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STATEMENT BY

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PERFORMING THE DUTIES OF

UNDER SECRETARY OF DEFENSE FOR ACQUISITION & SUSTAINMENT

BEFORE THE UNITED STATES SENATE

COMMITTEE ON ARMED SERVICES

ON

DEFENSE ACQUISITION PROGRAMS
AND ACQUISITION REFORM

April 28th, 2021

I. Introduction and Background

Chairman Kaine, Ranking Member Sullivan, and distinguished Members of the Senate Committee on Armed Services, thank you for the opportunity to testify today on acquisition initiatives and performance across the Department of Defense (DoD).

The 2018 National Defense Strategy emphasized the need to restore our Nation's competitive advantage and renewed focus on near-peer competition. To keep pace with the dynamic threat environment, we needed to build a more lethal force and accelerate delivery of capability to our Warfighters—in other words, DoD acquisition needed to move at the speed of relevance.

At that time, our acquisition system had evolved to a "one-size-fits-all" model for *all* acquisition programs that, while tailorable, often resulted in a checklist approach, was susceptible to prescriptive processes, and rarely enabled speed. Simply stated, the system was better suited for our programs of the past, not our programs of the future. Initial efforts were underway to shift milestone decision authority for acquisition programs to the lowest possible level, and we were also amidst the reorganization of the former Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics (OUSD(AT&L)).

As called for in Section 901 of the Fiscal Year 2017 NDAA, the reorganization resulted in the current structure of two separate organizations: the Under Secretary of Defense for Research and Engineering (USD(R&E)) and the Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)). Accordingly, the Department has operated on the expectations set forth by Congress, that the USD(R&E) would take risks, press the technology envelope, test and experiment, and have the latitude to fail, as appropriate, and the USD(A&S) would focus on timely, cost-effective delivery and sustainment of products and services, and thus seek to minimize any risks to that objective.

While there have been positive outcomes as a result of the reorganization, one of the challenges that A&S has faced is a significant reduction in workforce, while experiencing a significant increase in mission. The Major DoD Headquarter Activities reductions, combined with the reductions due to the bifurcation of AT&L, resulted in a 39% reduction to A&S civilian authorizations and a 38% reduction to A&S military authorizations across Fiscal Years 2015 through 2020.

For all of these reasons, the environment was right to shift our mindset from piecemeal

reform in favor of true, overarching innovation. We made the decision to transform acquisition policy from the ground up with the goal of delivering a Defense Acquisition System that afforded program managers flexibility, empowered critical thinking and common-sense decision making, and most importantly, accelerated delivery timelines. The resulting Adaptive Acquisition Framework is the most transformational change to acquisition policy in years—perhaps decades—and its implementation has laid the foundation for a versatile, scalable, and data-driven solution we expect to have a long-lasting, positive impact across the Department.

II. NDAA and Enabling Transformation

Throughout this transformation of the Defense Acquisition System over the last four years, Congress has been a steadfast partner in enabling us to be innovative and forward-thinking.

In addition to the dissolution of AT&L into A&S and R&E, a number of provisions in the Fiscal Year 2016 NDAA increased authorities for the Department to execute acquisition more rapidly. First, Section 825 delegated milestone decision authority to the service acquisition executive (SAE) of the military department or component that is managing the program, unless another individual is specifically designated by the Secretary of Defense. By delegating acquisition oversight, efficiencies can be gained, for example, through a reduction in staff work and the associated time required to get a decision brief to the appropriate milestone decision authority. Designating the SAE as the milestone decision authority also ensures the SAE certifies that program requirements are stable and funding is adequate to meet cost, schedule, and performance objectives for each program. Since that time, all but nine of the major defense acquisition programs already existing on October 1, 2016 and two special interest programs have been delegated to the Services, increasing the efficiency and effectiveness of program management. To compare, in 2016 there were 34 MDAPs at the ACAT ID level with USD(AT&L) oversight.

Second, Section 804 authorized the operation of the Middle Tier of Acquisition (MTA) for programs intended to be fielded within five years. This authority allowed the Department to rapidly develop fieldable prototypes to demonstrate new capabilities, as well as to rapidly field production quantities of systems with proven technology that require minimal development. MTA programs are not required to comply with the Joint Capabilities Integration and

Development System (JCIDS) process but rather are established to fill approved requirements document in alignment with operational needs. With the MTA, the focus is on speed: authority for requirements and acquisition oversight are pushed down, and funding is provided for smaller increments of capability.

Third, Congress provided authorities that fundamentally transform the way the Department acquires software. Given that software is central to every major DoD mission and system, DoD must be able to acquire and deliver software with greater speed, agility, and cybersecurity.

Sections 873 and 874 of the Fiscal Year 2018 NDAA authorized pilot programs to leverage iterative development techniques and other Agile standards and best practices. In doing so, Congress removed the burden of resource-heavy reporting requirements of earned value management (EVM) in pilots, resulting in greater focus on delivering working product and value over documentation. The pilot programs enabled by these provisions are delivering working products to environments and operations over shorter time frames. The pilots continue to provide insights on how to best move programs toward agility through continuous integration and delivery of software capabilities, and we look forward to expanding this pilot approach moving forward.

Section 800 of the Fiscal Year 2020 NDAA provided statutory flexibilities for the creation of the Software Acquisition Pathway, setting conditions for cultural change by streamlining decades-old processes that were designed for major weapon systems and optimizing to build software in the 21st century. This pathway helps relieve programs from procedural bottlenecks of major defense acquisition programs and the JCIDS process, and drives DoD to focus on rapid delivery of secure software with active Warfighter involvement. As of April 6, 2021, there are 16 programs using the pathway and dozens in the pipeline. Together, these authorities have allowed us to focus on delivering smaller increments of software capability faster, incrementally generating requirements, prioritizing customer participation throughout capability development, and increasing the use of automated testing.

Finally, the recent NDAAs also provided contracting flexibilities that the Department has benefited from. Section 815 of the Fiscal Year 2016 NDAA codified DoD permanent authority to award Other Transactions for research, prototype, and production purposes. Other Transaction Authority (OTA) gives the Department the flexibility necessary to incorporate

standards and best practices from commercial industry into our award instruments. This increased flexibility spurs innovation and helps broaden the industrial base by leveraging commercial investment in technology development to ensure DoD requirements are incorporated into future products. The flexibility also attracts non-traditional and small businesses with leading edge technologies, ultimately enabling more rapid acquisition of innovative technologies. Other Transaction usage has grown significantly in recent years, more than doubling in obligations from $7.4 billion in Fiscal Year 2019 to $16 billion in Fiscal Year 2020, though more than $7 billion of the increased obligations in Fiscal Year 2020 was for COVID-19 related actions.

Section 879 of the Fiscal Year 2017 NDAA provided DoD authority to conduct a pilot program using Commercial Solutions Opening (CSO) competitive procedures to improve our ability to access and expedite delivery of commercial technologies to the Warfighter. Like OTAs, CSOs provide another tool to reduce the burden for commercial companies to compete as well as for the Department to more rapidly move to award. The pilot program enables a streamlined contracting process using a general solicitation procedure in combination with Federal Acquisition Regulation Part 12, Acquisition of Commercial Items, to fulfill requirements, capability gaps, or technological advancements through commercial and nontraditional defense contractors who might otherwise be unwilling to do business with DoD. Through the end of March 2021, 82 actions with $61.5 million in obligations were awarded by the Services, Defense Health Agency, and Defense Logistics Agency. The Department's Defense Assisted Acquisition (DA2) Cell also leveraged the authority on behalf of the Department of Health and Human Services (HHS) to enable investments in industrial base expansion to help mitigate constraints in the medical supply chain as part of the national COVID-19 response. These three CSOs resulted in multiple actions with over $1.1 billion in investment obligations. The Department appreciates that the CSO authority was extended through September 30, 2022 in the Fiscal Year 2021 NDAA, and we are currently collecting the data to prepare and provide a briefing to Congress on the use of the pilot program by June 2021.

III. Attributes of Successful Programs and Common Challenges

High performing programs deliver critical Warfighter requirements within the

established cost, schedule, and performance baseline, and several factors contribute to the overall success of acquisition programs. Cost baselines are typically generated by our teammates in the Services, and for major defense acquisition programs, confirmed by additional assessment from the Department's Cost Assessment and Program Evaluation (CAPE) office. The schedule is proposed by the program manager and approved by the Milestone Decision Authority, which is either the Project Manager, Program Executive Officer, SAE, or USD(A&S) depending on the program's scope and scale. Lastly, performance objectives correlate directly to the requirements approved by the Joint Staff or Services that generated the capability development or procurement action at the outset. A disciplined approach to cost estimation, realistic schedule projections, clearly defined performance requirements, and on-time funding are paramount for stability in these baseline parameters, and ultimately program success.

As an enterprise, the acquisition community has made great strides in "failing early" to inform technology readiness for military application. Program managers working within the Adaptive Acquisition Framework are encouraged to take prudent risk to ensure programs start with mature technology that has been tested in relevant environments as early in the lifecycle as realistically possible. Allowing immature technology to move forward often leads to failure, as demonstrated in several high-profile programs over the last two decades. As an organization, we have actively shifted culture to recognize that failure is, and must be, an option to prevent programs from moving forward unless technology maturation occurs early. Effective prototyping ahead of entering research and development better informs risk management, ultimately increasing program performance.

Fostering a competitive environment in which multiple companies are incentivized to develop or produce capability solutions for military requirements is a best-case scenario to deliver the most capable and cost-effective solutions to our Warfighters. Whereas a number of historical examples show instances of sole-source providers reducing the Department's flexibility in negotiating better outcomes for programs, a number of ongoing programs, including the Next Generation Interceptor (NGI) and the Army's Future Long Range Assault Aircraft (FLRAA), have leveraged strategic contractor selection to increase competition, which is expected to lower costs without sacrificing capability. While this approach may add cost to the development program, it should be encouraged for as long as fiscally practical to advance

the best product into engineering and development, or directly into production. When our industrial base competes, our government wins.

At the heart of the acquisition enterprise—and in turn of successful programs—are our people. Like the transformation brought about by the Adaptive Acquisition Framework, we are also committed to reforming and modernizing our defense acquisition workforce management framework. By pivoting from a "one-size-fits-all" certification construct to a component- and workforce-centric tailorable, continuous learning construct, and by streamlining the structure of the workforce into fewer functional areas, this shift to modern talent management will empower the workforce for success today and into the future. Teams of subject matter experts in engineering, testing, product support, contracting, cost estimating, and project management are the foundation of the Defense Acquisition System. When these teams of teams are well-trained and well-integrated to think critically in the development of an acquisition strategy, the wide range of functional areas are considered early in the program's life cycle and enable program success.

Other critical elements of successful programs include understanding and acquiring the right level of intellectual property from our industry partners, understanding system and subsystem designs, understanding the capability of the legacy system being upgraded, designing systems with modular open architectures whenever possible, having insight into all aspects of testing, and ensuring cybersecurity is foundational from the outset and throughout a system's entire life cycle. While these foundational program decisions are not necessarily new, their importance is greater than ever and must be increasingly emphasized to exploit opportunities to be successful. For example, sufficient technical data and the rights to use it are needed to compete production if necessary due to cost or capacity limitations, as well as to compete modernization or sustainment so the program is not locked into a long-term sole source scenario. We are working to ensure the requisite education is available to the acquisition workforce, as well as to focus teams of experts at the Department level to assist decision authorities and program managers in implementing best practices for success in these domains.

Along with best practices that make programs successful, acquisition programs across the Department experience a number of common challenges throughout the life cycle from design, to development, to deployment, and in sustainment. One of the greatest challenges is

adjusting to and mitigating changing performance requirements. It is incumbent upon the Joint Staff and the Services to develop the requirements that establish the performance baselines of our programs. When that baseline changes—especially late in a program—to add additional performance attributes or to increase the capability "ask" of a certain system in development, it can easily cause perturbations in cost and schedule to meet the additional requirements. To maintain baselines is to manage the intersection of getting what our forces need, when they need it, at a reasonable cost to the taxpayer. While A&S continues executing reform efforts in conjunction with the Services, the efforts fall largely within the purview of what A&S controls and oversees. To realize meaningful, innovative change across the larger acquisition enterprise, future efforts must be holistic across the Department and encompass the full breadth of requirements development, portfolio assessment, and major capability acquisition. Reform is not effective in isolation.

The stability of resources from year to year, particularly in the face of changing priorities and strategic direction, and overly optimistic cost estimates also negatively affect programs. While the Department fully understands the nature of today's dynamic threat landscape and the need to maintain our competitive advantage, the impacts of major changes in resourcing commitments must be well informed and carefully considered. We are appreciative of any opportunity to communicate regularly with this committee and other partners in Congress, and look forward to maintaining strong, open lines of communication regarding both decisions affecting our largest, most critical programs and our acquisition workforce writ large. We also continue to establish a culture of transparency and data-based decision making at the lowest levels to ensure we establish the realistic baselines against which we measure program success. The Department is investing in the education of our cost estimating teams at the program offices as well as strengthening relationships with CAPE to share information in developing these estimates.

Balancing program risks between each baseline, to include risks associated with the health of the industrial base, is the responsibility of our program managers and program executive officers. PMs and PEOs must understand their mission, and their capacity to make decisions to maintain forward progress on their programs. Often, there is a culture of risk aversion as leaders are hesitant to change or abandon unsuccessful strategies for a variety of reasons, including sunk costs. We are working hard to change this. When a decision rises to the

level of the SAE or Under Secretary, it is typically critically important requiring a selection between two less-than-optimal courses of action. In these instances, decisions must be made in a timely manner in order to maintain momentum or change course. However, it is important to recognize that not every effort or program is going to be successful, and leaders must be comfortable having uncomfortable discussions on program restructuring and or cancellation, should that be in the best interest of the government.

Leaders must equally incentivize innovation and disciplined program management to ensure success. Opportunities for innovation throughout acquisition strategy development and execution—regardless of the AAF pathway or pathways being used—cannot sacrifice program management best practices, but rather enable a higher degree of critical thinking. For example, execution of an MTA Rapid Prototyping program will require the same discipline and rigor of executing a Pre/Post-Milestone A Program on the Major Capability Acquisition pathway.

Program managers are trained to interface with their customers, the defense industrial base—both commercial and organic—and academia to build successful programs and deliver required capabilities. Incomplete, inaccurate, or inconsistent communications between PMs and their stakeholders can lead to challenges throughout the life cycle of a program. In the AAF construct, PMs have more flexibility and authority to build program plans that make sense for each specific capability being acquired. Highly-trained PMs will take these authorities and think critically about how to apply the policies of the pathways to their programs to reduce risk and maximize success.

IV. Delivering Acquisition Transformation: Implementing Lessons Learned

The rewrite of the DoD 5000 Series acquisition policies and creation of the Adaptive Acquisition Framework decomposed a large policy document into six clear and separate pathways, each of which is tailored to the unique characteristics of the capability being acquired. By design, these pathways implement the six main tenets of the defense acquisition system to simplify policy, tailor-in approaches, empower program managers, facilitate data-driven analysis, actively manage risk, and emphasize sustainment. Whether responding to urgent needs or acquiring major capabilities or services, simply put, the AAF affords program managers and their teams multiple ways to field capability faster. Currently, 86 programs are using the AAF's new software and MTA pathways.

In addition to the acquisition pathways, the policy transformation also included the development of a series of functional policies to facilitate effective and efficient acquisition programs. One such policy, which will be described by my colleague from the Office of the Director of Operational Test and Evaluation (DOT&E), is the Test and Evaluation Policy which encourages automated and integrated testing to reduce risk and accelerate acquisition timelines. Integrated testing requires the collaborative planning and execution of test phases and events to provide shared data in support of independent analysis, evaluation, and reporting, and we continue to work with the DOT&E and OUSD(R&E) across the continuum of development testing, operational test and evaluation, and live-fire test and evaluation.

The Department is actively establishing data and analysis capabilities to measure the effectiveness of the AAF and position the Department's data assets for enterprise-level strategic insight and decision-making on acquisition program portfolios. Pursuant to authority provided in Sections 912 and 913 of the Fiscal Year 2018 NDAA, the Department issued the first data strategy to develop and implement core data analysis and metrics to measure acquisition outcomes, ensuring the use of authoritative and transparent acquisition data to support the Department's strategic insight and decision-making at all levels associated with policy, process, and portfolio performance.

As the AAF pathways are beginning to be used in earnest across the defense acquisition enterprise, the initial focus of the data strategy was to establish foundational capabilities to support, enable, and measure the success of the reformed AAF policies and build flexibility into data management practices to allow the organization to easily pivot to support emerging enterprise-level data analysis needs. To that end, the Department prioritized three foundational capabilities to support the AAF pathways: data standards, a common data framework, and an analytic framework.

In conjunction with the Services, we have made significant progress to define and promulgate data standards for the AAF pathways via our Acquisition Visibility (AV) governance forums. We have completed the initial effort for the Middle Tier of Acquisition, Major Capability Acquisition, and Urgent Capability Acquisition pathways. Software Acquisition is currently underway with Acquisition of Services scheduled to begin soon, and we expect to complete data standards by the end of the fiscal year.

Additionally, we have carefully matured and integrated the AAF core data into a

common data framework, the Acquisition Visibility Data Framework (AVDF), to promote a common understanding and the efficient management of acquisition data as an asset that can be shared across the Department. The AVDF will provide the baseline to build in additional core data for other use cases and initiatives such as integrated acquisition portfolio review and management, which is an emerging priority for Fiscal Years 2021 and 2022.

Finally, we are in the early phases of implementing metrics for measuring performance of the AAF pathways. Initial metrics have been identified for each of the AAF pathways and a plan is in place to pilot them via manual data collection with a small number of programs, ultimately with the goal of publishing reports and visualizations in ADVANA around the end of the fiscal year. That said, much work remains to fully mature a comprehensive performance management program of iterative processes to measure the performance and effectiveness of organizational goals, policies, and processes to further our goal of improving acquisition outcomes for the Department.

Moving forward, the Department is committed to advancing these assessment initiatives in partnership with the Government Accountability Office and Congress. Since the GAO added Weapons System Acquisition to its High-Risk list in 1990, it has made hundreds of recommendations. As of December 2020, 114 recommendations remained open as noted by GAO in the March 2021 High-Risk Report, 56 of which GAO made since the last High-Risk Report in March 2019. Overall, GAO has issued 38 reports covering some aspect of Weapon System Acquisition since 2017.

V. Current Programs of Note

Across the Services, we are already seeing the AAF's pathways in action and making a difference in our ability to deliver capability to the Warfighter. In Fiscal Year 2019, the total funding for 86 MDAPs was $371.5 billion, with F-35, Ballistic Missile Defense System (BMDS), and VIRGINIA-Class Submarine (SSN 774) accounting for 38.6% of that total. The GAO's May 2020 Defense Acquisitions Annual Assessment found that although the 2019 MDAP procurement portfolio increased by $49 billion since 2018, it was largely due to quantity increases. At the same time these quantity increases led to efficiencies in lower average procurement unit costs, which provided more than $16 billion as an offset and would have totaled nearly $66 billion the prior year.

Integrated Visual Augmentation System

Across all the Services and U.S. Special Operations Command, there are currently 70 programs using the Middle Tier of Acquisition, 56 of which are rapid prototyping efforts and 14 of which are rapid fieldings. The Army's Integrated Visual Augmentation System, or IVAS, is one such program that has used the MTA authorities to shave significant time from the schedule, streamline metrics to better inform decisions and reporting, and provide greater flexibility to manage risk.

IVAS is a 28-month rapid prototyping effort that is leveraging commercial technology into government needs and standards to respond to an erosion in close combat capability relative to pacing threats identified in the National Defense Strategy. Integrating next-generation 24/7 situational awareness tools and high-resolution simulations to enable Soldier sensing, decision making, target acquisition, and target engagement, IVAS provides a single platform for Soldiers and Marines to train, rehearse, and fight both day and night. The resulting increase in lethality, mobility, and communications will help our Warfighters achieve overmatch against current and future adversaries in any domain.

IVAS used Other Transaction Authorities to competitively award 15 Firm Fixed Price agreements to a combination of traditional and non-traditional vendors. When coupled with the application of MTA authorities, the program has accelerated the schedule by several years when compared to the Department's old way of doing business. IVAS' success using the rapid prototyping pathway ultimately led to its entrance into the MTA rapid fielding pathway on December 14, 2020; it will undergo Initial Operational Testing and Evaluation this year with a production decision tentatively scheduled for Fiscal Year 2022.

F-35

The F-35 Lightning II is the Department of Defense's largest acquisition program and vitally important to our Nation's security. The F-35 is the premier, multi-mission strike fighter of choice for three U.S. services, seven international partners, and six Foreign Military Sales (FMS) customers, and the Department is committed to the F-35 as the tactical air system of choice. The program has reduced unit procurement cost per aircraft 26% since Fiscal Year 2014, and can now deliver 150 aircraft per year across the customer base. F-35 aircraft

production is now meeting goals for cost per aircraft and is the world's only 5th generation aircraft delivering at scale.

This success, realized in the Lot 12-14 production contract, was the result of solving long-standing challenges to ensure stable requirements and funding, realistic cost estimates, and a mature technical baseline, all accomplished through an acquisition strategy that acknowledged concurrency challenges. The program established a fixed configuration baseline for Block 3F and pushed higher-risk development efforts to the Block 4 modernization effort, enabling the program to focus on efficient production.

The F-35 we have today has shown exceptional performance in operations around the globe. We are paying for a fully-networked and survivable platform capable of prevailing in a high-density threat environment, as peer competitors continue to develop concepts and invest in capabilities specifically designed to counter our operational advantages. To continue outpacing these key competitors and win the high-end fight, we need a capable, available, and affordable F-35 as part of a deliberate fighter force design.

The Department currently prioritizes modernization over accelerating production, and delivering an aircraft that maintains dominance across its service life has always been the focus of the program. Upgrading the F-35's hardware and software systems through the Block 4 modernization effort, which is enabled by Technical Refresh-3 (TR-3), is critical for ensuring our Warfighters remain equipped with the best tools available. While leadership remains actively engaged in providing oversight and direction, the scale of the cost impact across three Services forces difficult decisions when vital capability requirements cost more than initially estimated.

The Department has prioritized modernization to keep these capabilities on track, working to provide a stable, realistic funding baseline. To that end, accelerating or increasing procurement quantities of Block 3F variants is counterproductive and wastes scarce resources as such planes will need to be pulled from the flight line and retrofitted when Block 4 capabilities deliver. The program is pursuing best practices in open systems architecture and common interfaces, and has established a mechanism to iterate the prioritization of requirements within the Block 4 capability set. It's also important to note that these modernization efforts are leveraging Continuous Capability Development and Delivery (C2D2), which is based on Agile software development processes and enabled by the Software

Acquisition Pathway. With this approach, DOD intends to deliver new aircraft and sustainment support capabilities to the Warfighter faster than it did during original development.

To date, the program has delivered over 620 total aircraft. Eleven services from nine countries have declared initial operational capability, and six services from five countries have conducted F-35 operational missions. The F-35 routinely demonstrates its unmatched capabilities in the hands of our joint and international warfighters and is a critical piece in defending the Nation against advanced and persistent threats. The F-35 delivers capability that bolsters deterrence and maintains our competitive advantage in a dynamic threat landscape, as well as strengthens economic, industrial, and security ties with key allies and partners around the globe to enable unprecedented coalition fighting.

FORD Class Carrier

Our Navy remains the most powerful navy in the world, and the Department is committed to ensuring it has the proper mix of capabilities across the spectrum to defend the Nation at sea. With their embarked Carrier Air Wings (CVW) and associated surface combatants of the Carrier Strike Group (CSG), our nuclear carriers are the most survivable, adaptable, and lethal airfields in the world.

The Navy took delivery of the U.S.S. Gerald Ford (CVN 78) in May 2017 and the ship has been undergoing qualification and testing since that time. CVN 78 is in the final month of an 18-month Post Delivery Test and Trials (PDT&T), which will end on April 30, 2021. Full Ship Shock Trials (FSST) are subsequently on track to execute from May to August this year.

Since the Post Shakedown Availability period ended in November 2019, the ship has spent approximately 210 days underway as well as 270 days in port as planned to conduct maintenance and modernization work. The ship has conducted nearly 8,000 launches and traps on Electromagnetic Aircraft Launch System (EMALS) and Advanced Arresting Gear (AAG) respectively. Seven out of 11 Advanced Weapons Elevators (AWE) have been turned over to the Navy; remaining elevators are expected to be operational for FSST.

The CVN 78 program introduced over 20 critical new technologies, including nuclear propulsion/electric plant design, EMALS, AAG, AWE, and an all-electric auxiliary system. There have been reliability challenges with EMALS, AAG, and AWE and the systems are below required performance levels. The Navy has incorporated a number of design changes

and upgrades to improve reliability and is fully committed to ensuring critical systems meet operational performance parameters. Lessons learned from CVN 78, to include taking a more disciplined, incremental approach to implementation of technology insertion after land-based testing has been conducted and across multiple ships, are expected to be fully incorporated into CVN 79 and other follow-on ships as feasible depending on cost and schedule impacts.

Shipbuilding

Reflecting extensive analysis of the threats and challenges facing the Nation, the Navy is focused on warfighting capability in the future distributed maritime environment, affordability, sustainability, and maintaining an industrial base capable of supporting the future fleet. Recognizing China and Russia as pacing threats, our Navy requires a larger, more modern fleet of both crewed and uncrewed ships. The future naval force will be shaped to outpace advancing adversarial challenges by strengthening submarine construction capacity and increasing surface combatant capability through construction of Arleigh Burke-Class Flight III Destroyers (DDG FLT III) and the new Constellation-Class Frigates (FFG 62).

The industrial base continues to be the fundamental enabler for achieving and sustaining the Navy's future fleet. The shipbuilding industry and its supporting vendor base, along with organic and contractor repair yards, constitute a national security imperative that must be steadfastly supported and developed to maintain a skilled workforce, as well as provide crucial construction and maintenance capabilities.

The Department has successfully executed such a strategy with critical suppliers via our Integrated Enterprise Plan (IEP), a joint effort in support of nuclear submarine and aircraft carrier programs. Through the IEP, annual assessments of critical suppliers are conducted and assistance is provided to ensure they are able to meet the production demands of the fleet. This fiscal year, Congress has enabled initiation of a similar program for surface combatants. Our major shipbuilders will continue to build both large and small surface combatants, and increased procurement of unmanned vessels will help strengthen and grow our smaller shipbuilders.

KC-46A

KC-46A is a top Air Force acquisition effort replacing roughly one-third of the legacy

tanker fleet with 179 new tankers by 2029. The KC-46A is in-flight refuelable (via receptacle), and able to refuel receptacle and probe-equipped aircraft on every mission. Additionally, the aircraft is capable of carrying cargo and passengers, perform aeromedical evacuation missions, and is equipped with defensive systems and avionics for global operations. Currently, the Air Force has 94 KC-46As on contract in Lots 1-7 with Boeing and, as of April 12, 2021, 44 have been delivered to four bases; the Air Force accepted the first aircraft delivery in January 2019.

The program is an example of the challenges associated with use of immature technology. In conjunction with Boeing, the Air Force is in the process of resolving two Category 1 deficiencies: the platform's Remote Vision System (RVS) and stiff boom. Both systems have required significant additional engineering work and investment, predominantly on the part of the contractor, to resolve the issues.

On April 2, 2020, the Air Force and Boeing signed the RVS 2.0 agreement to fix deficiencies in the system that enable the air refueling operator to see receiving aircraft and transfer fuel to them. The Air Force will direct and own the design solution, and Boeing will implement the solution at no additional cost to the government. Additionally, the KC-46's stiff boom makes fuel transfer to some fighter aircraft difficult. The Air Force executed an Engineering Change Proposal to fix the boom at the government's expense. The Air Force is targeting late 2023 to begin retrofit of RVS 2.0 and the stiff boom solution.

The Air Force is delaying the full rate production decision until late Fiscal Year 2024 to allow for completion of Initial Operational Test and Evaluation and receipt of the statutorily-required Beyond-Low Rate Production Report from the Director of Operational Test and Evaluation. The Air Force Milestone Decision Authority has approved low-rate initial production through Lot 9, which is expected in Fiscal Year 2023.

Next Generation Interceptor

The Next Generation Interceptor (NGI) is an advanced interceptor designed to protect the Nation against intercontinental ballistic missile attack, and has just entered the Technology Maturation and Risk Reduction (TMRR) phase of the acquisition life cycle. The DoD continues to uphold "fly before you buy" principles to ensure the overall system and components have been rigorously tested prior to making any procurement decisions.

Given that kill vehicle acquisitions have historically proven to be challenging, the

Department is leveraging critical lessons learned from previous programs to best position the NGI acquisition for success. The technical design challenges encountered on the earlier Redesigned Kill Vehicle have been prevented by an early focus on vetting NGI's requirements to ensure realism.

Additionally, the Department plans to fund two vendors through the critical design review to mitigate the schedule and technical risks associated with technology development. Ensuring we demonstrate mature technology early in the program and maintaining competition for as long as is affordable are critical lessons learned from earlier programs. The Missile Defense Agency awarded contracts to Lockheed Martin Corporation and the team of Northrop Grumman Systems Corporation and Raytheon Technology on March 23, 2021. The NGI program includes multiple contract types with a combined funding limitation of $1.6 billion through Fiscal Year 2022, and a total value of over $7.5 billion through Fiscal Year 2026.

Funding challenges are another area that have undermined similar acquisition programs in the past. On NGI, the Department obtained an accurate and realistic cost estimate from the Cost Assessment and Program Evaluation team, and the Department has previously shared that with Congress. At the outset of the TMRR phase, DoD committed to funding the effort to that independent cost estimate. Starting with a realistic cost estimate and committing the necessary funds up-front are critical lessons learned from earlier programs.

Ground Based Strategic Deterrent

The Ground Based Strategic Deterrent (GBSD) program is a full-system replacement intercontinental ballistic missile (ICBM) for the aging Minuteman III weapon system. GBSD will modernize and replace Minuteman III flight systems and weapon system command and control, while converting current launch facilities to the GBSD configuration. GBSD will also construct new launch centers, and construct or recapitalize operational and support facilities. GBSD is a model for modern design and development of complex systems, implementing an enterprise-wide digital acquisition strategy—including using digital engineering approaches such as model-based systems engineering—to ensure on-time and on-budget capability delivery to the Warfighter.

The program fostered competition as long as possible to ensure GBSD remained affordable at each stage of its development. The Air Force conducted a full and open competition for the TMRR phase contract, executing a protest-free source selection resulting in two competitive contracts awarded in August 2016. Competition remained in effect through the Air

Force's competitive request for proposals release from the two contractors in June 2019 for the Engineering and Manufacturing Development (EMD) contract. Although one contractor did not bid for the EMD phase contract, the other contractor still made it offer in a competitive environment.

The Air Force developed a thorough data rights strategy for every stage of the GBSD program, recognizing that affordably sustaining the weapon system would require both technical data and the rights to use it. The Air Force required GBSD bidders to assert data rights associated with contract deliverables as part of their competitive TMRR proposals, and included government ownership of the technical baseline as an evaluation criteria. Throughout TMRR, the Air Force constantly reviewed every GBSD contractor deliverable to ensure data rights claimed were in-line with the terms of the contract. During the EMD contract negotiations, the Air Force successfully secured no less than Government Purpose Rights for all GBSD program data delivered by the prime contractor and its subcontractors during the EMD phase. The GBSD program's ability to retain both the data and secure the data rights to use it will ensure the Department has the options to sustain the program affordably and competitively throughout its life cycle, rather than being beholden to a single contractor.

GBSD's digital acquisition approach includes the use of digital engineering tools, such as model-based systems engineering, to create a Government Reference Architecture (GRA). The GRA powerfully captures and portrays GBSD weapon system capabilities, requirements, functions, and interfaces—as well as the relationships between them—in such a way that traditional paper documents cannot. It permits management of the critical interfaces needed for a modular open systems architecture, and the ability to understand impacts of capability and requirements iteration such that GBSD can be affordably adaptable to future technology insertion and evolving threats over its life cycle.

Finally, the Department built robust cybersecurity into the GBSD program design from inception. Through the use of innovative practices such as the System-Theoretic Process Analysis for Security (STPA-Sec), the GBSD program continues to assess cyber vulnerabilities across the entire weapon system. Further, by drawing the GBSD cybersecurity boundary around not just the weapon system, but also the government and contractor program offices developing GBSD, the Department protects sensitive GBSD program data from exfiltration no matter where it resides. GBSD's cybersecurity approach led to it being one of the pilot programs the

Department is using to implement the Strategic Cybersecurity Program (SCP) mandated by the Fiscal Year 2018 NDAA Section 1640, and the corresponding amendments made by Section 1712 of the Fiscal Year 2021 NDAA.

National Security Space Launch

In 2014, Congress directed the Department to phase out usage of the Russian RD-180 rocket engine. In order to maintain assured access to space, Congress authorized a substantial increase in funding to develop domestic rocket engine technologies and capability. The Department used this opportunity to strategically pursue public-private partnerships (PPPs) for developing and advancing new technologies as well as modifying existing commercial launch vehicles to meet all national security space (NSS) requirements, ultimately ending reliance on the RD-180. This transition also enabled a shift away from sole source procurements, reintroducing competition with launch service providers capable of meetings all NSS requirements.

Our successful PPP initiative resulted in four providers competing for the Department's launch service procurement contracts in Fiscal Years 2020 through 2024. In August 2020, the National Security Space Launch (NSSL) program awarded contracts to two providers that significantly reduced launch service procurement costs and, for the first time, deliver true, assured access to space. The Department is currently baselining the program and expects the average procurement unit cost to be significantly less than originally estimated in 2019.

VI. Conclusion

In recent years, the breadth and depth of actions the Department has taken to transform the Defense Acquisition System have enabled greater flexibility in the way we do business as well as accelerated our ability to deliver effective capability to our Warfighters. The transparency and partnership of both Congress and the committee staff made these efforts possible.

While the Department continues implementing data collection and analysis capabilities to measure the effectiveness of these innovations and policy reforms, our team is committed to fully maturing a comprehensive performance management program of iterative processes to improve acquisition outcomes. As an increasing number of programs leverage the Adaptive

Acquisition Framework's pathways, the Department's data assets will improve enterprise-level strategic insight and decision-making on acquisition program portfolios.

It's important to note that the challenges stemming from the COVID-19 pandemic over the last year have been unprecedented in every aspect, and the acquisition enterprise is no exception. Across the Defense Industrial Base, our partners were impacted by facility closures and measures to ensure the health and safety of personnel; these impacts were especially burdensome to small- and medium-sized companies. While we expect to see cost growth in our contracts and in rates as a result of these impacts, which will undoubtedly impact our acquisition programs over time, as we look to the future we must remain committed to ensuring a secure and resilient industrial base. These partners are critical in delivering the advanced capability required to maintain our competitive advantage.

From the onset, the Adaptive Acquisition Framework and other innovations we've implemented were intended provide our Defense Acquisition System an adaptable, responsive construct capable of satisfying emerging requirements. We look forward to building upon the momentum Congress has enabled and remain focused on ensuring we provide the right tools to deliver-end-to-end operational capability to our Warfighters at the speed of relevance.