have a baseline that’ll allow us to do it. I think this is where Senator Peters was. Where does this come from? Ten efforts to one. There’s real cost, real schedule, real capability that gets delivered in a much more effective fashion. That’s what this proposal is about.

I’d trade 500 people, in a heartbeat, to implement this proposal. If that’s where the negotiation is, I think we have a winner, here. The real benefit is delivering capability at a much lower cost, and those dollars are in the billions.

Senator JONES. All right. Just to bring it home to Alabama, is the Army Space and Missile Defense Command (SMDC) at Redstone Arsenal going to be part of the Space Force? Do you know, or do you want to get back to me?

Secretary SHANAHAN. No, actually, it depends which part, because when we think of some of the critical roles in the SMDC, some of that will be aligned with the Space Force as we do Army modernization. Some of the existing resources that support ongoing, I’ll call them, legacy Army operations, they’ll stay in their current capacity and in their current alignment.

Senator JONES. All right.

Secretary Wilson, I’m just going to ask it in a different way, this question about the need for this. Because I’ve read statements of yours in the past, where you have talked about the need for a Space Command versus Space Force, maybe not both. I get it about acquisition. But, I sometimes think that that could be done within the Air Force. Let me just put it this way. Had the President of the United States not issued an order about creating this—and you have been the Secretary now for a couple of years—would this be something that you would be coming to the Senate Armed Services Committee, recommending, after having served 2 years as Secretary of the Air Force?

Secretary Wilson. Senator, I think the President of the United States has done us a service by elevating this conversation and making the challenge we face in space a kitchen-table conversation. When I came here to be confirmed in front of you 2 years ago, I was told, by a holdover from the folks who were still kind of in the previous Administration or holding over or whatnot—that I had to take out the words “space” and “warfighting” in the same sentence. And look at where we are today. The President has proposed, and you all have supported, 2 consecutive years of double-digit percentage increases in the space budget, and there’s another one before you today in the fiscal year 2020 budget. We’re having a hearing on how America needs to dominate in space. And I think we need to give him credit for that.
Senator JONES. Thank you.
Thank you, Mr. Chairman.
Thank you for that answer Secretary Wilson.
Chairman INHOFE. Thank you, Senator. Senator Ernst.
Senator ERNST. Thank you, Mr. Chair.
And thanks, to all of our witnesses today, for being here.
This is obviously very important to all of us, but making sure that the structure is right is also very important. I think we’ve determined that it’s a necessity. It’s just how we establish the forces.
So, I hope we can get this sorted out. I know we’ve talked about this so many times over, in so many different ways. We’ve given a lot of different examples of different types of structures of organizations within our military. I guess we need some convincing that there is a necessity for a sixth branch within our armed services.
We do have the United States Special Operations Command, SOCOM, and its components. They were stood up to organize, train, and equip our Nation’s special operators, and they were established to address a gap in our warfighting construct without standing up a separate branch of service. So, with that, we have Naval Special Warfare, we have U.S. Marine Corps Forces Special Operations Command (MARSOC), we have U.S. Army Special Operations Command (USASOC), and we’ve got U.S. Air Force Special Operations Command (AFSOC), all of our branches represented within SOCOM. So, why is that not a great example, then, of what we could do for a Space Command instead of a Space Force? Could somebody address that?
Secretary SHANAHAN. I’d be happy to do that. In my previous life, I did weapon system development for SOCOM, and I’ve done weapon systems development for space, and then also the Missile Defense Agency. So, a full spectrum of different classes of engineering and different levels of complexity. The SOCOM model is very much different than what we’re proposing. And that’s what you’re recognizing.
In the SOCOM model, the very advanced engineering is actually done by the Service. In this model, it would be the same. The advanced capability would be done by the Space Force. So, there’s similarity. The actual research and development that’s done by SOCOM today, if we just looked at the budget, is about $600 million. If we look at what’s in the Air Force today, it’s about $11 billion in acquisition. It’s about $8 billion in research, development, test and evaluation (RDT&E). It’s a different scale, and the complexity of the engineering and the complication is just a different class. So, I would just argue, it’s different missions and different scales. I think it would be much more difficult to manage in that environment, given the amount of acquisition we’re going to do as a Department, going forward.
Senator ERNST. I understand the acquisition challenges. I would say that right now, as well, we also have challenges with personnel, simply, to move into a Space Force, and what those requirements might be.
Secretary, I know we had spoken, just several weeks ago, about maybe some of the challenges. Because anytime we do stand up—even if it’s a brand-new unit, whether it’s a company or a battalion, you’re trying to field new positions. Could you address for me the
challenges with pulling a lot of talent, primarily from our Air Force, but also from some of our other service branches, and the implications of what that might do to hollow out some of the other forces with that talent, and just some of the challenges we'll face in filling some of those top-heavy slots?

Secretary, can you address that, maybe?

Secretary WILSON. Senator, with respect to the people, I think part of this has to do with at what timescale. How do we develop our people, and then how do we gradually promote them and get them ready to take on positions of responsibility? I think you've identified one of the issues that will be one of the hard parts we're dealing with in the working group, the task force that's been set up under a two-star general to look at how do we make sure we have the right expertise, and on what timescale could that Space Force grow into a fully robust support for a member of the Joint Chiefs?

Senator ERNST. Again, understanding that these are decisions that will be made along the way—but, what kind of timeline will it take to fully establish a Space Force rather than a Space Command?

Secretary WILSON. Senator, the concept that is in the draft working group paper that was finished by the end of March and is currently being refined is that, within 90 days of passage of legislation, we would stand up the cell of a Space Force staff inside the Air Force, and then it will move on to two other phases, one to initial operating capability, and then full operating capability. Each of those phases are conditions-based, but the concept is that it would be fully operational in the window of 2023–2024 timeframe.

Senator ERNST. Okay. That sounds very fast, actually, to stand up a whole separate branch of service, but it is something that we'll continue to look at, as Congress.

I appreciate the input that you've all provided here today. Thank you very much.

Chairman INHOFE. Senator Kaine.

Senator KAINE. Thank you, Mr. Chair.

And thanks, to the witnesses.

I have appreciated my colleagues' questioning. I think they've addressed a lot of the questions I have. And I want to take it in a different direction—I would say, take it to 30,000 feet, but we're talking about a Space Force, so I should probably call it a low-Earth orbit—and talk about problems in space and how we're going to deal with them. And maybe if we talk about problems, then we could work backward to structure.

So, here's a recent one that I was interested in. Just in the last couple of weeks, March 27th, India announced that it had successfully conducted a test of an anti-satellite weapon (ASAT), so they had something in low-Earth orbit that used an anti-satellite weapon to knock it down. And it resulted in, the estimates right now, 400 pieces of debris, 24 of which are large enough to potentially pose a threat to the International Space Station. There have been other instances like this. There was a Chinese similar effort in 2007 that led to 100,000 cataloged pieces of debris, many of which we are still observing in debris fields that pose danger to other assets in space. There was a collision in 2009 between a working U.S.
satellite and a sort of defunct Soviet-era satellite—a kind of a fender bender that produced debris. Then this debris causes challenges.

If we think that space is going to be more of a traffic jam, more satellites for all kinds of purposes up there, what should we be thinking about, as a Senate, in this committee or in Foreign Relations, about the rules? What should the rules environment be, and what should we be doing to try to promote rules? India’s an ally. We’re not talking about an adversary doing something. We’re talking about them testing some capacity. But, then that creates challenges for all kinds of uses of space. How should we be solving problems like that?

General Hyten, you looked like you wanted to jump in.

General HYTEN. So, Senator Kaine, the first lesson from the Indian ASAT is just the simple question of, Why did they do that? The answer should be simple, I think, to all the committee looking at it, is that they did that because they’re concerned about threats to their nation from space. Therefore, they feel they have to have the capability to defend themselves in space.

Senator KAINE. Can I just interrupt for a second? I think they have a second concern, as well, that there’s no rules right now; there may one day be rules, and, often, when we write rules about this, we benefit those who already have the technology and say, “Okay, you already have it, we’ll establish rules for you,” but then we usually establish nonproliferation for rules for everybody who doesn’t. So, if they’re concerned about the weaponization of space, they want to be able to get in there first so that, if the rules are created, they’re sort of grandfathered in. I think that’s part of the issue.

General HYTEN. Well, the second issue, from my perspective, is that—I’ve advocated, for a long time, for the development of some kind of international norms of behavior in space. And where those norms of behavior should begin, from my opinion, is with debris. Because as the combatant commander responsible for space today, I don’t want more debris.

Senator KAINE. Yeah.

General HYTEN. But, we don’t have any international conditions that say that that’s not a good thing.

Senator KAINE. And you would think that even our adversaries would have the same concern about the debris effect on their programs. So, that should be something where there could be some international common ground and ability to find rules of the road.

General HYTEN. I think that’s how it should be worked, in an international perspective, to start walking down that path to make sure that space can be used for future generations. Because if we keep creating debris in space, eventually we’re going to get to the point where it’s very difficult to find a place to launch, very difficult to find a place to put a satellite, to operate a satellite without having to maneuver all the time to keep it away from debris. All those kind of things are very complicated. But, it has to be worked in an international perspective. And I hope we get there——

Senator KAINE. What is the international forum, or what is the international group that could do something like this?

General HYTEN. The place where that’s debated now is in the United Nations in a Committee on Peaceful Uses of Outer Space.
That's where that is debated, mostly. And the United Nations is a good place. But, I would like to think the United States could take a leadership role in that, working with our allies to define what we believe are the proper norms of behavior in space, and then bring that into the broader international community. It's very difficult, if you try to work something like this in the broad context. And that's clearly a State Department-led function. Others in the government will lead that. But, from a military perspective, it's important that we have those structures.

Senator Kaine. I mean, there is some concern that adversaries create debris intentionally, too. If they create debris fields, that can then prohibit access to portions of space. One of the most scintillating Federal publications is NASA's Debris Quarterly NASA has an office whose job is to monitor debris so that those of us putting up satellites so we can get Sirius in our car are not going to be affected by that. So this is an issue that really needs some rules.

I think, Secretary Shanahan, you were about to say something.

Secretary Shanahan. Yeah, I was just going to add on to your comment when you said, “What are some of the areas that we should be spending more time as a committee or a body?” Space is clearly one. Cyber is another one of those domains that needs a better rule set. Artificial intelligence (AI) and autonomy, all these new technologies are going to unlock enormous, very positive capabilities, but there's also a downside, and we need to really be investing time to think about those so we can, to the earlier point, set some rules or establish some norms so that someone doesn't take an advantage or leverage——

Senator Kaine. I hope we will play a leadership role in that. I think treaties have kind of gone out of fashion in the Senate. We don't ratify treaties much anymore. But, treaties are necessary. I mean, the notion that we could just have our own set of rules, and a treaty is a bad thing because it involves some incursion into sovereignty—if we don't have some rules about space, it's going to affect our ability—we create a Space Force like that, and it's perfect, but we find a lot of the domain is a domain that we really can't adequately invest in because of debris fields or other things, it's going to be to our detriment.

Very helpful. Thank you, Mr. Chairman.

Chairman Inhofe. Thank you, Senator Kaine.

Senator Sullivan. Thank you, Mr. Chairman.

I appreciate the witnesses testifying today.

I also appreciate, from the President and Secretary and Chairman, the $750 billion DOD request. I hope we can move on that, and appreciate the President putting this idea forward. You can tell that we're all wrestling with it. We're kind of struggling with it, to be honest. It's pretty clear that, watching some of your evolutions, that you've struggled with it, as well, and wrestled with it. And I think that's okay. That's what this committee's supposed to be trying to address.

General Dunford, your statement on the fact that reform usually comes after some kind of disaster, that we can try to be preemptive or in front of this, actually, I think, is a very powerful one.
And, General Hyten, I think what you’re talking about, saying, “This is going to happen at some time in the future,” I think you’re probably right about that.

My questions actually relate to this issue of timing. And let me give you a concern that I have. It relates to readiness of the entire force. So, I commend all of you and everybody else at the Pentagon for working on this readiness. A lot of people forget, 2010 to 2016, the Department of Defense budget was cut by 25 percent, an amount that was almost close to $540 billion, which is an entire DOD budget here. We all know that readiness plummeted. I chair the Subcommittee on Readiness, and I've held numerous hearings and readiness in the force plummeted, period. What we’ve all been trying to do—and I commend you and the President and everybody else in this committee, and the Chairman, Ranking Member—is get the readiness of our five current Services back up to the level that the American people expect from all of us and from all of you. That is a hugely important mission.

And here’s been one of my overriding concerns with regard to the Space Force. Not that it is not important, not that it might not even be a good idea, but I’m concerned that—is it prudent to take on what would be a fairly disruptive element of a new aspect of the Services in the United States military, when the current five Services, let’s face it, are not up to the level of readiness that they need to be? Do any of you think that we are at the level of readiness that we should be right now?

General Dunford?

General DUNFORD. Senator, I'll start. No. And, as you know——

Senator SULLIVAN. So, isn’t that a concern, then? I mean, I know you’d think we can walk and chew gum, but shouldn’t we try to get to the level of readiness that we all really think we need and then turn to this?

General DUNFORD. Sir—let me tell you how I think about this. I don’t look at it as, “it’s either space or readiness.” I actually look at making sure that we have a singular focus on the interdependencies of the Joint Force on space as a readiness issue. We can generate all the squadron and battalion readiness we want, and, if we’re not capable of defending ourselves in space and taking full advantage of space from a command-and-control and intelligence-surveillance-reconnaissance perspective, precision munitions, timing of our systems—if we can’t take full advantage of that and we can’t protect ourselves in space, battalion or squadron readiness will amount to naught. I view this issue, actually, from my perspective, which is why my evolution on the issue has taken the direction it has, I actually now have come to much better appreciate, as a result of our analytic work, the interdependencies on space and the fact that this whole issue of Space Force really is, in my judgment, related to readiness.

Senator SULLIVAN. So, in your professional judgment, which I respect immensely, you do not think this is going to take away what I believe is the most important mission everybody here should be doing, is getting our five current Services back up to the readiness that are demanded by the American people.

General DUNFORD. Whatever direction the committee decides to go, this should be addressed as a joint warfighting readiness issue.
That’s what it is. It’s not an organizational issue. It’s a joint warfighting readiness issue.

Senator SULLIVAN. Let me be a little bit more specific as it relates to a readiness concern. This committee, and all of you, have made, all of us, together, significant progress with regard to building up our Nation’s missile defense. And, Mr. Secretary, you recently said, in testimony, that was vital. I agree with that. I think the whole committee does. It’s been very bipartisan. One of the elements, General Hyten, you have mentioned that’s actually critical to our Nation’s missile defense, is having and deploying as soon as possible space-based sensors that can look at both hypersonics and the ballistic missile threats coming to our Nation. I think it’s your number-one unfunded requirement. Again, I think the committee agrees that that’s critical. My understanding is that the space sensor layer system is being shifted from MDA, the Missile Defense Agency, to the Space Development Agency, which hasn’t even been stood up yet.

General Hyten, doesn’t something like that almost automatically, in your mind, indicate that we’re going to have a delay in deploying a space-based sensor system, which you and others and we all agree is critical to missile defense, when you’re taking it out of the Missile Defense Agency into a new agency that hasn’t even been stood up yet? How can that help with regard to readiness on missile defense? I’m very concerned about that topic.

General Hyten. So, I think there’s a number of interesting observations. I would say that the Secretaries to my right will probably have an interesting perspective on where they live. Where I live, as the combatant commander, I have a requirement for a space-sensor layer that will see the threats that will enable our deterrent and enable our defense.

Senator SULLIVAN. How quickly can we deploy that?

General Hyten. That’s the question. We need that by the mid-2020s. That’s what the threat requirements are showing us. Therefore, we have to go fast in order to do that. I’ve testified in front of this committee before for that issue. We’ve pushed that. There are so many people that are involved in space now, it makes it difficult. So, it was going to be the Space and Missile Systems Center (SMC), then the Missile Defense Agency. The Space Development Agency is focused on that. The Space Development Agency is supposed to look at revolutionary, not evolutionary, concepts. This is a good place for them to do that. They have the right ability to go fast. But, the key, from a combatant commander perspective, is, that’s my requirement. I need that requirement, and we need it filled by the middle of the next decade.

Chairman INHOFE. Thank you, Senator Sullivan.

Senator Duckworth.

Senator Duckworth. Thank you, Mr. Chairman.

As I understand it, under its current organization, the Air Force does not have a good track record of being able to effectively manage the prioritization of its missions in both air and space. Space frequently falls to a lower priority or lacks a consistent seat at the table. I contrast this with the U.S. Navy, which has successfully managed to prioritize its own air, surface, and submarine missions, to include the establishment of separate training, acquisitions, and
doctrinal development centers across these very different domains. Why has this been such a problem for the Air Force under its current structure? And what role does a new U.S. Space Command play in helping prioritize space across departments? And how does that differ or duplicate the intent of the proposed Space Force?

Madam Secretary or General, do you want to address that?

Secretary WILSON. Happy to. Senator, the biggest shift that we are seeing is the shift from an uncontested domain to a contested domain. Over the last 3 years, including the budget that you have before you, the President’s budget includes double-digit-percentage increases in the budget that are driven by an analysis of the threat, the strategy to meet that threat, the concepts of operations, and the programs to support it. I think what you’re seeing in the difference between what you described with the Navy is that the Navy has been operating in a contested domain for hundreds of years. The Air Force, in space, has been operating in a contested domain for a much shorter period of time. We have set up the National Space Defense Center. We have schoolhouses and specific focus on space, most of which have been set up in the last decade. You’re seeing, in the Air Force, that focus.

I would also say that, for the missions and the requirements of the combatant commander, the United States Air Force has provided what the combatant commanders needed in an uncontested environment. The Air Force built a glass house before the invention of stones. We now have the invention of stones, and, as “Jay” Raymond said just yesterday to a very large audience, a year ago, the Air Force was in a 9G turn toward space superiority, and he was wrong. It’s a 12G turn. I’m proud of the force that we’re presenting.

Senator DUCKWORTH. So, how will the U.S. Space Command help prioritize across departments? And will it? And how does that differ from intent or duplication, in terms of the proposed Space Force? I mean, that is a very complex system. You’re saying you’re standing up new training and—do you think you will be just as capable, in the Air Force, to do multiple things at once, the way the Navy can do it? How does this differ between Space Command and Space Force?

Secretary WILSON. Senator, I was trying to explain why I thought the Navy structures were different from the way the Air Force evolved with respect to space. But, in the proposal that’s before you, there’s the additive personnel. Some of it is to support the four-star who will be a member of the Joint Chiefs. The other large number of people is to set up a Training and Doctrine Center specifically focused on the challenges of space as a contested domain.

Senator DUCKWORTH. So, then the Air Force will send your people to their training programs? Is that what you’re saying? Or how does that work?

Secretary WILSON. That Training and Doctrine Center would be primarily for members of the Space Force and other officers to get joint experience, and, honestly, also our allied officers. The Air Force has already opened up its Space 100, 200, and 300 programs to our allied officers, and we have opened up and created a Combined Space Operations Center, this last year, that includes our allies, in California.

Senator DUCKWORTH. Okay. Thank you.
I also serve in the Committee on Commerce, Science, and Transportation, so I want to talk a bit about the intersection of military and commercial space assets. As you’re all aware, this is an area where we don’t yet widely have accepted norms. And we’ve had that discussion here today already. The multipart proposal we have here would likely increase complications even further. In the realm of great-power competition, we see countries like China, who are rapidly expanding their space presence, but they don’t have issues of deconfliction, because their military and commercial assets are intermingled, and they operate almost as a single unit. So, how does DOD and the proposed Space Force plan to work with other Federal agencies and our commercial sector to deconflict with these issues before and while they’re arising?

Secretary SHANAHAN. Senator, let me take that one on. The Space Development Agency, in its design, is intended to undertake four different activities. The first is consolidation, so that we can take all the requirements of the Department, and then to do fundamental systems engineering, so that we can take advantage of a space ecosystem, so everything from launch to sustainment, and then, by design, tap into the commercial space industry, where significant innovation has occurred. But, for us to actually be able to incorporate that technology, we have to accommodate or make corrections to our acquisition system. Our rules and regulations won’t allow us to leverage that new innovation. And the Space Development Agency, which is modeled after the Missile Defense Agency, allows us to be able to take advantage of all those things. I think that’s what’ll allow us to be able to develop capability more quickly, and at a lower cost.

Senator DUCKWORTH. But, I’m also concerned about security, and how do you force the civilians to work closely with you in security and share information? You’ve got people selling tickets for tourism into space for crying out loud.

Secretary SHANAHAN. Yeah.

Senator DUCKWORTH. How do you deconflict that? Whereas, the Chinese don’t have these problems, because they have total control over their commercial sector.

Secretary SHANAHAN. I mean we have procedures, protocols. We have worked with commercial segments. You know, we have a long, long history of doing that. That’s really the intent of standing up an organization like this, so we can really leverage that commercial space.

Senator DUCKWORTH. I’d love to explore this further, but I’m out of time.

Thank you, Mr. Chairman.

Chairman INHOFE. Thank you.

Senator Tillis.

Senator TILLIS. Thank you, Mr. Chairman.

Thank you all for being here.

I want to talk more about organizational transition. I think the President was right to make this a target that we need to achieve. So, to me, it’s not a matter of whether we should do it, it’s how we should do it and when we should do it.

Secretary Shanahan or Secretary Wilson, when you stand up the force, a part of what you’re doing is realigning current operations
into a more cohesive unit. So, if you’re looking at the end state of a Space Force, have you done the analysis to determine how much of that is just realigning existing commands, Training and Doctrine Center? In other words, if I’m building a new enterprise, how much of the current enterprise is simply being realigned, and then what is the net new? What I’m specifically talking about is the underlying cost associated with that. Because, in reality, you’re not going to get a whole lot more money. So, you’re going to have to create this force within current spending run rates, for the most part. I’m trying to figure out, when General Hyten rightly suggests that there’s a capability he needs by the mid-2020s, what potentially shifts to the right after we’ve already quantified that net incremental cost, just for the overall structure of a separate force?

Secretary SHANAHAN. Sir, the way we’ve been looking at this is, how quickly can we respond to the threat? Then, behind all this, how do we do it more effectively? Standing up the Space Command is not an incrementally large change in cost, so I would argue it’s not really moving lines of boxes, it’s eliminating overhead and competing priorities so, 100 percent of the time, the Space Command Commander can focus on the new mission. It’s not about just getting separation from STRATCOM, it’s 100-percent focused on the new mission, which is contested space, and the authorities, the rules of engagement, and the tactics, techniques, and procedures (TTPs), and the technology to support that.

The other piece of this was—and this is where the real value is created—in the Space Development Agency, for incremental capability that we’re going to deploy and I’ll use Secretary Wilson’s metaphor—given that we’ve been designing glass houses, how do we quickly transition so we’re no longer building glass houses? That’s the race. It’s really not about reorganizing for people and professional development. We can pace that, based on how much change and cost we want to absorb. But, the race to get out of building glass houses is where we’ve looked at consolidation. How do we go from ten people attempting to get out of that operation to one, and then leveraging the infrastructure? Because we duplicate.

Senator TILLIS. Right. I think this could represent an opportunity for driving out efficiencies and coming to find out that maybe there’s a way to do this without any net incremental cost. But, if you don’t get that right, then you say, “The good news is, we have a very clear vision for a Space Force. The bad news is, we need net incremental money that we don’t have today.” And then the bad news we’re likely to give you is, “We don’t have anymore money, so what are you not going to do?” So, that’s really my focus.

Secretary SHANAHAN. Yeah.

Senator TILLIS. Secretary Wilson?

Secretary WILSON. If I can—just to add on, here. Ninety percent of the forces that we’re talking about are currently in the Air Force, in the design phase that we’re in, with the task force that we have stood up that includes all of the Services, but is led by the Air Force, by a two-star general. We are in the design phase now. One of the tasks in that design phase is to recommend the preliminary macro-organizational design of U.S. Space Force field units as well as subordinate headquarters. So, that planning work is underway.
Senator Tillis. General Hyten, do you have anything to add to that?

General Hyten. I think it’s just important to emphasize that the Space Force that is in our proposed legislation is under the Air Force.

Senator Tillis. Right.

General Hyten. So, if the Space Force existed today, I would be sitting next to the Service Secretary responsible for space. That decision by the President and the Vice President to put the Space Force under the Air Force was the big driver for me, because that will allow us to drive efficiencies and fix problems, and not focus on what is the song, what is the recruiting structure, what is the personnel structure, what is the basing structure?

Senator Tillis. When I saw that proposal, I felt a lot more comfortable with the organizational concept. So, that’s why I said, to the points that General Dunford made in his opening comments, I don’t think it’s a matter of whether or not we need this focus, it’s just the organizational construct. And I think that what’s been laid out, to this point, is a good one.

The last thing I’ll leave you with, because I want to end on time, in deference to my colleagues, is that while we’re taking a look at this organization evolution, I still think that we need a lot of work done on the overall organizational evolution of these operations that are now embedded within the service lines that we should really take a look at to drive efficiencies. Has nothing to do with the Space Command, but there’s one best practice for acquisition, there’s one best practice for a lot of these operations that are now siloed. And my guess is, if you did that, you’d free up a lot of resources within the current spending levels that could actually be made to accelerate a lot of the things that I know are your top priorities. So, that’s something I’ll look forward to speaking with y’all about when we can do it in a more meaningful basis, back over at the Pentagon.

So, thank you all for being here. Thank you for your service.

Chairman Inhofe. Thank you, Senator Tillis.

Senator Manchin’s recognized.

Senator Reed, presiding.

Senator Manchin. Thank you, Mr. Chairman.

Thank you all again for being here. I’m sorry, I’ve been running back and forth to committee meetings.

I do have a few. This could be to anybody that would want to answer—in the proposal delivered to Congress, there was little reference to the Reserve component, other than to say that it will be part of other 15,000 people in the Space Force. What staff was told last week at a briefing was that the Department was not really sure what the Reserve component’s role would be until we stood up the Active component, and that it would take additional legislation to make clear what the role of Space Force Guard and Reserve look like. If we vote on this Space Force later this year—or in spring or early summer, whenever—I’m being asked by the Department to vote on a proposal that does not have a real plan for our National Guard or Reserve, which is a big constituency base of mine. So, my question would be, if total force is going to be as important to the
Space Force as it is to other branches, isn’t it important that we think critically about the Reserve components?

Secretary Wilson. Senator, it's impossible for me to imagine a Space Force without a Reserve component.

Senator Manchin. Because there’s no plans I’m seeing. You’re moving without that in part of your plan right now, as we see it.

Secretary Wilson. Well, I am very happy to work with you to make that more specific.

Senator Manchin. You all do have it? You can get more specific with that?

Secretary Wilson. We’re happy to work with you on that. There are, within the Air Force, some, particularly, Guard units that have——

Senator Manchin. Very much so. I know that. But, I’m saying, if you have something, we haven’t seen it yet. I’m sorry. But, if you could share that with us, it would be very helpful. It can relieve a lot of tension.

Yes, sir, General.

General Dunford. Senator, if I could just talk about where I think we are. So, there’s a number of issues—and I’ve looked through this and had some of the same concerns you have—there’s a number of issues unresolved. The real question before the committee is, Do we stand up the organization and get that four-star leader singularly focused on what the right organizational construct is, or do we wait for the perfect organizational construct to stand it up? Where I fell was to move out and refine as we go. The committee will have plenty of time to provide oversight. So, the initial first step to take in this next fiscal year would be, stand up the organization, get the leadership in place, and then begin to address these very important issues, one of which you raised.

Senator Manchin. Okay.

Let me go a little bit further. You talk about the culture. This whole new Space Force is a culture, right? And you want to diversify it. Well, I can tell you, the Army has a certain culture. The Marines definitely have a certain culture—they’re in first, they’re going with their guns in blazing. The Air Force, basically, the culture has always been the same. This is where the space professionals have come from. This has basically been your bailiwick. How are you going to change that culture, when everyone’s still going to come from the Air Force?

Or what culture do you think to diversify?

Secretary Wilson. Senator, our focus on changing culture is to shift from providing a service to the combatant commanders, with almost like a utility, to a warfighting ethos. We’re doing that within the space cadre of the Air Force today in the way in which we train our people, the way in which we assign them. Just as one example, we have people who operate satellite systems at Schriever Air Force Base, in Colorado Springs. They spend 4 months on the floor, operating their satellite systems in a peacetime environment, and then 4 months in training for a contested environment and how they would operate——

Senator Manchin. Secretary, I’m just having a real hard time understanding why we need this other agency. You’ve got everything at your disposal right now. It just doesn’t make any—I mean,
I'm just having a hard time with it. I'm trying to understand it, and Secretary was very patient with me, trying to explain it. But, if I had everything you all have at your disposal right now, and the Air Force has that expertise, and there's some flaws in it, and you want more attention to it, we'll give you what you need. Just doesn't make any sense to me at all. I'm sorry.

Secretary, I know you want to take another shot at me?

Secretary SHANAHAN. No, I'm happy to take another shot at it. I——

[Laughter.]

Secretary SHANAHAN. That's why I'm here.

Senator MANCHIN. I know.

Go ahead and give me your spiel again, because they might want to hear why you think we need this other agency.

Secretary SHANAHAN. Yeah. The very short story is the amount of change that's taking place in this environment, we're not prepared to address.

Senator MANCHIN. The way you're set up now.

Secretary SHANAHAN. The way we're set up now.

Senator MANCHIN. But, can't you redirect what you have within the Air Force right now, which is where most of the culture is going to stay? It's not going to go over to the Marines. It's not going to the Army.

Secretary SHANAHAN. Yeah.

Senator MANCHIN. It's staying right over there.

Secretary SHANAHAN. Yeah. Yeah. So, most of this is really within the Air Force, and, as Senator Tillis was talking about, restructuring. This is a fundamental shift that now treats space as a domain. So, the culture is changed because the mission has changed.

Senator MANCHIN. Okay.

Secretary SHANAHAN. The leadership will change. The prioritization of the resources will change. Then our approach to developing capability will change.

Senator MANCHIN. I gotcha.

If I can lead into this back to Secretary Wilson.

Secretary SHANAHAN. Sure.

Senator MANCHIN. Secretary, you've also publicly stated that you didn't think the Space Development Agency is a good use of resources, citing the Air Force's own Space Rapid Capabilities Office as an effective acquisition body. Can you elaborate on why you think our money and effort is better invested in processes and organizations that already exist, which is the point I'm trying to make?

Secretary WILSON. Senator, the Space Development Agency is not part of the President's proposal or the legislation in front of you. The first project that this agency is apparently going to take on is actually funded by the Air Force and is in our budget. It's, How do we use low-Earth orbit commercially-based satellite constellations? It's in our budget at $140 million over 5 years, and is intended to——

Senator MANCHIN. It's in your purview also. I mean, that's part of your bailiwick.

Secretary WILSON. That is. And we propose to do it with the Defense Advanced Research Projects Agency (DARPA). Question is
how best to buy them and whether we need a new agency to do so.

Senator MANCHIN. Do we need a new agency just to get into lower orbit?

Secretary Wilson. Senator, what I'm saying here is not new. My memorandum to the Secretary on this subject has been reported on publicly.

Senator MANCHIN. Okay.

Secretary Wilson. And I did not support it.

Senator MANCHIN. Thank you, Mr. Chair.

Senator Reed [presiding]. On behalf of Senator Inhofe, Senator Cramer.

Senator CRAMER. Thank you, Mr. Chairman.

Thanks, to all of you, for being here. I've only been in the Senate for, well, less than 4 months, but this is the most fascinating 2 hours so far. So, thank you all for being as prepared as you are.

I'm going to summarize a few things I've heard this morning before I run out of time to do that, and then ask some questions.

General Dunford, you said space is no longer a sanctuary. I think, Secretary Wilson, you both said it's now contested. Great points. Important points.

General Hyten, you said there will be a Space Force one day. I'm going to hone in on that, because we hear a lot of reluctance and a lot of questions about efficiencies, business model. You've answered them all brilliantly—not necessarily convincingly, maybe, to some, but I think you've answered those questions very well.

Secretary Shanahan, you said something interesting. I want to go through, maybe, a little history. You said the existing forces are based on that place, on geography. I think it's an important point that sometimes we're missing when we draw parallels between this and other efforts and missions. As you said that, I started thinking about the Air Force itself, that the Air Force wasn't always the Air Force—it was once the Army Air Force; and prior to that, it was the Army Air Corps; and prior to that, there weren't airplanes—that, as new domains became contested, we had to lead.

I was also thinking about some other proverbs, including proverbs where it says that, without vision, the people perish. I'm pretty sure it was a Minnesota Viking fan that said, “The logical conclusion of defense is defeat.” Being second is not a great place to be. I know we're first, but I just feel so strongly that, if we're going to have a Space Force one day, why wouldn't we start sooner rather than later? Why would we let somebody else get there?

So, from a strategic standpoint—and I guess I'd ask the Generals first about this—how important is it to have this public kitchen-table-level discussion? I appreciate your terminology, Secretary Wilson, when you said, “The President has elevated this topic to a kitchen-table level.” I think that's exactly right. But, our adversaries are watching. They're probably watching this hearing right now. How did China and Russia roll out their space forces or their space activity? Did they do it in a real outward way, or did they try to do it under the radar?

Maybe the Generals could answer that for me. Is it important, by the way, that we send a message?
General Dunford. Senator, I don’t mean to be flippant, but the Russian military and the Chinese military are not typically afforded the opportunity we have been afforded this morning, in full transparency with initiatives like this.

General Hyten. And, Senator, the Chinese and the Russians both look at space as a critical element of their defensive capabilities, as their military. They’ve also organized differently about space. The Chinese are integrating a lot of their capabilities into a single command—space, counterspace—those into a single command. They have an officer responsible for space, an officer responsible for counterspace. I’ll be glad to talk to you, in a different setting, about what I think they’re doing, and what the strengths of what they’re doing, and the weaknesses, are. But, I really don’t want to talk about that in a public forum.

Senator Cramer. I appreciate both answers very much.

We’ve had a lot of discussion about cost and benefit. I understand the concerns of a couple of years—or several years of cutbacks that now have us in catchup mode on readiness and lethality and all those things that are important. I appreciate the answer, Chairman Dunford, that this is probably essential to readiness. But, maybe, Secretary Shanahan, is a cost-benefit analysis, a literal cost-benefit analysis, is that a possibility, here?

Secretary Shanahan. No, it is. And implicit in the Space Development Agency is a cost-benefit analysis. It’s a twofer. More capability, sooner, at a lower cost. This is about moving more quickly. This is a threat-driven response, and I think what the Chairman’s been highlighting here is, How do we get ahead of things?

The other piece, here, and we’ve touched on it briefly, is, we’re about to usher in a new age of technology. We’re on the dawn of some major changes. If we adapt properly, we’ll be able to take advantage of it and, again, increase our dominance in space.

Senator Cramer. Maybe just the last question, for Secretary Wilson. With that in mind, are the increments important? I appreciate what my colleagues are saying about why isn’t this in the plan, or why isn’t that part of the proposal, and whether it’s the Guard or the Reserves or other things. Yet, aren’t the increments sort of an important part of the rollout? In other words, we’re not going from here to here, we’re going incrementally. Is that not an important part of the strategy?

Secretary Wilson. I’m not sure it’s incremental. I do think that what we have now is a set of programs that support a strategy to dominate in space. We all prefer that space remains peaceful, because everyone loses if war extends into space. But, we are developing the capabilities to deter, and, if necessary, to fight and win in the space domain, as we do in all other domains, so that our adversaries will choose wisely to deal with our diplomats and not with our warfighters. And that’s what this is about.

Senator Cramer. Beautifully said.

Thanks, to all of you. And I might just wrap up my comments by saying, I just don’t want to be sitting here 4 years from now and have four people look at me and go, “I wish we would have started this 4 years ago.”

With that, I yield.

Senator Reed. On behalf of Chairman Inhofe, Senator Shaheen.
Senator SHAHEEN. Thank you, Mr. Chairman.

Thank you all very much for being here, and for your responses.

I totally agree with everything that you all have said in your opening statements about the importance of space, the competition for space that we have entered into. Space is the next potential battleground. I may even be convinced, in the future, that we need a new Space Command. I do appreciate President Trump’s focusing on space. I just have questions, based on what I’ve heard and what I understand—and maybe I need to know more—that we have not gotten there, in terms of the planning and the commitment, and that, rather than spending a lot of time debating and questioning which direction we’re going to go, we’d be better to continue to work on that and focus on what we need to immediately do to address the challenges that we’re facing.

So, let me begin with that and ask—I share Senator Manchin’s concern about the failure to address Guard and Reserve as part of any planning for a new Space Command. It’s a question, as you all alluded to—I guess it was you, General Dunford or, Secretary Wilson—that many of our National Guard folks are already doing work in space. So, I think they have a question about what their future role might be in any new Space Command. I think answering those questions is going to be very important in order to ensure that there’s support from States who control the Guard.

But, I want to go on to the whole civilian side of this question, because, as I understand, as space activity increases, as our ability to detect debris improves—and right now, my understanding is that DOD tracks more than 20,000 objects in space, and that number continues to grow, and that we are making investments in situational awareness in space—I had the opportunity to see some of that recently—to try and track some of that space debris, and that the Space Policy Directive of this Administration contemplates a larger role for the Department of Commerce in space situational awareness and space traffic management. We just had a hearing with the Commerce Committee last week, where they were talking about reorganizing all of the space elements in the Department of Commerce into the Office of the Secretary. So, I’m trying to figure out which functions would actually go to Commerce, and which would stay in DOD, and how that responsibility gets sorted out.

Secretary WILSON. Senator, I think I can take that one.

The Air Force has, really, since the late 1950s, taken on the responsibility of warning people when a piece of debris might hit their satellite. We do that out of Vandenberg Air Force Base, in California. You’re right that we currently track about 24,000 pieces of debris that are larger than 10 centimeters, and we provide that information to every country in the world.

We are also expanding our ability to know what is going on in space. This year, we will go operational with something called the Space Fence, out of Kwajalein, which is a space-facing radar, and we will increase the number of pieces of debris that we’re tracking to probably over 100,000 with that Space Fence, and it’ll go out to geosynchronous orbit.

This shift to the Commerce Department is that they will take over the responsibility of telling commercial companies and deconfliction and those things. We’re working very closely with
them. We're happy to transition that responsibility of working on
the commercial space, on space traffic management, to the Com-
merce Department. They have had people out, working alongside
our folks at Vandenberg on how that would probably work. As the
military service, obviously, we would continue to have to have
space situational awareness and collect the data. We would feed
that over, likely, to the Commerce Department, who would combine
it with other sources of data and work with industry.

Senator SHAHEEN. Would that be the plan in any new Space
Command that's operational?

Secretary WILSON. The concept is that Vandenberg would be part
of the Space Force, and the Combined Space Operations Center is
where we have all of the services, as well as our allies and part-
ners, that track space debris.

Senator SHAHEEN. But, we would continue to shift the collection
of that information to the Department of Commerce?

Secretary WILSON. Yes, ma'am.

Senator SHAHEEN. General Hyten?

General HYTEN. So, that mission today is accomplished by air-
men in the United States Air Force, but it's under my command,
U.S. Strategic Command. We provide that data, and we have,
today, 98 space situational awareness sharing agreements with
others. We have to do that, because we want to be able to operate
safely in space. But, it's not a military mission. That's a civil mis-

But, I met with Secretary Ross this week. He is not going to try
to build all of the data and the sensors that we have in order to
do that. He'll take our sensors and our data, and he will just be-
come the face to the commercial sector and the face to the world
so the military doesn't have to do that. But, that function that's in
STRATCOM will transition to the U.S. Space Command
(SPACECOM).

Senator SHAHEEN. Will the personnel who are currently working
at STRATCOM transition to the Department of Commerce? Is that
the plan?

General HYTEN. No, ma'am, the Department of Commerce will
have that front-facing piece. The airmen of the United States Air
Force today that would be in the Space Force in the future, work-
ing for the Space Command, they still have to do that mission so
we can do our defense of mission and our space control missions
in the future. That's why we just fell into the space traffic manage-
ment business. We do it for defense.

Senator SHAHEEN. No, I'm just concerned about the expertise
that might be required in the Department of Commerce. And are
they going to have to hire that new? Are they going to take it from
the Air Force?

General HYTEN. We're working very close with them to under-
stand what kind of personnel requirements they would have to
have, how they would do that. In the conversations I had with Sec-
retary Ross this week, what I pointed out is that, if we do it right,
most of the capabilities they need can actually be automated and
acquired through commercial agreements. They wouldn't have to
have this army of people doing that. They could do it a whole lot
better if we do it right from the beginning, and we’re working close-
ly with them to make sure we do it as efficiently as possible.

Senator SHAHEEN. Thank you.

Thank you, Mr. Chairman.

Senator REED. On behalf of Chairman Inhofe, Senator Black-
burn, please.

Senator BLACKBURN. Thank you, Mr. Chairman.

I want to thank each of you for being here today. I want to thank
you for the time that you’ve spent individually with us.

I may be the outlier on this panel, but I totally appreciate why
you need to have a Space Force. I get it. You know, when you look
at technological advancement, when you look at 5G that is coming
on, you look at the cyber pressures, you look at that lower-orbit
component, when you look at the integration that is taking place
in the new space economy, I fully understand why you need to
make this a priority, and why you need to focus on this, why we,
as a Nation, need to focus on this, because 21st-century warfare is
most likely, from what I understand, going to be a good bit dif-
ferent than what we have seen in times past. So, I appreciate that
we are putting an emphasis on this so that we’re not left and
caught flatfooted at some point when we need to respond.

Secretary Wilson, I want to say all good wishes as you leave. It
truly is an honor to have you here, and we appreciate the work
you’ve done, whether you were wearing the uniform or in the
House or here. Of course, I thoroughly enjoyed serving in the
House and on Energy and Commerce with the Secretary. And I
know, because of that expertise, you do have an understanding of
the commercial side and also of the military side. It is a unique
perspective.

One of the things I do want to come to—and Secretary Shanahan
and I discussed this a little bit—as you look at this new space econ-
omy that is growing—and Senator Duckworth talked a little bit
about the Chinese, and, of course, we’ve discussed this. You don’t
know where their commercial sector and their military sector end
and begin, because they’re one in the same. That is a great-power
competition. We want to make certain that we are focused on what
that means. So, are we doing enough to encourage and leverage the
dynamism of the commercial space industry so that we are going
to be able, as we conduct this transition, to meet our national secu-

Then, since we are near the end of this hearing, I would like to
just go down the dais, anything that you all want to add that you
haven’t had the opportunity to add.

Secretary, to you first.

Secretary SHANAHAN. Sure. Thank you.

I think we’re in a unique opportunity, given that now we have
to design and deliver capability that’s more resilient, that we can
draw in the advances the commercial space industry has developed.
I mean, I think that’s this unique point in time. That’s why it’s so
important that, when we do the development and the acquisition,
we start at a different place than where we are today with our ac-
quisition system.
There are two big opportunities. One is, we systems-engineer the ecosystem to draw in launch, to draw in the ground segment, to draw in 5G. It’s not about, How do we procure a microsatellite or a CubeSat? It’s, How do we design the system so we can ingest large volumes of data that we’re going to——

Senator BLACKBURN. With a focus on interoperability and cross-platform and integration of all the different agencies that come under DOD.

Secretary SHANAHAN. No, absolutely.

Senator BLACKBURN. I think that is a very important point.

Secretary SHANAHAN. Thank you.

Senator BLACKBURN. Yes.

Secretary Wilson, anything to add?

Secretary Wilson. Senator, with respect to architectural design, the Air Force has just finished a 90-day study looking at the threat, looking at the phases of conflict, looking at all of our missions, and calculating and doing about—several thousand iterations of wargames to figure out, What are the best architectures, and how do we get there fastest to defendable space? There are a few conclusions from that. One is that different missions require different solutions, that an increase in number of satellites, particularly large number of commercial satellites, helps, but numbers alone are not enough to prevail. We also found that the congressional direction to consolidate all of space communications under the Air Force is actually a tremendous step forward, and I can explain, in classified session, why that would be. Then, the space missions that are not well aligned with commercial low-Earth orbit satellite systems should probably stay where they are, possibly with changes in protection, but that using only commercial space, so putting hundreds of small, cheap satellites into orbit, does not work as a strategy. And it would mean that, in combat, that low-Earth orbit system would be quite vulnerable and would fail.

So, this is a complex problem. We’ve done some pretty good wargaming, and we will be happy to come up and brief the committee, at their convenience.

Senator BLACKBURN. Appreciate it.

General Hyten, anything to add?

General Hyten. Senator, I’ll just say it’s all about the threat. How do we stay ahead of the threat? The threat right now, especially in China, is going much faster than we are. We have a significant advantage over them, but that’s the advantage of history and what we’ve built over the last few years. We have to stay ahead of them. And I just thank this committee, thank the Congress, for taking on the threat. When it comes right down to it, that’s what it’s all about.

Senator BLACKBURN. General Dunford?

General Dunford. Senator, the only thing I’d say, in the interest of time, would be that, we really have two choices, either have a bias for action now and move out and establish an organization, knowing that there’s many questions to be answered, or wait until we have all the questions answered before we stand up the organization. My best military advice, given the importance of space and the consequences of not doing all we can to optimize the Department to move forward in space, would be move out now, with what
might be the 80-percent solution, refine as we go, and the committee will have an opportunity to provide oversight to address some of the issues that have been raised this morning.

Senator BLACKBURN. Thank you for the service.

Senator REED. Thank you.

On behalf of Chairman Inhofe, Senator Heinrich, please.

Senator HEINRICH. Thank you, Ranking Member Reed.

I guess, first, I just want to say, as somebody who’s Ranking Member right now on Strategic Forces and sits on Intel and obviously sits on this committee, and as somebody who has oftentimes fought the Pentagon, over the last decade, about the value of disaggregated space architecture and rapid capabilities, I really appreciate the focus we have on space right now. I think it is welcome. There are disagreements on—or at least some skepticism about this construct at this point, but I think all of us can agree that this is a conversation that’s been coming for a long time, and we need to have it.

I want to pivot from Space Force, real quick, to Space Development Agency for a minute, and just ask Secretary Shanahan and General Dunford—one of my concerns there is that we aren’t simply shifting money and missions around to do what we’re already doing at places like Space Rapid Capabilities Office, Air Force Research Labs, SMC, and some of the things that are working under the current construct. So, just what assurances can you provide that we’re not reinventing the wheel, but we’re adding value?

Secretary SHANAHAN. You know, I think there are two domains, or two capabilities that the Department is going to invest in, in its modernization, and it has to do with command-and-control communications, and then Earth observation. Each of the Services has its own plan. So, it’s really more about the systems engineering and the architecture, rather than the technology that’s being developed at the Space Rapid Capabilities Office (RCO).

We do need to, when we look across all of the labs, start to make decisions on what are the standards we want to employ—not necessarily direct technology development, but, how do we develop standards so integration becomes more seamless and less costly?

Senator HEINRICH. Yeah. I would not disagree. As we’re looking at this, I think there’s some real value in looking at colocating the new Space Development Agency (SDA) with some of the existing ecosystem so that we get those economies of scale.

General Dunford, do you have anything to add to the Secretary’s comments there?

General DUNFORD. The only thing I’d say, Senator, is—I mean, this makes sense to me as an initial step, and I think the broader question you’re asking about is, How do we make sure that all the processes in the Department are aligned?

Senator HEINRICH. Right.

General DUNFORD. And that’s going to be the responsibility of all of us, to ruthlessly drive alignment over time, ruthlessly drive efficiencies over time, and get this thing moving, and make the refinements that I know are going to come. There’s probably only one thing I’m 100 percent confident of as I sit here this morning, and that is, 5 years from now, it’s going to look slightly different than it does today—or what we propose today.
Senator HEINRICH. Great.
Secretary, I want to talk a little bit about NRO. Obviously, a lot of exposure to that on one of my other committee assignments. They have a pretty unique role right now, both under title 50 and under title 10. I think they’re working well. Is NRO in or out of the White House legislative proposal right now? And what’s the logic?
Secretary SHANAHAN. It’s out.
Senator HEINRICH. Good.
Secretary SHANAHAN. It’s not out because there aren’t enormous synergies. It’s really out because of organization and agreement on timing and alignment. There are a lot of details. This is General Dunford’s point about how quickly can you move? We can move out on the things we can control. It doesn’t mean that we couldn’t move out in the integration with NRO.
To your earlier point around architectures and technology, as we build out the future, we need to be provisioning with the NRO, because that integration is going to take place in the future. And if we do that, it makes the integration that much easier in the future.
Senator HEINRICH. I think that’s probably the right answer. I know there are some questions on this committee about where that belongs, but I think that’s the right approach.
Secretary Wilson, General Hyten, I wanted to ask you. I know we talked, before, about the importance of leveraging small space in commercial assets. Last week, you spoke about Blackjack. But, I’m more interested in the issue around giving small launch providers an opportunity to put some of these small sats in place. Does this space proposal do anything more to leverage that emerging industry to meet our national security objectives? Is that one place where SDA might also play a role?
Secretary Wilson. Senator, the Air Force is responsible for launch, but, as you know, we don’t build rockets, we buy launches.
Senator HEINRICH. Right.
Secretary Wilson. The biggest challenge is on the heavy end. But, on the light end, we have a variety of things that we’re doing. General Hyten may be able to add to this some. But, we have contracted, for example, with Virgin Galactic to launch under the wing of a 747. We are working with a number of very small, very innovative companies on different ways to launch. And launch flexibility and reconstitution from unexpected places is one of the ways in which we keep our adversaries guessing.
Senator HEINRICH. General.
General Hyten. Senator, we’ve made a lot of progress, in the last few years, of taking advantage of that. I think one of the strengths of the proposal that’s before you, though, is, the structure we’re proposing will allow us to better leverage all of industry that this country has to offer. We’ve struggled a little bit with the commercial sector, in particular. We’ve struggled with the smaller companies, figuring out how to do that.
Senator HEINRICH. General.
General Hyten. The Air Force recently has made huge progress in walking down that path. I think the Space Development Agency can walk down to real commercial leverage. So, I think the total
of this proposal really gets after a lot of the things you're talking about.

Senator HEINRICH. Thank you.

Senator REED. Thank you.

On behalf of Chairman Inhofe, Senator Hawley, please.

Senator HAWLEY. Thank you, Mr. Chairman.

Thank you to the witnesses, for being here. Thank you for your diligent work on this important proposal and this important topic. You've nearly made it to the end, here. So—just 6 minutes to go.

I want to ask you about a few specific challenges. We've talked a lot this morning about the space domain, the importance of the space domain, in general. Let me ask you about some of the challenges, as I understand them, that make the space domain important. And you can tell me if my understanding needs revision.

One of the major issues, as I understand it, that makes space so important is our global Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) architecture that runs through space, sort of the central nervous system of the Joint Force. We were able to build that central nervous system in and through space in years past because it was largely uncontested space. But, now, as you've said over and over today, it's contested, it's congested, it's competitive. And so, our C4ISR and precision, navigation, timing networks are at risk.

So, what I want to ask you is, What are we doing to make our global C4ISR networks and our positioning, navigation, and timing (PNT) networks more resilient and survivable? And how will a Space Force contribute to that?

Absolutely, go ahead, General.

General HYTEN. So, Senator, I think you described the space challenge quite well. I think we have a significant element of everything that we do that goes through space. There's not a single military operation that exists on this planet that doesn't involve space some way. And the C4 network that we operate leverages space, especially because we operate away from our homeland. We operate overseas. And when you do that, you need to bring your communications, bring your ISR, bring all those capabilities with you. And a significant amount of those capabilities today come from space.

And so, as we look to the future, we have to make sure we protect that and we defend that, and we can still provide those capabilities. And our adversaries are seeing that, too. As they've seen that, they are developing capabilities to counter those. So, we have to adjust. We have to be able to build different architectures that we can fight with more effectively, that can guarantee that capability is always there. We have to build the ability to defend ourselves and an ability to deny an adversary the use of space, at a time and place of our choosing, if we have to.

As the Secretary discussed earlier, we don't want conflict to go into space, but, if it does, we have to——

Senator HAWLEY. And, in this setting, General, can you give us some idea about what are some of the steps that we are taking now, or that need to be taken, to make that infrastructure, that C4 infrastructure, architecture, and our PNT architecture, more resilient? What I'm driving at, as I think you can see, is, What are the
specific things we need to be doing to meet this very pressing challenge? Then, how does that tie into this large structural change that you've been proposing here today?

General Hyten. So, the Secretary described, one of the big challenges is the integration of satellite communications in one place. As we move to a Space Command and a Space Force, the benefits that we'll get from that unity of effort will be, we'll have one command focused on operating satellite communications, and we'll have one force looking at acquiring the capabilities we need to. The integration of those two capabilities will allow us to better defend ourselves and operate in the future. You can apply that to positioning, navigation, and timing. You can apply that to overhead weather, missile warning. All the capabilities we have, you apply that same concept. And we can talk, in a classified session, about the specifics of what we're doing, but, in broad terms, that's the structure.

Senator Hawley. Madam Secretary, you wanted to add to this.

Secretary Wilson. Senator, before the fiscal year 2019 budget that we brought up before your election, we did some work on, What should our strategies be, and how do we shift our programs to implement those strategies? We did a tabletop exercise with many of the Members of the Committee to show what the strategies were in the program shifts.

Those strategies really kind of revolve around five things, in general:

The first is to protect and defend. So, defend our satellites, think chaff and flares, but other kinds of things. And it’s different, mission by mission.

Second, be able to stop an attack. It’s not good enough to stand in the ring and dodge and weave and take punches. You need to be able to swing back.

Third, proliferate. Now, proliferation, alone, does not solve the problem, but it does complicate the problem for an adversary.

Fourth, undermine the confidence of the adversary that they really understand what’s going on around them.

And fifth, all of this rests on a foundation of excellence in our people.

So, those are the five lines of effort, and they’re all supported by programs and programmatic change that was supported by the committee in the fiscal year 2019 budget.

Senator Hawley. Thank you. That’s very helpful.

My set of questions around your proposal for this major structural change, for the standing up of a Space Force, relates to this line of questioning. What are the specific pressing challenges we face in that domain? Will this new structure help us meet those specific challenges? Or is there a danger that we are too focused on the domain as a domain, and we’re not focusing enough on the specific challenges?

Mr. Secretary, before my time expires, let me just ask you a somewhat related question: the relevance of AI and new technologies. You touched on this briefly, I think, with Senator Cramer, but tell us something about how Space Force may help the whole Joint Force continue to develop the new technologies, whether it’s
AI or otherwise, that we need to be leaders, here, in the 21st century.

Secretary SHANAHAN. Right. So, the Space Development Agency, in our modernization for the National Defense Strategy, addresses building an integrated transport layer for the Department of Defense so that we can ingest and move significant volumes of data that facilitate artificial intelligence. It’s this buildout of the broader infrastructure. It also includes the ground network that’ll connect sensor and shooter, and then all other decisionmakers. It’s not just about closing the fire-control loop, but we’re trying to scale and address latency. This is why we need fundamental systems engineering as we approach this problem set.

Senator HAWLEY. Thank you very much.
Thank you, Mr. Chairman.
Senator REED. Thank you.
On behalf of Chairman Inhofe, Senator Blumenthal, please.
Senator BLUMENTHAL. Thank you, Senator Reed.
Thank you all for being here today, and thank you for your service.
You know, I’ve been in and out as I’ve attended other committee hearings, and I sort of feel like the most important facts for us and the American people to understand are the facts that haven’t been said today. The reason why they haven’t been said is that they are largely classified. The reason that’s important is that the American people have no idea—really no idea—about the immensity of the threat in space. I’ve made this comment in a classified setting, that I wish the American people could be present in this room—not this room, but the Sensitive Compartmented Information Facility (SCIF)—because our adversaries know what they are doing, we know what they are doing, they know we know what they are doing, but the American people have no idea. So, this discussion and debate will have very little interest in the American public. It’s carried on in a level of, forgive me, bureaucratic language that most Americans would have trouble seeing an immediacy in their daily lives. But, if they were privy to what we hear—and you know it much better than we do, because you live it—I think they’d be pretty alarmed. And this is not by way of criticism of you, because you’re living with the strictures of what is classified, and not. But, I think we have a real obligation to explain to the American people why space is a domain that matters, why the threats there are real and urgent, why they are growing in importance.
So, I think we all agree here that space is an important domain. Undersea warfare is an important domain, but we don’t have a separate command for it. Cyber is an important domain, as my colleague and friend, the late John McCain, used to say.
I found very persuasive, Secretary Wilson, what you said in July of 2017—I know it’s been quoted to you before this morning—and others of you, the reasons for your opposition to that separate domain, or the separate Command for the space domain. But, I would like to ask, in terms of the personnel issues that I think are of immediate concern to a lot of folks. This proposal would exempt Space Force civilian personnel from title 5 rules and protections. It would create a new, excepted service that is separate from the Federal Government competitive service or senior executive service. It
would create an alarming precedent, I think, that potentially could erode the merit-based civil service within the Pentagon and eliminate the rights of Space Force employees to participate in collective bargaining, for example. There's currently no civilian workforce that is statutorily exempt from collective bargaining rights. Can you tell me, Secretary Shanahan, why that is a part of your proposal?

Secretary SHANAHAN. The title 5 that you were referencing was based on the discussion we were having earlier around integration with the NRO. That's the model that they employ there. And, as we think about the talent management practices that we'll need in the future, we wanted a provision for that. Much like in your reference to the undersea domain, our approach to systems engineering is the same as the Navy's undertaken. So, there are a lot of examples that we're trying to draw from that have been successful. That was the nature of that insertion.

Senator BLUMENTHAL. Would there be protection for whistleblowers in the same way there is throughout the rest of the government?

Secretary SHANAHAN. The baseline that we're coming off of is the existing personnel system. This was to incorporate the ability to integrate with the NRO. So, I'd have to go back and confirm that for you.

Senator BLUMENTHAL. If you would, that would be appreciated.

Secretary SHANAHAN. You bet.

Senator BLUMENTHAL. Because, based on this proposal, the Secretary of Defense could terminate any Space Force employee, "in the interests of the United States," and, as drafted, it says, "notwithstanding any other law," which leads me to think that they would be exempted from a lot of other protections of law, and could simply be dismissed whenever you determine it's in the interest of the United States.

Secretary SHANAHAN. Yeah. Let me go back and confirm that that's not our interpretation.

Senator BLUMENTHAL. My time is expired.

Thank you, Mr. Chairman.

Senator WARREN. Thank you, Mr. Chairman.

So, we're here today to examine a proposal to set up a Space Force within the Air Force. And, before we haul off and authorize spending billions of dollars on this, I just want to ask a couple of questions about what problem this Space Force is supposed to solve.

So, let me start with you, Chairman Dunford. Is it correct to say the Department of Defense has proposed a Space Force because the United States is at risk of losing its competitive advantage in
space, and our space assets, including critical satellites, are becoming increasingly vulnerable? Is that a fair statement?

General DUNFORD. That is a fair statement, Senator. And just a quick caveat, based on your opening comment. In the organization that we have today is an organization that we built when space was——

Senator WARREN. No, I understand that. I understand that.

So, I want to think about, though, what the basis of the problem is, then. A 2016 GAO report that examined our existing space acquisition programs noted, “We and others have reported, for over two decades, that fragmentation and overlap have contributed to program delays and cancellations, cost increases, and inefficient operations.”

Secretary Shanahan, is it the DOD’s view that unifying space programs under a single service will address these problems?

Secretary SHANAHAN. Senator, unifying and aligning certain programs under the Space Development Agency will address that problem that you spoke to.

Senator WARREN. So, you say the problems of delays and cancellations, cost increases, and inefficient operations will be solved if there is a separate branch of the military, but still under the command of the Air Force. You know, this is particularly surprising to me, since the proposal to leave the Space Force headquartered under the Air Force would still leave exactly one person responsible for acquiring hardware for both the Space Force and the Air Force. So, it’s not clear to me how this solves anything. In fact, it’s hard to see how that person would be able to balance the competing needs of both Services without a massive increase in overall spending.

So, Secretary Shanahan, let me ask. Obviously, DOD has not been able to solve the problems identified by the GAO over the last 20 years. Why do you think another layer of bureaucracy will suddenly solve this problem?

Secretary SHANAHAN. Well, I think the Department solved a lot of problems. I think we can point to a lot of programs, where inefficiencies, delays in decisions, redundancies, overlaps have been corrected. I think there’s——

Senator WARREN. Well, I’m sorry, the report is from 2016, from the GAO, saying you have not solved these problems.

Secretary SHANAHAN. And all I’m arguing is, we’ve made lots of improvements, and we can point to——

Senator WARREN. And how is having one person, as you have now, in charge of the acquisitions for these two programs—space program and the Air Force—how’s that going to solve the problems that were identified by the GAO?

Secretary SHANAHAN. Well, specifically, there are a set of fragmented programs today that will be consolidated, and they’ll allow us to get at many of the issues identified in the GAO report.

Senator WARREN. There’s just one person in charge right now and you still haven’t fixed this problem.

Secretary SHANAHAN. No, this isn’t about one person. This is about an organization, an organization that has certain capabilities and decision rights.
Senator W ARREN. Well, look, I understand that DOD says that unifying space acquisitions is going to help improve outcomes. But, I'm concerned that it won't, because program delays and cancellations, cost increases, and inefficient operations are the rule, not the exception. And the entire defense acquisition system already has this problem, and nothing in this proposal makes it any better.

You know, none of the ideas I've heard today clearly spell out how a Space Force leads to improved security in space. Instead, all I see is how a new Space Force will create one more organization to ask Congress for money. And there's no reason to believe that adding an entirely new Space Force bureaucracy, and pouring buckets more money into it, is going to reduce our overall vulnerability in space. I just think the taxpayers deserve better than this.

I yield back my time, Mr. Chairman.

Senator REED. Thank you, Senator Warner.

On behalf of Chairman Inhofe, let me thank the witnesses for their testimony and declare that the hearing is adjourned.

[Whereupon, at 12:08 p.m., the committee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR M. MICHAEL ROUNDS

RESERVE COMPONENT

1. Senator Rounds. Secretary Wilson, you stated that it is “impossible for me to imagine a Space Force without a reserve component.” What roles do you see the National Guard and Reserve performing in the Space Force and how, very generally, do you envision current Air National Guard and Air Force Reserve units transitioning into the new Space Force?

Secretary Wilson. Today, both Reserve and National Guard units provide strategic depth for U.S. space operations. They also recruit and retain personnel with unique civilian experience across the space enterprise. The Reserve and National Guard role in space will continue. The DOD is currently conducting the detailed planning to determine how this role will be implemented for the Space Force. The Space Force Reserve Components will be shaped around the Active Component of the Space Force. The Secretary of Defense, with advice from the Chairman of the Joint Chiefs of Staff, Secretary of the Air Force, and Chief, National Guard Bureau, will determine the best organizational structure for the Space Force Total Force and provide a legislative proposal for consideration in a future National Defense Authorization Act.

QUESTIONS SUBMITTED BY SENATOR JONI E RNS T

COOPERATION WITH ALLIES

2. Senator Ernst. Secretary Shanahan, Secretary Wilson, General Dunford, and General Hyten, one area that distinguishes our armed forces from competitors is our network of strong military relationships with our partners and allies. Given the variability of counterspace weapons, it could be in our advantage to work with our allies to ensure the integrity of the space ecosystem. Can you assess our current engagement with allies regarding space operations, and discuss any future goals?

Secretary Shanahan. The United States maintains strong and burgeoning relationships, conducts close coordination and cooperates with allies to compete, deter, and win in space. U.S. allies directly contribute to and support space surveillance operations as well as conduct operational level command and control of coalition space forces at the Combined Space Operations Center. U.S. Strategic Command manages space situational awareness sharing agreements with international and commercial partners and coordinates allied intelligence support to space operations. As allied space strategies and programs develop and mature, the United States will seek opportunities for deeper integration, including enhanced joint and coalition planning for space defense. A military service dedicated to the space domain—with a separate 4-star Chief of Staff as an equal member of the Joint Chiefs of Staff—
will ensure we enhance a holistic approach to engagement with our allies regarding space operations.

Secretary Wilson. I defer to the Secretary of Defense on this question.

General Dunford. I defer to OUSD(P) to provide the appropriate response to this question.

General Hyten. Our engagement with our Allies in space has never been higher, and it enhances our national security objectives. We have a rich history of cooperating with our closest Allies in space which predates U.S. Strategic Command assuming responsibilities for Joint space operations. For example, through our North American Aerospace Defense Command (NORAD) partnership with Canada, we have partnered together in the missile warning and space situational awareness mission areas for decades. Similar relationships with Australia and the United Kingdom have also seen decades-long partnerships in these same mission areas. In July 2018, in recognition of these partnerships and the fact that Australia, Canada, and the United Kingdom have contributed capability into our Joint space enterprise, and had sent exchange personnel to the Joint Space Operations Center (JSpOC) at Vandenberg AFB, California, we renamed the JSpOC into the Combined Space Operations Center (CSpOC). Not only did this renaming highlight the international partnerships we leverage every day in space, but it also drove us to a higher level of integration through the assignment of additional Allied personnel at the CSpOC (to include a Canadian officer serving as the CSpOC Deputy Director), daily integration between the CSpOC and the national space operations centers of the other three countries, and the incremental improvement in the information sharing systems we use to pass information in real time. In addition to the formal designation of a CSpOC, we have also created the Multi-National Space Collaboration (MSC) Office at Vandenberg AFB. This office allows space-faring, like-minded Allies such as Germany and France, to send liaison officers to work alongside our experts at Vandenberg AFB to improve and enhance how we cooperate in space. To date, the MSC Office has full-time liaison officers from Germany, France, and the United Kingdom (even through the UK has personnel assigned to the CSpOC, they also wanted to send a liaison office to explore even deeper space relationships with the U.S.). Several other countries, such as Japan, Italy, and South Korea, have also expressed an interest in sending liaison officers to the MSC Office, and we are actively working the necessary international agreements to do so. Over the past year, we have evolved our space situational awareness (SSA) cooperation to a daily activity. Our lead unit for SSA, the 18th Space Control Squadron, holds daily engagements with a number of Allied nations to maintain shared awareness of what is happening in space, and to use significant space activities (such as last year’s reentry into the Earth’s atmosphere of a Chinese space station) as practice opportunities to improve our tactics, techniques, and procedures for cooperating in the SSA mission area. Building on the success of the CSpOC, this fall we plan to stand up a Combined Technical Operations Cell (CTOC) at Vandenberg AFB. The CTOC, which was conceived at the most recent Schriever Wargame, will allow Australia, Canada, UK, and the U.S. to make available Special Technical Operations capabilities for use by our Joint Space Enterprise. Planning to standup this capability is ongoing at the CSpOC and within the Combined Space Operations (CSpO) working groups today. Finally, we are moving toward executing a multi-national named operations in space in the near future. The U.S. Strategic Command operation for conducting Joint space operations is known as Operation OLYMPIC DEFENDER (OOD). In late 2018, OOD was re-written to be releasable to Australia, Canada, France, Germany, New Zealand, and the UK. Additionally, these countries have been invited to join the multi-national force which will execute OOD with the U.S. as the lead nation and Commander, U.S. Strategic Command, as the Multi-National Force Commander (which will be delegable to the Joint Force Space Component Commander). Australia, Canada, and the UK have all expressed that they plan to join OOD in the near future, and all three are in the midst of securing their national-level approvals to do so. In summary, space operations are inherently Joint and Combined. Simply put, we couldn’t execute many of our space mission without the important contributions of our Allies. We are stronger together, and soon we will be executing daily operations together under the collective banner of the multi-national OOD.
QUESTIONS SUBMITTED BY SENATOR RICHARD BLUMENTHAL
CIVILIAN PERSONNEL AND EXCEPTED SERVICE

3. Senator Blumenthal. Secretary Shanahan, why are you eliminating the rights of Space Force employees to unionize?

Secretary Shanahan. The Space Force mission is similar to, and interchangeable with, organizations with missions that are largely exempt from collective bargaining by Executive Order for reasons of national security. Many of the workforce authorities envisioned for the Space Force are modeled on authorities currently used by the National Reconnaissance Office. Due to the classified nature of the mission and the work that would be performed by the Department of the Air Force employees supporting the Space Force (also known as “Space Force employees”), the unionization of employees and collective bargaining for the Space Force workforce would not be consistent with national security considerations.

The Department proposes to exempt the Space Force workforce from collective bargaining rights because the non-standard pay system the Department envisions for the Space Force would require lengthy and costly collective bargaining without such exemption. The Department has determined workforce pay flexibility is a national security imperative for the Space Force in order to maintain U.S. advantages in the space warfighting domain. Since the Space Force would be competing for talent in cutting edge fields, the Department has determined it is willing to pay to meet market demands where needed.

Based upon planning assumptions and initial estimates, the Department anticipates that the large majority (approximately two-thirds) of current civilian employees who would be part of the Space Force workforce are not in a union or are ineligible for union representation.

4. Senator Blumenthal. Secretary Shanahan, are you concerned that this proposal would establish an employment system where ideology and political affiliation—rather than merit and qualifications—would influence hiring, compensation, and termination decisions?

Secretary Shanahan. No. Merit system principles would apply to the Space Force. In addition, Space Force employees would be protected against unlawful discrimination and prohibited personnel practices. Space Force employees could file complaints alleging unlawful discrimination with appropriate Equal Employment Opportunity offices and could raise allegations of prohibited personnel practices to the Air Force or Inspector General or the U.S. Office of Special Counsel. Additionally, civilian employees who currently serve in title 5 competitive service positions and who become Space Force employees would retain the right to appeal adverse actions to the Merit Systems Protection Board. Civilian employees newly appointed to title 10 Space Force positions may appeal within DOD.

5. Senator Blumenthal. Secretary Shanahan, unions play an important role in providing employee protections and sharing feedback on policy changes throughout the implementation process. Why should the Space Force be exempt from this kind of union input?

Secretary Shanahan. Union representation would not be consistent with national security considerations due to the classified nature of the Space Force mission and the work performed. Collective bargaining would subject management decision making to review by arbitrators who can overturn decisions and inject their own opinions on what is best for mission accomplishment and national security. The Department would establish regulations to ensure that Space Force employees have the right to present administrative grievances or other concerns to the appropriate Department of Defense authority for prompt and equitable consideration. Space Force employees could present concerns to the Office of Special Counsel as well. In addition, advance notice and bargaining with labor unions over changes to conditions of employment likely would delay implementation of changes needed to carry out the Department’s mission. An exemption from collective bargaining is proposed because the non-standard pay system the Department envisions for the Space Force would require lengthy and costly bargaining without such exemption. U.S. Space Force implementation must be accomplished without delay, including with regard to establishing a competitive pay system.

CULTURE OF RETALIATION AND WHISTLEBLOWER PROTECTIONS

6. Senator Blumenthal. Secretary Shanahan, the proposal as drafted requests these authorities “notwithstanding any other law.” Do you intend to exempt the
Space Force workforce from the American with Disabilities Act, or other employment discrimination laws? Secretary SHANAHAN. No. Space Force employees would not be exempted from the Rehabilitation Act, the American with Disabilities Act, or other employment discrimination laws applicable to Federal employees. Space Force employees would be able to file complaints alleging unlawful discrimination with relevant Equal Employment Opportunity offices.

7. Senator BLUMENTHAL. Secretary Shanahan, are you concerned that this proposal does not appropriately protect whistleblowers and all employees from unjust termination? How would you suggest amending the proposal to better protect all employees, including whistleblowers? Secretary SHANAHAN. The appeal authorities included in the Space Force legislative proposal are modeled after existing authorities for the Defense Civilian Intelligence Personnel System (DCIPS). The Department has found that DCIPS employees are adequately protected, and we do not believe the proposal needs to be amended. The same statutory whistleblower protections afforded most Federal employees would apply to Space Force employees. Space Force employees would be able to raise concerns regarding alleged prohibited personnel practices, including violations of law, rule, or regulation, or other gross mismanagement, waste of funds, abuse of authority, or danger to public health or safety, to the Air Force or Department of Defense Inspectors General or the U.S. Office of Special Counsel. Employees would be protected from retaliatory action for disclosure of alleged prohibited personnel practices.

Space Force employees would also be protected from unjust termination. Employees would have the right to appeal adverse and performance-based actions and would be protected from prohibited personnel practices, including unjust termination. The Department anticipates that the need for the focused special termination procedures exercised in the interest of the U.S. described in what would be section 9384 of title 10, U.S.C., if the proposal is enacted into law would be used sparingly and only to protect the Department from serious national security breaches. This proposal is based upon section 1609 of title 10, U.S.C., that governs DCIPS.

COST

8. Senator BLUMENTHAL. Secretary Shanahan, are you confident that the budget requests includes all of the additional staff and annual recurring costs? Secretary SHANAHAN. Yes. The Department invested significant time and effort in developing the personnel and cost estimates for the Space Force. The additional recurring costs reflect what is required for the Space Force headquarters, as well as additional resources to build a space-specific expertise, culture, and ethos, such as education and training, a warfare center for space, a space personnel center, and a doctrine development center.

9. Senator BLUMENTHAL. Secretary Shanahan, can you commit to providing documentation to support this cost estimate? Secretary SHANAHAN. Yes. The Air Force submitted the President’s Budget Operation and Maintenance, Space Force Volume 1 justification exhibit with the President’s Budget. This includes the 0–1, OP–32, and PB–31R summary exhibits. In addition, the Department developed detailed cost estimates of the additive costs of the Space Force over the Future Years Defense Program (FYDP) and at full operational capability. A Department-wide team led by the Air Force is currently refining those estimates as they conduct the detailed planning to establish the Space Force, if authorized by Congress. The Department is prepared to brief you on the details of these estimates and planning to date.

10. Senator BLUMENTHAL. Secretary Wilson, last fall, you signed a memo that estimated the cost of starting a Space Force Department and U.S. Space Command would be about $13 billion over five years. I understand that the current proposal differs from the original, but can you explain why the cost estimate is drastically different now? Secretary WILSON. In September 2018, the Air Force provided the Deputy Secretary of Defense with a proposal for a Space Development Agency and transition to a Department of the Space Force. Our previous proposal included standing up a Service and a new Department, rather than a Force within an existing Department. The previous approach would have been unable to leverage the staff of the existing Department of the Air Force. The original AF cost estimate included additive costs
of a Department and U.S. Space Command that totaled $12.9B over five years. The proposal did not include additive costs for a Space Development Agency:

- Establishing a fully independent Military Department for Space ($4 billion over the FYDP)
- Establishing U.S. Space Command ($1.6 billion over the FYDP)
- Additive manpower for the transition to operations in a warfighting domain, as well as operational support activities for the new department ($7.3 billion over the FYDP).

The current DOD proposal for the Space Force estimates the cost of a new Military Service within the Department of the Air Force as $2 billion over the first five years, with a steady-state cost of $500 million per year following declaration of Full Operational Capability, projected in fiscal year 2024. This total does not include the cost of establishing U.S. Space Command. It also does not include additive manpower for the transition to operations in a warfighting domain, nor operational support activities for the new Service consistent with the September 2018 proposal, the current estimate does not include additive costs for a Space Development Agency.

ORGANIZATIONAL STRUCTURE

11. Senator BLUMENTHAL. Secretary Shanahan, after you identified the need for “institutionalized and centralized advocacy” for the space warfighting domain, what other courses of action were considered?

Secretary SHANAHAN. The Department considered multiple models to address the need, including: a combatant command-only model, a Space Corps consisting of Air Force space only, a Space Force consolidating space forces from all existing Military Services, and a Department of the Space Force. When examining these organizational options, the Department sought to address two interdependent issues: 1) the need to focus the joint force on space defense and 2) the need to organize, train, equip, and present space forces in a manner consistent with a distinct warfighting domain.

The combatant command-only model was not the right solution because it did not provide the complete structure necessary for a distinct warfighting domain. Although the new combatant command would enhance focus and prioritization on space for the joint force, the organization, training, equipping, and presentation of space forces would remain fragmented across DOD. Furthermore, there would continue to be no independent advocate for space on the Joint Chiefs of Staff (JCS). An Air Force-only Space Corps would be less optimal than the proposed solution. By being composed of existing Air Force space forces only, it would not unify space doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) across the Department. A Department of the Space Force could be most effective in addressing the problem, but is significantly more resource intensive than the proposed solution.

The Space Force within the Department of the Air Force is the right solution now. It elevates space on par with the other warfighting domains; creates dedicated advocacy for space with a 4-star Chief of Staff who is a full member of the JCS; and unifies organize, train, and equip functions for all space forces. By leveraging existing infrastructure in the Department of the Air Force where appropriate (e.g. General Counsel, Service Acquisition Executive, Installations, Energy & Environment, etc.), the Space Force will be a lean organization, focused on space combat and combat support. This solution maximizes space warfighting capacity while minimizing bureaucracy.

12. Senator BLUMENTHAL. Secretary Shanahan, what criteria were evaluated in deciding on this particular proposal?

Secretary SHANAHAN. The Department had three priorities when analyzing the options: maximum effectiveness to stay ahead of the growing threat to space systems and operations, low risk to current missions and ability to execute changes, and affordability of the overall solution. The Department’s proposal represents the optimal balance between warfighting effectiveness, risk, and affordability.

13. Senator BLUMENTHAL. Secretary Shanahan, did you talk to President Trump about this proposal? If so, what did you advise him?

Secretary SHANAHAN. Yes, I spoke to the President numerous times about the options the Department was considering. I advised him that creating the Space Force within the Department of the Air Force would be the most effective and affordable solution for our armed forces.
14. Senator BLUMENTHAL. Secretary Shanahan, do you think that your feedback was appropriately considered in policy discussions?

Secretary SHANAHAN. Yes. I presented the President multiple options to address the problem, recommending a Space Force within the Department of the Air Force. He agreed that it was the right solution to maximize our warfighting capacity while minimizing bureaucracy.

NATIONAL GUARD ROLE

15. Senator BLUMENTHAL. Secretary Wilson, with the current proposal of a separate Space Force service within the Department of the Air Force, how do you plan on organizing the Air National Guard to serve the new Organization of the Department of the Air Force?

Secretary WILSON. Today, both Reserve and National Guard units provide strategic depth for U.S. space operations. They also recruit and retain personnel with unique civilian experience across the space enterprise. The Reserve and National Guard role in space will continue. The DOD is currently conducting the detailed planning to determine how this role will be implemented for the Space Force. The Space Force Reserve Components will be shaped around the Active Component of the Space Force. The Secretary of Defense, with advice from the Chairman of the Joint Chiefs of Staff, Secretary of the Air Force, and Chief, National Guard Bureau, will determine the best organizational structure for the Space Total Force and provide a legislative proposal for consideration in a future National Defense Authorization Act.

16. Senator BLUMENTHAL. Secretary Wilson, do you envision a separate Space National Guard to provide reserve support to the Space Force?

Secretary WILSON. The Department envisions that the National Guard role in space will continue. The DOD is currently conducting the detailed planning to determine how this role will be implemented for the Space Force.

QUESTIONS SUBMITTED BY SENATOR ELIZABETH WARREN

UNIVERSITY RESEARCH

17. Senator WARREN. Secretary Shanahan, what role will university research programs and partnerships with universities play in the activities of the Space Development Agency (SDA)?

Secretary SHANAHAN. The university research community will play a potentially significant role in the activities of the Space Development Agency (SDA). I established SDA with the explicit scope of "fostering growth in the U.S. space industrial base" as part of an overall approach to developing and fielding space capabilities much faster and much more affordably. I have also given the Director, SDA explicit authority to enter into transactions other than contracts, cooperative agreements, and grants. These mechanisms will carry out basic, applied, and advanced research projects as well as certain prototype projects and activities authorized by 10 U.S.C. 2371b to rapidly access the capabilities of the university research community, including our national University Affiliated Research Centers.

18. Senator WARREN. Secretary Shanahan, what are the key technical areas that the university research community should be funded to work on that will support the future space capability needs of the Department of Defense?

Secretary SHANAHAN. The Space Development Agency (SDA) defined architecture will be a major driver for future research. SDA is refining its architecture, and its plans for acquiring those capabilities, so it can move quickly once the Department receives its Fiscal Year 2020 appropriation. As those efforts mature, SDA will detail specific technical focus areas. Those research topics and others will continually be proffered by the Deputy Director of Research & Engineering for Research and Technology and the Undersecretary of Defense for Research & Engineering Assistant Director for Space. I recommend the university research community consider key technical areas that support the eight capabilities described in the Department’s August 2018 Report on Organizational and Management Structure for the National Security Space Components of the Department of Defense (the “DOD Space Vision”). These capabilities include:

1. Persistent global surveillance for advanced missile targeting;
2. Indications, warning, targeting, and tracking for defense against advanced missile threats;
3. Alternate positioning, navigation, and timing (PNT) for a GPS-denied environment;
4. Global and near-real time space situational awareness;
5. Development of deterrent capability;
6. Responsive, resilient, common ground-based space support infrastructure (e.g., ground stations and launch capability);
7. Cross-domain, networked, node-independent battle management command, control, and communications (BMC3), including nuclear command, control, and communications (NC3), and;
8. Highly-scaled, low-latency, persistent, artificial-intelligence-enabled global surveillance.

QUESTIONS SUBMITTED BY SENATOR GARY PETERS

ORGANIZATION OF SPACE SCIENCE AND TECHNOLOGY AND TESTING CAPABILITIES

19. Senator Peters, Secretary Shanahan, in your written testimony you indicated that the Space Development Agency will “will be complimentary to ongoing space efforts within the Department and, where applicable, leverage emerging commercial technologies to field enhanced space capabilities on an accelerated timeline.” The Department already has significant activities in science and technology and test and evaluation in the development of space capabilities, both in government labs and test ranges, and through grants and contracts with universities and industry. Do you plan to reorganize or realign any of the current in-house or extramural space science and technology or test and evaluation activities currently being executed by the Services, DARPA, or other agencies, and if so what are the specific reorganizations or realignments being considered, and what criteria are being used to evaluate the benefits and costs of such changes?

Secretary Shanahan. No. I do not plan to realign those types of activities into the Space Development Agency (SDA). SDA will address emerging threats, allowing legacy organizations to focus on continuing to acquire and deliver highly reliable space systems for enduring missions, and aggressively pursue capability and efficiency improvements to these systems. This approach will ensure SDA remains complementary to legacy space acquisition organizations as well as balance risk across the Department. Where appropriate, space science and technology or test and evaluation activities currently being executed by the Military Services will be realigned to the Space Force.

ROLE OF SPACE DEVELOPMENT AGENCY IN S&T AND T&E

20. Senator Peters. Secretary Shanahan, will the Space Development Agency be responsible to ensure that space, science, and technology and test and evaluation activities and infrastructure are adequately funded by the Services and agencies to meet the needs of the Department of Defense?

Secretary Shanahan. No. The USD(R&E) Assistant Director for Space has overall responsibility for those activities across the Department of Defense. The Space Development Agency (SDA) is charged with a subset of those activities related to rapidly developing and deploying next-generation space capabilities including rethinking how we do rapid experimentation, prototyping, and innovating for space. SDA will work with other agencies and the Military Services, to include the U.S. Space Force when approved by Congress, to ensure the next generation capability needs are met across the entire spectrum of the national space community.

QUESTIONS SUBMITTED BY SENATOR JOE MANCHIN

SPACE FORCE MANNING

21. Senator Manchin. Secretary Shanahan, Secretary Wilson, General Dunford and General Hyten, the estimates for personnel requirements in the U.S. Space Force from the last information I received are approximately 16,500 people. Approximately 14,550 of these will be transfers from the Services. On top of this, there will be a requirement for hundreds if not thousands eventually at the U.S. Space Command headquarters once fully established. Many of the uniformed Services already struggle to meet recruiting goals, especially in more technical areas like space and cyber. The majority of these individuals will have to come from the Services. Can you provide a more detailed structure of where you are planning to move these personnel and the predicted costs of doing so to the services?
Secretary SHANAHAN. Our goal is to create a lean Space Force with minimal bureaucratic overhead. Almost all of the military and civilian personnel who would be transferred to the Space Force are performing space missions today in the existing military services. Unifying those personnel into a single branch of the armed forces dedicated to space would allow the current, limited space personnel to focus on building the space doctrine, expertise, and capabilities we need for a warfighting domain.

Secretary WILSON. I defer to the Secretary of Defense for this answer.

General DUNFORD. I defer to OUSD(P) to provide the appropriate response to this question.

General HYTEN. I have to defer to the Services. I have not been involved in these discussions.

ENSURING QUALITY CONTROL OF PERSONNEL

22. Senator MANCHIN. Secretary Shanahan and General Dunford, the Space Force proposal is very heavy at the top of the organization in both numbers and rank. The required staff for the Space Force headquarters reaches almost 7 percent of the total personnel. This is contrasted with the current Air Force staff which is only about 0.7 percent of the total personnel. The number of general officers created is also concerning. The Space Force will have two four-star generals at the top. The Space force staff will also presumably have its own staff directorates to accomplish the goals of truly focusing on space away from the Air Force. Many of these directorates will be led by three-star generals with two and one-star generals working underneath them. Additionally, the U.S. Space Command will also have a similar command and directorate structure as every other combatant command. This is a significant requirement for a force that is less than 10 percent the size of the U.S. Marine Corps to continuously populate with high quality, qualified individuals. After the initial standup, where the officers already exist and can be transferred, how do you plan on developing your Space Force officers from the start to ensure that we have quality officers at the top of the organization and don’t end up relying on a “next in line” mentality?

Secretary SHANAHAN. The Department of Defense is committed to ensuring the Space Force maximizes warfighting efficiency while minimizing bureaucracy. We recognize the Space Force will be small in comparison to other Services. However, it will require seasoned, well-trained, and educated leadership, with the technical and operational expertise to acquire and operate complex warfighting capabilities in the space domain. As such, the leadership structure will not mirror the other manpower intensive branches of the military.

Creating the Space Force within the Department of the Air Force leverages existing capability and expertise in the areas of logistics, support, and acquisition to limit duplication and unnecessary growth. As part of the on-going detailed planning for the Space Force, the Department has estimated that the steady state Space Force would cost $500M per year. To ensure we are recruiting, developing and training the most qualified people for this challenging domain of operations, $200M per year of this funding would support centers fully focused on the unique demands for space education and training, personnel management, doctrine, and space warfare. This will ensure the Space Force develops the expertise, culture and ethos needed for the complex warfighting domain of space.

General DUNFORD. I defer to the Secretary of the Air Force to provide the appropriate response to this question.

ACQUISITION ALIGNMENT

23. Senator MANCHIN. Secretary Wilson and General Hyten, the need to speed up acquisitions and unify a number of fractured development and acquisition organizations has been cited multiple times as rationale for establishing the Space Force. Already though there is the example of the Space Sensor Layer being delayed due to its transfer from the Missile Defense Agency to the Space Development Agency. While I understand that the Space Development Agency is not a part of this legislative proposal, this suggests that we could see more delays in programs as we start to move around programs and responsibilities. Can you explain in more detail what problems the current disaggregated system presents and why it is not currently possible to better align those practices within the established services and Department of Defense constructs?

Secretary WILSON. The disaggregation of space program responsibilities falls into two categories: the disaggregation of space program execution; and the disaggregation of authority and oversight responsibility within the DOD. From a program execution perspective, the Air Force is actively working to ensure space programs are aligned
under structures which most appropriately prioritize the integration of ground, user, and space segments while accelerating defendable space capabilities. These program execution structures are unified under Air Force Space Command, and the Air Force is actively exploring ways to further unify programs which are part of the space communications architecture. From an authority and oversight perspective, the Air Force stood up the Space Rapid Capabilities Office, as directed by Congress, with streamlined authorities for rapid acquisition and fielding of new space capabilities across the Department of Defense (NDAA 2019, Section 1602). The Air Force has assigned three classified projects to this new office. The Space and Missile Systems Center has just completed a major reorganization to streamline program oversight and approval, to speed-up space acquisitions. This reorganization stripped out three layers of bureaucracy. It has also established the Space Enterprise Consortium, which has over 200 companies engaged, many of them nontraditional companies which have never done business with the Air Force. In the Consortium, the Air Force is averaging 90 days between requests for proposal and contract award. The Air Force has also used the milestone delegation authority granted by Congress to remove years from acquisition schedules. In May 2019, we surpassed 100 years that the Air Force has taken out of acquisition; 21 years came out of space programs alone.

General Hyten. The current disaggregated system has driven a construct with dozens of stakeholders whose primary role is synergizing the nation’s space capabilities because there isn’t a single responsible organization. The result is layers of bureaucracy that can tell a program manager “no” and stop a potentially innovative idea before it has a chance to begin. It is important to streamline the decision-making process to ensure innovative ideas have a better chance to be vetted and ultimately approved at the appropriate level. Over the last few years, with the support of Congress and Department leadership, a lot of work has been done to delegate programmatic decisions down to lowest practical level for all acquisition programs, to include national security space. A few examples of this include the delegation of Milestone Decision Authority to the Service Acquisition Executives from the Department of defense level, the designation of middle tier acquisition authority in Section 804 of the FY16 NDAA, and broader use of alternative contracting to include Other Transaction Authorities. So far, the Air Force Space and Missile Systems Center has saved an estimated 16 years in acquisition timelines on seven programs by utilizing Section 804 authorities. Standing up SDA, initially under USD(R&E), allows for the proper integration and streamlining of research, development, and acquisitions across DOD. SDA is designed to move fast, cut red tape and focus on rapid prototyping and experimentation and spearhead efforts to accelerate the development and fielding of new military space capabilities. SDA will also explore innovative concepts and alternative architectures to provide a more robust and resilient space enterprise. With the evolution of the space domain from a permissive to a contested environment, it is imperative that the U.S. adjust to meet the peer-level threat by having strong space leadership within the Department. The creation of a Space Force, if supported by Congress, will allow for a unified and singular focus on space as a warfighting domain that is difficult to achieve without that unified, sole responsibility.

QUESTIONS SUBMITTED BY SENATOR DOUG JONES

SPACE-BASED ORGANIZATION MOVEMENTS

24. Senator Jones, Secretary Shanahan and General Dunford, please provide a listing of all current space-based organizations and indicate the following: 1) which of these would immediately become part of the Space Force, 2) which you would plan to move to the Space Force later, and 3) which would be split, with an explanation of the split; and 4) which would remain as they currently are.

Secretary SHANAHAN. I envision consolidating the preponderance of existing military space capability under the Space Force. Other Department of Defense components may retain organic space capabilities uniquely required to support their core mission (e.g., terminals and localized electronic warfare equipment).

The Department has set up a planning task force within the Department of the Air Force that includes all of the Military Services and relevant Defense Department agencies. The Department is currently conducting detailed planning to determine the specific transfers to the Space Force. I will make decisions on specific transfers in consultation with affected Military Services.

General DUNFORD. I defer to OUSD (P) to provide the appropriate response to this question.
SPACECOM LOCATION CRITERIA

25. Senator Jones, Secretary Wilson and General Dunford, please provide the criteria you will use to select the permanent home of U.S. Space Command, as well as the timeline for your decision.

Secretary Wilson. The Air Force through their Strategic Basing process will be responsible for selecting the permanent location for U.S. Space Command. Site survey criteria include mission (alignment with critical space force expertise, co-location with a United States Space Command component or center, access to a C–17 capable airfield), capacity (administrative building requirements, communications connectivity, base operating support), environmental (air quality, biological and cultural resources), and costs (one-time and recurring). The Air Force anticipates having a final basing decision in late summer/early fall 2019 timeframe.

General Dunford. I defer to the Secretary of the Air Force to provide the appropriate response to this question.