

**DEPARTMENT OF DEFENSE AUTHORIZATION
REQUEST FOR APPROPRIATIONS FOR FISCAL
YEAR 2025 AND THE FUTURE YEARS DEFENSE
PROGRAM**

HEARINGS

BEFORE THE

**COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE**

ONE HUNDRED EIGHTEENTH CONGRESS

SECOND SESSION
ON

S. 4638

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 2025 FOR MILITARY
ACTIVITIES OF THE DEPARTMENT OF DEFENSE, FOR MILITARY CON-
STRUCTION, AND FOR DEFENSE ACTIVITIES OF THE DEPARTMENT OF
ENERGY, TO PRESCRIBE MILITARY PERSONNEL STRENGTHS FOR
SUCH FISCAL YEAR, AND FOR OTHER PURPOSES

**PART 4
AIRLAND**

MAY 8, 15, 2024



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**DEPARTMENT OF DEFENSE AUTHORIZATION
FOR APPROPRIATIONS FOR FISCAL YEAR
2025 AND THE FUTURE YEARS DEFENSE
PROGRAM**

WEDNESDAY, MAY 8, 2024

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

AIR FORCE MODERNIZATION

The Subcommittee met, pursuant to notice, at 4 p.m. in room SR-232A, Russell Senate Office Building, Senator Mark Kelly (Chairman of the Subcommittee) presiding.

Committee Members present: Kelly, Blumenthal, Peters, Duckworth, Cotton, Ernst, Scott, and Mullin.

OPENING STATEMENT OF SENATOR MARK KELLY

Senator KELLY. This hearing will come to order.

I want to welcome our witnesses and give you our thanks for testifying in front of this subcommittee today. General Spain, General Harris, welcome. Secretary Hunter, General Moore, welcome back.

The budget request in front of us today was developed under the tight constraints of the Fiscal Responsibility Act. Some of your sister services were pushed into even more painful decisions than the Air Force has had to make, but we should not understate the difficulty of the tradeoffs that have been made as you seek to modernize our forces to maintain our competitive edge with our most advanced adversaries, while also maintaining necessary capabilities to respond to the threats that we face today.

Perhaps most notable is that the Air Force has proposed to divest 250 aircraft in fiscal year 2025. Now, each of these proposed divestments has their own arguments for and against, but the broader picture is an Air Force that is shrinking. It is an Air Force that is forgoing the modernization of some legacy platforms, including F-15, F-16, and F-22, and directly divesting of others, in order to invest in fielding a highly capable future force. The details of that highly capable future force, and the threat that is driving you there, are difficult to talk about in an unclassified setting. What we can say is it will be a smaller but better force that is betting on future programs like Collaborative Combat Aircraft to reach the capacity we will need.

In addition to risks in these modernization plans themselves we need to be upfront about the risks we are taking to get there. This year's budget request proposes to retire 190 fighters and attack aircraft and procure only 60. That would be 130 fewer tactical aircraft for pilots to maintain proficiency and 130 fewer aircraft across which to spread those flight hours. That would mean 130 fewer tactical aircraft to provide forces to meet the combatant commander's needs, and I see no reason to believe that these demands will fall for the foreseeable future.

The merits of each proposed divestment must be considered separately. Not all aircraft are created equal, and those disparities only grow over decades of service life.

We do understand the pressures the Air Force is under in the procurement account and elsewhere. Two of the three legs of the nuclear triad are under your umbrella, presenting an enormous, fixed wedge in your plans, and of course, the other side does get a vote. The most stressing threats do not lend themselves to incremental improvements, let alone standing still.

Finally, the Air Force is embarking on a significant structure overhaul to optimize itself for great power competition. The ambition is laudable, and I look forward to hearing your testimony on your vision for these efforts.

I look forward to hearing from our Air Force witnesses about the challenges and opportunities they face in modernizing the Air Force, as we finish our scheduled hearings before we mark up the DOD authorization request.

Anywhere we look in the Air Force program we can see tradeoffs that are being made in this request between strategy and budget. That includes with the Compass Call aircraft, where we are replacing the current fleet with a smaller number of upgraded aircraft that will not be delivered until 2029.

It also includes the Air Force's plan that would have truncated the HH-60 Whiskey program after fiscal year 2023. We need to hear how this reduction in the inventory objective for these forces would affect the Air Force's ability to rescue downed pilots and aircrews in future conflicts.

I am especially interested in hearing from the witnesses how the Air Force plans to manage its multiple modernization programs in ways that expeditiously deliver the capabilities our warfighters need, while protecting taxpayer dollars and avoiding too much risk to supporting combatant commander requirements. These should include the F-35 fighter, the B-21 bomber, the KC-46 tanker, and a new program to procure "Wedgetail" aircraft to replace some of the E-3 Airborne Warning and Control Systems (AWACS), aircraft, also the Advanced Air Battle Management System (ABMS), which seeks to replace the E-8 JSTARS [Joint Surveillance Target Attack Radar System] capability, and is the Air Force's contribution to the Defense Department's Joint All Domain Command and Control program.

The F-35, the core of the tactical air forces for the next few decades, has very real availability, affordability, and modernization challenges. It seems the Air Force has recently made some hard decisions when it comes to the F-35 upgrade efforts, accepting a diminished capability in order to hopefully regain at least some mo-

mentum and avoid parking a large number of jets while the TR-3 software matures.

It also sounds like the Air Force is doing some hard prioritization on Block 4 capabilities to bring the schedule back to where it needs to be, but whatever that capability set is going to be, it needs to be locked in soon so we understand what the demands are going to be on the engine and cooling systems of the aircraft.

Finally, we need to ensure that subsequent Air Force investments yield the capabilities necessary to compete in any future conflicts, such as hypersonic missiles, the Next Generation Air Dominance (NGAD) fighter program, and others. We cannot ignore needs to recapitalize other existing capabilities that give our forces a competitive edge, such as our tanker forces. We will also take into account such lower visibility, but very important capabilities such as the investments we need to make to ensure adequacy of training ranges for our fifth-generation fighters and other next generation systems.

I am going to stop there and get to our questions, but I want to thank our witnesses again for their service and for appearing before the committee.

Yes, we will go to opening statements. Thank you very much, and then when Senator Cotton arrives we will give him the opportunity for an opening statement. So let me start with General Spain.

**STATEMENT OF LIEUTENANT GENERAL ADRIAN L. SPAIN,
USAF, DEPUTY CHIEF OF STAFF FOR OPERATIONS**

Lieutenant General SPAIN. Great. Thanks, Chairman Kelly, Ranking Member Cotton is not here at this time, but Senator Ernst, thank you for the opportunity to provide testimony on Air Force modernization in review of the Department of the Air Force's Fiscal Year 2025 Presidential Budget.

As the Air Force continues to evolve to meet the needs of the current and future strategic environment, we must optimize how we organize, train, and equip Air Force forces, and we must do so in light of increasing global demands on the Joint Force.

We have made great strides in our journey to transform the service and to task organize units of action with clearly defined force elements capable of meeting the worldwide demands of this strategic environment and its associated threats, but there is more to be done.

Clarity in the structure of our force presentation and force generation models has allowed us to better articulate capability, capacity, operational readiness, and risks to both ourselves and to the Joint Force. As we continue on this path, fiscal reality means we must take measured risk, even as we transform and modernize to meet those needs.

The Air Force Force Generation Model (AFFORGEN), in conjunction with a definable force presentation construct, has been successful in providing predictability for our service-retained forces, and continued improvement in this model is allowing our airmen to deploy as a team. As our force presentation model continues to evolve from the Air Expeditionary Wing constructive, effective for the past couple of decades, to Expeditionary Air Bases, to Air Task

Forces, and soon Combat Wings, we are shifting focus back to warfighting in a peer competitor environment. We will carefully balance the risk in our garrison functions in order to prioritize focus on the combat mission and warfighting effectiveness.

While we are in the midst of this important transition the Air Force must continue to make deliberate and measured risk in current operational readiness in order to modernize our forces in line with the Department's Strategic Readiness Framework mentioned in the National Defense Strategy (NDS). We have had to make tough choices to order to prioritize investments in manpower, training infrastructure, Flying Hour Program (FHP), and Weapons System Sustainment (WSS), all aspects critical to enabling a ready force.

DOD capabilities and those of peer, near-peer, and potential adversaries are advancing at a rate that challenges our ability to provide relevant and realistic training. In order to maintain a qualitative advantage in multi-domain, full-spectrum employment, we are modernizing our training ranges and legacy airspace, and we have increased investments in virtual and synthetic training, acknowledging that while not a replacement for flying, certain factors will demand high-end training be accomplished in a synthetic or augmented environment.

The Air Force remains committed to meeting the needs of the service and its airmen through continuous, data-driven feedback. We have instituted multiple meaningful initiatives over the years regarding pilot production. Although it remains constrained we are taking a holistic, ecosystem-wide approach to operational readiness and data accountability, which in turn has refined our pilot reporting information, awareness, and trust in the information to shape future initiatives, and we are starting to see positive indicators on those results.

We appreciate the support the committee on additional efforts to improve rated force management and pilot production to include improved retention initiatives. I thank you for your support and for the opportunity to testify today, and look forward to the questions and future collaboration with the committee.

Senator KELLY. Thank you, General. Secretary Hunter.

STATEMENT OF THE HONORABLE ANDREW P. HUNTER, ASSISTANT SECRETARY OF THE AIR FORCE FOR ACQUISITION, TECHNOLOGY, AND LOGISTICS

Mr. HUNTER. Thank you, Chairman Kelly, and also thanks to Ranking Member Cotton for having us here today to provide testimony on our Fiscal Year 2025 President's Budget Request for Air Force modernization.

As we testified last year, our operational imperatives work highlighted the challenges of integration and the importance of tight partnerships between the operational and acquisition communities in the Department of the Air Force and developing the necessary capabilities to deter and win in future conflicts.

Insights from that work directly informed, and I would say shaped and enabled, our ability to make the challenging tradeoffs that we had to make in our 2025 budget request that you alluded to, Mr. Chairman, in your opening statement. While not all of those

choices were ones that we would have necessarily preferred to have to make, it was really essential that had the analytical work and the underpinning of our operational imperative to inform those choices, and it will continue to be so in future year budget requests, which are likely to be equally challenging, based on the current budget environment.

It is also essential, as you alluded to, that we organize ourselves to do that work repeatedly as a normal functioning of the Air Force enterprise, and that really informed our effort to reoptimize for great power competition and make organizational changes so that the work that we did under operational imperatives is something that we do on a daily basis and not something that is done by exception, as it was when we undertook initially to study the operational imperatives. We ask for your support for our budget request, which really continues to focus and build upon the modernization required to meet our operational needs in the future.

We remain steadfast in resourcing these top priorities as well as other, as well as nuclear modernization, but our resources, as you noted, were limited by the 2023 Fiscal Responsibility Act. The impacts of the FRA, combined with funding through continuing resolutions, which were extended this year, and restrictions on our ability to retire older weapons systems divert our ability to focus on delivering decisive combat power and put that capability at risk. Nothing could be more imperative than our need to receive timely authorization and appropriations of our fiscal year 2025 budget request.

As I noted, this request continues our modernization efforts, such as the development of the Collaborative Combat Aircraft, the Next Generation Air Dominance family of systems, KC-46, continuation of uninterrupted tanker recapitalization, our T-7 training aircraft, the E-7 Wedgetail, and the critical munitions that are essential to our future operations. It also allows us to continue fielding platforms like the F-15EX, the F-15 EAPWSS, upgrades to the F-22 fighter, F-35 Block 4 capability, as well as sustaining our current fleet.

I particularly want to highlight the CCA [Collaborative Combat Aircraft] program as the exemplar of our efforts to develop and field new capabilities rapidly, affordably, and at scale. In April 2024, the DAF exercised two option-award contracts for CCA Increment 1 to Anduril and General Atomics to conduct detailed design, build, and test of production-representative test articles. In fiscal year 2025, we will begin concept refinement for the next CCA increment, as we also continue to explore international partnership participation with us on the CCA program.

All of the work that you see happening in our CCA program has essentially been initiated and taken forward in the last 2 years. So this is a program that is going from initiation to moving toward production on the most rapid time scale I have ever seen for a system of this complexity.

Since time is of the essence in capable development, we also want to thank the Congress, and particularly the Members of this Subcommittee, who are critical to the effort, for providing the Department with Quick Start authority in Section 229 of the Fiscal Year 2024 National Defense Authorization Act.

Secretary Kendall, when he testified to the committee, highlighted a program that was just approved through this Quick Start authority, which will initiate work on providing C-3 battle management for moving target indication at scale, that we are initiating and have initiated this year. This effort is an element of the operational imperatives funding request in fiscal year 2025, and is included in the budget request that you will be considering this year. The Quick Start authority allowed us to begin that work in this year and not wait for next year's appropriation.

Thank you again for the opportunity to testify, and we look forward to working with Congress, industry, and the communities that support us to defend the Nation.

Senator KELLY. Thank you, Mr. Secretary. General Harris.

**STATEMENT OF LIEUTENANT GENERAL DAVID A. HARRIS,
USAF, DEPUTY CHIEF OF STAFF FOR STRATEGY, INTEGRA-
TION, AND REQUIREMENTS**

Lieutenant General HARRIS. Chairman Kelly and Ranking Member Cotton, I really do appreciate the opportunity to come and talk to you about our modernization efforts in the Air Force. We know that your support is vital to not only our Air Force but our airmen as we go forward and develop concepts and capabilities to confront our toughest challenges.

Our current warfighting advantages are actively being tested in both traditional and non-traditional ways, and also our adversaries are determined to contest our activities in all domains of warfare. Success in the future operating environment will require some different capabilities. Perhaps more importantly, winning will require a new level of integration across the Air Force and the Joint Force as advantages are becoming more relative and increasingly transient.

We are demonstrating the resolve to rapidly adapt and effectively compete, and we see that today in PACAP, USAFE, as well as CENTCOM. We are transforming concepts, capabilities, and organizational design to evolve the Air Force at a rate that will ensure our warfighting advantage.

However, today our Air Force is out of balance. Our operational imperative efforts and future force design analysis highlight several strategic areas of modernization that must be addressed, a modernization that moves away from platform-centric views to a threat-informed and systems-focused approach to deliver the right effects. I am really referring to the Integrated Capabilities Command of our GPC effort.

The threat environment is as complex and dynamic as it has ever been. What worked well before may not work well in the future. This is why the United States Air Force must continue to aggressively modernize. We cannot scale with our adversaries in terms of capacity alone. Instead, we must develop the right balance of integrated capabilities to maintain an operational advantage to deter adversaries. This requires us to transition to a force that can generate effects from longer range, with sufficient mass, through a tailored mix of new and existing, and maybe even modified, capabilities, to shape the battle space for the Joint Force.

Our investments in the fiscal year 2025 budget continue to build on the work to modernize and rebalance the force, as I have mentioned. We are making considerable progress across areas such as kill chains, multi-domain sensing grids, unmanned systems, but there is significantly more work to be done. We need your support now more than ever to rebalance that force for a credible deterrence, and if needed to win in future conflict.

Thank you again for the opportunity to speak to you today, and I look forward to answering any of the questions you may have.

Senator KELLY. Thank you, General. General Moore.

STATEMENT OF LIEUTENANT GENERAL RICHARD G. MOORE, JR., USAF, DEPUTY CHIEF OF STAFF FOR PLANS AND PROGRAMS

Lieutenant General MOORE. Thank you, Chairman Kelly, Ranking Member Cotton, and distinguished Members of this Subcommittee. It is an honor to be able to testify today on the Air Force's defense authorization request for fiscal year 2025. On behalf of the Department, thank you both, as well as the members of the committee, for your continued leadership and your unwavering support of the United States military.

Today we are in the midst of a difficult transition from a legacy force to one built to deter Chinese aggression and win against any peer competitor. Fiscal year 2025 presents another opportunity for the Department of the Air Force and the Congress to work together to remain the world's preeminent power projection force.

Through this partnership we have made substantial steps toward achieving the force the Nation needs, but we have much more work to do. Our most valuable resources—manpower, money, and time—remain limited. We must be disciplined in our decisions and focus our investments on what we need most.

The Air Force strategy is not to divest. The Air Force strategy is to modernize. But this strategy requires us to make some difficult choices. We do not want to get rid of airplanes, but in order to invest in modernized capabilities, and most importantly pivot our airmen from the past to the future, we have to stop funding things that do not measurably bring us closer to the goal. In our fiscal year 2025 request, the Air Force remains focused on achieving a fighter force mix that provides a capable, sustainable, survivable, and affordable force that can operate across a range of mission sets.

Most notably, our fiscal year 2025 request seeks to preserve our advances in modernization while shaping future investments around long-range kill chains and the elements that support them. This contribution to the Joint Force is central to our ability to deter, and if necessary, defeat aggression.

We continue to make significant progress toward closing key capability gaps, but the hard choices are not all behind us. We must consolidate the things we need that are relevant to the future fight and make them the most relevant that we can. We must remain united as a Department and as a Nation to successfully overcome barrier to change. We cannot fail in this endeavor.

Can we keep more legacy aircraft? Yes. Can we increase today's readiness? Yes. Can we get after tomorrow's modernization? Yes.

But we cannot do all of these things at once, particularly in light of reduced buying power as a result of the Fiscal Responsibility Act plus the workforce, supply chain, and inflation issues which remain as a relic of COVID. We have to strategically spread risk over time. We have chosen a strategy that allows us to move past what is holding us back from being able to compete.

But our adversaries are watching. We must act now to make difficult choices and show them our commitment, and time is not on our side. American lives and those of our allies and partners rely on our ability to deliver airpower. We look forward to once again working with Congress to shape a lethal force that does exactly that and also efficiently and affordably provides the most capable airpower for our Nation.

I am honored to sit here today with Mr. Hunter, General Harris, and General Spain, and we look forward to answering your questions.

[The joint prepared statement of The Honorable Andrew P. Hunter, Lieutenant General Richard G. Moore, Jr., Lieutenant General David A. Harris, and Lieutenant General Adrian L. Spain follows:]

JOINT PREPARED STATEMENT BY THE HONORABLE ANDREW P. HUNTER, LIEUTENANT GENERAL RICHARD G. MOORE, JR., LIEUTENANT GENERAL DAVID A. HARRIS, AND LIEUTENANT GENERAL ADRIAN L. SPAIN]

INTRODUCTION

Chairman Kelly, Ranking Member Cotton, and distinguished Members of the Subcommittee, thank you for having us here today to provide testimony on The Department of the Air Force's (DAF) Fiscal Year 2025 President's Budget Request for Air Force modernization.

The Department of the Air Force is critical to our national defense. Our capabilities underwrite those of the Joint Force and we are uniquely suited to provide this cornerstone of the Nation's defense. This is particularly true of the long-range strike and power projection capabilities that are the purview of this subcommittee and that we will discuss today.

The Department of the Air Force's Fiscal Year 2025 President's Budget Request reflects our commitment to developing a threat-informed, concept-driven future Air Force as framed by the National Defense Strategy (NDS), but resources have been limited by the 2023 Fiscal Responsibility Act (FRA). The FRA spending caps increase risk and force difficult tradeoffs. We have made significant progress in identifying the capabilities the DAF will need to develop and field to prevail against our adversaries. However, the DAF is facing a significant, dangerous shift in the strategic security environment where our historical dominance in military operations will be challenged by adversaries intent on denying us previously assumed advantage in the air and space domains. The DAF has historically adapted to key inflection points to best compete in emerging security landscapes and our current efforts to achieve greater organizational agility by reoptimizing for Great Power Competition (GPC) once again illustrate this key trait.

The Secretary of the Air Force has made clear we are out of time and must reoptimize now. We seek to anticipate and develop the capabilities to dominate emerging military competitions before would-be adversaries can master the ability to threaten our vital interests. To achieve a more competitive posture, the DAF is implementing major changes centered on how we Develop People, Generate Readiness, Project Power, and Develop Integrated Capabilities. The Operational Imperatives work highlighted the challenges of integration and the importance of tight partnerships between the operational and acquisition communities. The capability development-related GPC organizational changes we are making at the Secretariat and Major Command levels institutionalize these lessons learned. The DAF is establishing a single, authoritative entity focused on identifying and prioritizing future operational capabilities, driving cross-platform mission systems integration and capability development, establishing focused acquisition Systems Centers for effective portfolio and lifecycle management, and standing up relevant Secretariat offices to inform senior leaders on enterprise-wide decisions. This will result in a more agile and integrated

acquisition system that delivers capabilities—quickly and at scale—while demonstrating to adversaries our resolve to rapidly adapt our organization to effectively compete today and win decisively in any future conflict.

Since time is of the essence in capability development, we are thankful for Congress providing the Section 229 “Quick Start” provision in the fiscal year 2024 NDAA and we look forward to providing information on the specific initiatives using this authority in the near future. While grateful for the support, we continue to be hampered by funding through Continuing Resolutions and restrictions on the retirement of outdated fighter, tanker, cargo, and command and control aircraft. Compromises that divert focus from our operational imperatives put our military’s ability to deliver decisive combat power at great risk. These short-term tradeoffs could prevent us from scaling a future force up to the numbers required to provide us with the military capabilities we need. We are conscious of the difficulties associated with these changes and are eager for continued collaboration with Congress, industry, and the communities that support our Air Bases to ensure our Nation’s security.

CONTINUING THE EVOLUTION

Global Force Generation

In line with our sister services, the Air Force has a history of evolving to meet the demands of the time. As we continue to evolve to meet the needs of the current and future strategic environment, we must optimize how we organize, train, and equip Air Force Forces and we must do so in an environment where the demands on the Joint Force continue to increase globally. We have made great strides on our journey to transform the service into task-organized units of action, with clearly defined force elements, capable of meeting the worldwide demands of this strategic environment and its associated threats—but there is more work to be done. Clarity in the structure of our force presentation and force generation models have allowed us to better articulate capability, capacity, operational readiness, and risk to ourselves and to the Joint Force. As we continue on this path, fiscal reality means we must continue to take measured risk even as we transform and modernize to meet these needs.

The Air Force Force Generation (AFFORGEN) model, in conjunction with a definable force presentation construct, has been successful in providing predictability for our service-retained forces and continued improvement in this model is allowing our Airmen to train and deploy as a team. As our force presentation model continues to evolve from the Air Expeditionary Wing construct, which was effective for the past couple of decades, to Expeditionary Air Bases (XABs), Air Task Forces (ATFs), and soon Combat Wings, we are shifting focus back to warfighting in a peer competitor environment. We will carefully balance the risk in our garrison missions, in order to prioritize installation and Airmen focus on the combat mission and warfighting effectiveness.

Readiness

While we are in the midst of this important transition from a legacy force presentation model optimized for operations with extreme overmatch from uncontested airfields, to one modernized to deter major power aggression and defeat any peer competitor, the Air Force must continue to take measured risk in current operational readiness in order to modernize our forces in line with the Department’s Strategic Readiness Framework mentioned in the National Defense Strategy (NDS). We’ve had to make tough choices to include divestment of older systems, less relevant for the high-end fight, and we must prioritize investments in manpower, training infrastructure, Flying Hour Program (FHP), and Weapons System Sustainment (WSS), aspects critical to enabling a ready force.

DOD capabilities and those of peer, near-peer, and potential adversaries are advancing at a rate that challenges our ability to provide relevant and realistic training. In order to maintain a qualitative advantage through superior training in multi-domain, full-spectrum employment, we are modernizing our training ranges and legacy airspace to enable warfighters to train for the peer fight in an all-domain, contested environment against relevant and realistic threats. The Air Force has substantial, planned investments during the next FYDP to sustain, modernize, and add training infrastructure to achieve this capability in the 2030 timeframe. We are similarly increasing investments in virtual and synthetic training environments for the future, acknowledging that while not a replacement for flying, factors such as OPSEC, threat replication, emitters and tactics, techniques and procedures will demand more high-end training be accomplished in a synthetic or augmented environment.

Rated Force Management

The Air Force remains committed to meeting the needs of the service and its Airmen through experimentation and continuous, data-driven feedback and we appreciate all the support the committee continues to provide for our Airmen. Despite multiple meaningful initiatives and the efforts of thousands of Airmen at multiple locations, pilot production continues to remain constrained. Fiscal Year 2023 Undergraduate Pilot Training (UPT) production graduated 1,315 pilots, which was an increase from fiscal year 2022, but still below the required 1,500 pilots we need to produce each year. We have taken a holistic, ecosystem-wide approach to operational readiness and data accountability, which in turn has refined our pilot reporting information, awareness, and trust in the information to shape future initiatives. Additional efforts to improve rated force management and pilot production include the Air Mobility Fundamentals—Simulator (AMF-S) program, and improved retention initiatives supported by the committee. Until production improves, we will continue to prioritize operations, test, and training units and take risk in staffs; if that position becomes untenable, we will be forced to shift risk to those historically protected units.

CURRENT CAPACITY AND CAPABILITY

Following NDS guidance, the DAF seeks to invest in technologies and field systems that are both lethal and survivable against tomorrow's threats. Our adversaries continue to erode our historically superior military advantages with ever-advancing capabilities specifically designed to counter traditional air power. This ultimately means transitioning away from legacy platforms to free up manpower and resources to modernize and field more credible systems. If we are to modernize to address the emerging threat, we must use resources tied to our legacy platforms and weapons systems that are decreasing in relevance today and will be irrelevant in a future peer conflict. Retaining systems that have either limited contributions, or are simply not relevant in the future fight, delays modernization and exacerbates future capability gaps while adversary advancements in the air and space domains only increase annually. If deterrence fails, our Airmen must have the training, tools, munitions, and platforms required to win. We must recognize the inherent tension between near-term and future risk to strike the right balance.

Bomber Force Structure

Our budget request supports the NDS's call for continued modernization of the nuclear triad, to ensure a safe, secure, and effective nuclear deterrent to backstop our integrated deterrence approach. Air Force bombers anchor the air leg of the Nation's Nuclear Triad. As a unique national security capability, the B-21 represents the future of this bomber force. As modernization continues, the Air Force will gradually transition to next-generation B-21s and modernized B-52s to provide nuclear and conventional global strike options for decades to come.

B-21

The B-21 is a Special Access Program (SAP). Budget year requests at the appropriation level are unclassified, but most supporting details are classified and provided to Congress in appropriate classified forums. The Fiscal Year 2025 President's Budget includes \$2.8 billion in Research Development Test & Evaluation (RDT&E) for the continuation of Engineering and Manufacturing Development (EMD), and also includes modernization activities. Modernization includes, but is not limited to, Long Range Standoff Weapon (LRSO) integration, new conventional weapons integration, air vehicle provisioning for future capabilities, sensors, and continued nuclear certification activities. The Fiscal Year 2025 President's Budget includes \$2.7 billion in Procurement funding for the execution toward Lot 3 of Low Rate Initial Production (LRIP). In addition to aircraft costs, which includes Advance Procurement, this also provides funding for producibility improvements, approved LRIP Active Management strategies, initial spares, support equipment, Diminishing Manufacturing Sources and Material Shortages (DMSMS) or obsolescence issues, and depot standup. The Fiscal Year 2025 President's Budget includes \$220.3 million in Main Operating Bases (MOB) Military Construction (MILCON) funding for three projects at Ellsworth Air Force Base (AFB), SD, the Addition and Alteration (ADAL) Squadron Ops facility, Environmental Protection Shelters (EPS), and Alert Apron, as well as continued Planning & Design. The Fiscal Year 2025 President's Budget also supports funding for two MILCON projects at Dyess AFB, TX, Refueler Parking and Fuels Admin Lab, as well as continued Planning & Design.

B-52 Squadrons

The Air Force is transitioning to a two-bomber force: B-21 and modernized B-52 aircraft. The Fiscal Year 2025 President's Budget request for all B-52 modifications is \$1.046 billion RDT&E and \$215.013 million procurement. This funding enables the Air Force to advance the most comprehensive modernization in the platform's history, executing numerous on-going modernization programs in various acquisition phases from early development phase through production and fielding phase. Major B-52 modernization efforts include the Commercial Engine Replacement Program (CERP) and the Radar Modernization Program (RMP).

The B-52J CERP has a Fiscal Year 2025 President's Budget request of \$785.0 million RDT&E and \$2.1 million for advance procurement of Common Graphics Processing Unit (GPU) cards for the display and sensor system processor (DASSP). B-52J CERP initiated as a Middle Tier Acquisition (MTA) program, selected Boeing as integrator (March 2018), selected Rolls-Royce as engine provider (September 2021), completed Preliminary Design Review (PDR) (October 2022), and delivered a virtual System Prototype (vSP) that provided residual operational capability to Air Force Global Strike Command (AFGSC) (October 2023). B-52J CERP has completed MTA requirements by delivering a digital prototype and has transitioned to a Major Capability Acquisition (MCA) (November 2023). The program continues to mature cost and schedule to set a program baseline at Milestone B targeted for September 2024. In fiscal year 2025 the program will be in the EMD phase, and will be integrating the electronics controls, displays, electrical systems, engine support components, and advanced engine testing required for conversion to B-52J.

B-52H Radar Modernization Program (RMP) has a Fiscal Year 2025 President's Budget request of \$179.8 million RDT&E and \$129.5 million in procurement. B-52H RMP replaced the first B-52 EMD aircraft's 1980's radar system with Raytheon's advanced, modern, off-the-shelf APG-79 radar system in September 2023. The program entered EMD on June 10, 2021 and awarded a development contract to Boeing Defense on June 14, 2021. B-52H RMP completed system-level Critical Design Review (CDR) in February 2022. Boeing started modifying the first B-52H RMP test aircraft in May 2023 and USAF will begin developmental flight tests in November 2024 at Edwards AFB. Milestone C Decision Point #1 is scheduled for 2nd quarter fiscal year 2025, and Milestone C Decision Point #2 is scheduled for 4th quarter fiscal year 2025.

B-2

The Fiscal Year 2025 President's Budget requests \$41.2 million in RDT&E for B-2 to continue development and flight testing to modernize avionics, communications systems, cockpit displays, armament systems, low-observable components, aircraft supportability improvements, and support equipment development. The Fiscal Year 2025 President's Budget also requests \$101.5 million in procurement to allow the Air Force to purchase and install equipment for modernized avionics, communications systems, cockpit displays, low-observable components, and training systems, as well as to provide maintenance and repair capabilities for B-2 systems.

B-1

The Fiscal Year 2025 President's Budget requests \$17.9 million in RDT&E to complete development and flight testing to modernize the B-1's secure communications systems. All of this is in preparation for transition to production in fiscal year 2025, which enables fleet installations to be completed by fiscal year 2027. Also, the Fiscal Year 2025 President's Budget requests \$13.4 million for B-1 procurement to allow the Air Force to begin installation of secure communication kits and procure external Load Adaptable Modular (LAM) pylons. The external pylon integration maximizes carriage of standoff munitions on the B-1 and allows the Air Force to increase volume of fires from standoff ranges.

Fighter Force Structure

The Air Force must continue to evolve its fighter force structure to meet the pacing challenge posed by the People's Republic of China (PRC) and the acute threat posed by Russia and ensure the capability and capacity to meet worldwide demands today. Extensive gaming and analysis (using the most difficult problem-sets and scenarios) show that the Air Force must adjust the future fighter force structure mix by adjusting investment priorities to provide the capability, capacity, and affordability required to defeat any peer threat. The threat will not allow the Air Force to just retain and modernize our current fleets. Modernization programs cannot transform our current fourth-generation fighters into fifth-generation fighters, or our current fifth-generation fighters into Next Generation Air Dominance (NGAD).

In realistic budget projections, we must balance the need for high-end technology with affordable capacity. To attain this desired fighter fleet, the Air Force must continue to right size current aircraft inventories to expedite the transition away from less capable, aging aircraft and emphasize investment in future capabilities such as NGAD and F-35 modernization. The desired Air Force fighter fleet should match capability and capacity of both platforms and weapons to mission requirements. As part of its force structure change, the Air Force must transition its fighter fleet from seven platforms (i.e., F-35, F-22, F-16, F-15E/EX, F-15C, A-10) to four (i.e., NGAD, F-35, F-15E/EX, F-16), plus Collaborative Combat Aircraft (CCA).

On the path to achieving the desired future fighter fleet, the Fiscal Year 2025 President's Budget continues to seek opportunities to divest systems that are not consistent with pacing challenges and focus on the key capabilities required to execute the NDS. Moving away from outdated and less capable legacy platforms allows us to redirect manpower to our newest aircraft/platforms, many of which require both experienced maintainers and pilots to maintain our competitive edge. These divestitures are critical to building a relevant future force capable of meeting the pacing challenge. Resourcing those future capabilities and modernizing our remaining force demands both money and manpower currently tied up in our legacy systems and platforms.

Fighter Force Structure Studies

Our fighters are becoming significantly more expensive to sustain as they age. The average age of the Air Force fleet is 26 years, which is significantly higher than all other Services. Weapons System Sustainment (WSS) costs have increased approximately 40 percent above inflation over fiscal year 2016 to fiscal year 2027. We need new platforms and weapons to replace an aging force, but also must invest in cutting edge technology needed to confront and outpace threats.

Both internally and alongside the Office of the Secretary of Defense (OSD), the Air Force has performed a Tactical Aircraft (TACAIR) analysis to evaluate how efficiently different force mixes meet future warfighting challenges in the 2035–2040 timeframe. Specifically, this study focused on fighter force mixes and quantities that were both affordable and militarily effective. The Air Force TACAIR Study was an initial step in creating a long-term plan for our future fighter force. While this study was not published, it was used internally by the Air Force to inform both fiscal year 2025 and future year programming efforts.

Fighters

F-35

The Fiscal Year 2025 President's Budget prioritizes investments in F-35 modernization, infrastructure, and advanced weapons, and commits \$5.9 billion to procurement, \$1.2 billion to development and \$2.8 billion to sustainment. The Fiscal Year 2025 President's Budget request for 42 F-35A aircraft represents a decrease of 6 aircraft from the Fiscal Year 2024 President's Budget position. Decreasing F-35A procurement was not an arbitrary decision. Reducing aircraft quantities enables the Air Force to fund unplanned increases to F-35 support costs without significant increases to the F-35 budget. Additionally, slowing the pace of procurement allows added flexibility for Lockheed Martin to work through the issues related to Block 4 development and integration.

Propulsion and power-thermal-management-systems-development investments help ensure capability enhancements continue to be viable for the platform as demands increase, while also reducing lifetime sustainment costs. Development funds also address a critical shortfall of F-35A flight test aircraft, which alongside System Integration Lab (SIL) resources are major F-35 modernization enablers.

The F-35 is the cornerstone of our future fighter fleet, and as of April 2024, 409 F-35As are fielded. Although a formidable platform today, the Air Force must continue to smartly modernize the F-35A fleet to keep pace with potential adversaries on relevant timelines. The current program-wide focus remains on Tech Refresh-3 (TR-3) certification and maintainability, which are the foundations for Block 4 capability upgrades and are designed specifically to compete in the highly contested fight in INDOPACOM and EUCOM.

The Air Force committees commit to controlling F-35 costs for both production and sustainment, as well as maximizing mission readiness. The Lighting Sustainment Center delivers global support to U.S. Services, F-35 Partners, and Foreign Military Sales customers around the world. In response to the Fiscal Year 2022 NDAA Section 142 mandate, the Air Force is working with the OSD, the Department of Navy (DoN), and the Joint Program Office (JPO) to assume greater management, planning, and execution roles of sustainment functions, both to improve aircraft availability and further reduce sustainment costs.

F-22

The F-22 is the Joint Force's preeminent air superiority fighter and the only operational weapon system capable of countering pacing air threats at scale into the 2030's. To date, its combination of stealth, super-cruise, maneuverability, and integrated avionics have given it "First Look, First Shot, First Kill" capabilities against adversary platforms. However, it requires an aggressive modernization strategy to ensure continued advantage against emerging threats in highly contested environments. The Fiscal Year 2025 President's Budget request furthers F-22 modernization with continued development and integration of sensor enhancements (SeE), communication systems (Link-16 and Mode 5 Challenge and Reply), navigation systems (EGI-M—an advanced navigation technology, known as Embedded Global Positioning System (GPS) / Inertial Navigation System (INS) Modernization, or EGI-M, and Controlled Reception Pattern Antenna-CRPA), and other performance upgrades.

The fiscal year 2025 RDT&E request of \$768.6 million greatly expands survivability by beginning the Infra-Red Defensive Suite (IRDS) Gen III integration effort, while maintaining continued developments across the entire F-22 modernization portfolio. The fiscal year 2025 procurement request of \$934.2 million ramps up production of Mode 5 and Low-Drag Tanks and Pylons (LDT/P) kits that are essential to reduce fratricide potential and extend maximum combat sortie ranges and durations.

To resource these F-22 modernization efforts and invest in sixth-generation platforms (NGAD), the Air Force has sought to divest F-22 Block-20 Formal Training Unit (FTU) and Test aircraft in the Fiscal Year 2023 President's Budget, Fiscal Year 2024 President's Budget, and Fiscal Year 2025 President's Budget. However, the 2023 NDAA prohibits divestment of F-22 aircraft through fiscal year 2027. F-22 Block-20 aircraft are currently in their third decade of operations, with the highest operating costs of any Air Force fighter, and do not possess the combat capabilities resident in the F-22 Block-30/35. The Air Force remains committed to delivering air superiority to the Joint Force in the highly contested environment.

F-16

The Fiscal Year 2025 President's Budget reduces the F-16 Total Aircraft Inventory (TAI) by 11 aircraft, to 830, and continues modernizing the post block fleet (i.e., Block 40/42/50/52) to improve survivability and offensive viability into the 2040's, filling mission roles in conjunction with fifth- and sixth-generation fighters.

The Fiscal Year 2025 President's Budget requests \$107 million in RDT&E to continue Operational Flight Program (OFP) software updates to integrate new mission capabilities, weapons, targeting pods, and improved avionics in support of NDS priorities.

Additionally, the Fiscal Year 2025 President's Budget requests \$231.9 million for procurement efforts to upgrade core mission computer sub-systems to realize full Active Electronically Scanned Array (AESA) radar capabilities, replace or repair aircraft-life-limiting components, upgrade the Communications Suite to meet crypto mandates, and continue AESA radar installations. Fiscal Year 2025 President's Budget F-16 investments align with Fiscal Year 2024 President's Budget priorities and support the DAF fighter roadmap.

F-15 Divestments

In fiscal year 2025, F-15C/D fleet recapitalization continues, and the Air Force plans to divest 65 F-15C/D aircraft, many of which are beyond their service life and have serious structural risks, wire chafing issues, and obsolete parts. The Air Force will also begin divesting part of the F-15E fleet, retiring 26 of the older aircraft which possess the less capable, Pratt & Whitney 220-engines. F-15 divestments make way for Air Force modernization, which includes F-15EX procurement to replace the aged F-15C/D aircraft, as well as F-15 Eagle Passive/Active Warning and Survivability System (EPAWSS) procurement, to increase the F-15 fleet's capability and operational readiness.

F-15EX

The Fiscal Year 2025 President's Budget includes \$1.8 billion to procure 18 Lot 6 aircraft and 6 pairs of Conformal Fuel Tanks (CFT). The funds also support requirements for a sixth operational location, which requires investment in spare parts, support equipment, training, and other support requirements. Finally, the procurement request includes funds to stand up organic, depot-maintenance repair capabilities. This request supports a total F-15EX fleet of 98 aircraft (6 fewer than in the Fiscal Year 2024 President's Budget) and would bring total CFT inventory to 18 pairs (12 pairs funded in fiscal year 2024), enough for one squadron.

As of January 2024, the Air Force accepted six F-15EX test aircraft, located at Eglin AFB. The Air Force expects to begin Lot 2 aircraft acceptance by the end of 2024 and grow F-15EX inventory to 29 aircraft by the end of fiscal year 2025.

The fiscal year 2025 budget contains \$56.2 million in RDT&E funds to continue F-15EX Non-Recurring Engineering (NRE) and integration development efforts, including incremental funding for the Automatic Ground Collision Avoidance System (AGCAS) and new Flight Control Computer (FCC).

- *Forward Fuselage Redesign.* Forward fuselage redesign challenges delayed six Lot 1 aircraft deliveries. The final two Lot 1 aircraft are projected to deliver by June 2024, 8 months later than projected during the Fiscal Year 2024 President's Budget rollout, but still within the program baseline threshold.
- *Cartridge/Propellant Actuated Devices (CAD/PADs) Shortages.* Issues have been mitigated through Lot 3 delivery (November 2025). The Air Force and industry remain engaged to mitigate CAD/PAD risks to Lot 4 and beyond.
- *Gun System Shortages.* DAF, Boeing, and the General Dynamics have collaborated to resolve the issue. All operational aircraft will deliver with their gun system installed.

F-15 Modernization (Including F-15 Eagle Passive/Active Warning and Survivability System (EPAWSS))

The Air Force continues investments in the F-15 fleet to improve survivability and lethality within highly contested areas. The future F-15E/EX fleet will bring substantial capacity for over-sized long-range fires, sensors, and electronic warfare capabilities to complement fifth-and sixth-generation aircraft and defend critical locations.

The fiscal year 2025 budget includes \$357.6 million in procurement funds to order F-15 Eagle Passive/Active Warning and Survivability System (EPAWSS) kits for 21 F-15E aircraft, install EPAWSS on 14 F-15E aircraft, procure initial spares, provide for interim contractor support (repair capabilities), and support other program requirements. The procurement request also supports other F-15E system modernization, many of which are necessary to comply with National Security Agency and Federal Aviation Administration (FAA) mandates. Specifically, the request funds hardware, installation, and/or interim contractor support for new or improved subsystems, which include a mission computer, tactical datalink system, radio for satellite communications, and data transfer module.

The fiscal year 2025 budget includes \$178.6 million in RDT&E to support F-15 annual software releases and flight test infrastructure for developmental and operational test requirements of the F-15 platform and various defense weapon systems. The annual OFP software updates integrate new hardware and weapons, counter emerging threats, and react to emerging safety of flight issues, preserving the F-15's survivability and lethality.

A-10

The Fiscal Year 2025 President's Budget does not include development or procurement requests, in accordance with the Air Force plan to divest the entire A-10 fleet by fiscal year 2028 and constraints imposed by the "Sunset Clause" (10 USC Sec 2244a) prohibiting the bulk of A-10 modernization and associated procurement. Although the A-10 has limited applications to higher-tier NDS priorities and limited survivability in the evolving global threat environment, the fleet is sufficiently modernized to meet operational needs over the next 5 years and to operate safely through platform divestment.

NGAD Family of Systems—Platform and CCA

The Fiscal Year 2025 President's Budget requests approximately \$3.3 billion to fund the development, testing, and experimentation of both NGAD and CCA, as well as CCA integration with fifth-generation crewed platforms. The CCA program will begin concept refinement for the next CCA Increment (CCA Inc 2) and explore international participation.

In April 2024, the DAF exercised two option-award contracts for CCA Increment 1 to Anduril and General Atomics to conduct detailed design, build, and test of production-representative test articles. In 2024 the Air Force plans to award an EMD contract for the NGAD crewed platform. These activities, guided by a family-of-systems acquisition approach, will continue into fiscal year 2025.

Advanced Engine Development

The Fiscal Year 2025 President's Budget request includes \$562.3 million in RDT&E for development of Next Generation Adaptive Propulsion (NGAP) prototype engines. The NGAP program builds on Adaptive Engine Transition Program prototyping to further advance adaptive cycle engine performance and size scalability key

to enabling future air dominance capabilities. NGAP funding supports production and test of a prototype engine by each of two contractors, preserving competition and key engine design and manufacturing skills. The program is also driving digital transformation of the propulsion industrial base to reduce future integration risks while shortening development timelines. This continued investment in the advanced propulsion and digital transformation of the industrial base are key factors in maintaining the U.S. strategic advantages in propulsion technology and development capability over competitors and adversaries.

Munitions

Advanced Medium-Range Air-to-Air Missile (AMRAAM)

The Fiscal Year 2025 President's Budget request for AMRAAM continues investment in the next generation medium and long-range air-to-air missiles. AMRAAM continues to be the Air Force's premier beyond visual range, all-weather, launch and leave medium range air-to-air missile that can defend against more advanced threats in a highly contested environment. The Air Force is requesting \$447 million for 462 AMRAAMs to maximize production capacity through the future years defense program.

Joint Air-to-Surface Standoff Missile (JASSM)

The Fiscal Year 2025 President's Budget request for JASSM continues investment in the long-range conventional air-to-surface missiles. JASSM continues to be the Air Force's premier autonomous precision guided standoff cruise missile; able to attack fixed or relocatable targets. The Fiscal Year 2025 President's Budget requests \$825 million of missile procurement funding for 550 missiles that supports the continued multi-year procurement strategy, initiated in fiscal year 2024. In the Fiscal Year 2025 President's Budget the Air Force also requests \$184 million of RDT&E to support the development of the B-3 and D variants of the JASSM. This funding supports Software development, Weapon Data Link (WDL) development for the JASSM-D, and weapon test and evaluation. These RDT&E efforts support fielding the B-3 and the D variants in fiscal year 2027. The Air Force will continue the purchase of the M-code enabled B-3 variant, and the post-launch retargetable D variant for all future lots.

Long Range Anti-Ship Missile (LRASM)

The Fiscal Year 2025 President's Budget request for LRASM continues investment in the long-range conventional air-to-surface missiles against high-threat maritime targets. LRASM is highly leveraged on the design of JASSM-ER with over 70 percent hardware commonality and shares the same production assembly line. The Air Force requests \$354 million of missile procurement funding for 64 C-1 and 51 C-3 missiles that supports LRASM MYP (starting with lot 9 procurement) of AGM-158C and AGM-158C-3 variants. The Air Force will continue to purchase the C-3 variant in fiscal year 2026 lot 10. The LRASM AGM-158C-3 variant will be a forward fit Engineering Change Proposal (ECP) to the AGM-158C, to enhance long-range strike and existing Offensive Anti-Surface Warfare (OASuW) capability. Beginning in fiscal year 2026 through the outyears, the Air Force will be procuring LRASM C-3 only, until the missile inventory objective is met. The DoN has oversight and primary management authority for the LRASM program, to include system development, with interest from the DAF as the lead for weapons procurement and contracting.

Stand-in Attack Weapon (SiAW)

The Air Force continues to invest in technology to counter future peer threats and continues development of the SiAW to deliver a strike capability to defeat rapidly relocatable targets, a hallmark of the highly contested environment. SiAW is the munition that gives the F-35 unique air-to-surface capabilities in the high-end fight for the Joint Force. The Fiscal Year 2025 President's Budget requests \$376 million for SiAW development and prototyping, along with \$173 million in procurement funding to field Advanced Anti-Radiation Guided Missile Extended Range (AARGM-ER) on the F-35 as an interim capability.

Air-Launched Rapid Response Weapon (ARRW)

The Fiscal Year 2025 President's Budget does not include a request for ARRW RDT&E or procurement funding. ARRW recently completed the final test of its All-Up Round executed under rapid prototyping authorities in March 2024. While future ARRW decisions are pending final analysis of all flight test data, the service is pleased to report that the ARRW rapid prototyping program is a categorical success.

Though specific test objectives cannot be provided in an unclassified forum, the test acquired valuable, unique data, and was intended to further a range of programs such as ARRW and Hypersonic Attack Cruise Missile (HACM). It also validated and improved the Air Force's test and evaluation capabilities for continued development of advanced hypersonic systems.

Hypersonic Attack Cruise Missile (HACM)

The Fiscal Year 2025 President's Budget request of \$517.0 million in RDT&E for the HACM development allows the Air Force to mature HACM through ground and flight testing, continue model-based engineering and digital ecosystem, complete critical design, and increase production readiness. Funding will support finalization of design verification testing, execution of initial qualification testing, and aircraft integration activities required for the HACM flight test campaign in fiscal year 2025 through fiscal year 2027 and enable production article procurement by fiscal year 2027.

Aerial Refueling

Near-peer competitors have made significant advancements that threaten today's tanker fleet and potentially forces them to operate farther away from their area of responsibility. The stacked demand of global operations requires a set number of air refueling tankers with specific connectivity, survivability, and agility capabilities, generating at mission capable rates to meet timelines and win the fight. The Fiscal Year 2025 President's Budget requests \$3.2 billion in RDT&E and procurement to continue uninterrupted tanker recapitalization.

KC-46A

The KC-46A continues to provide increased operational readiness, flexibility, connectivity, and survivability to the Global Reach mission. To date, 139 production aircraft are on contract and 82 KC-46As have been delivered to the warfighter.

The Air Force continues to work with Boeing to correct deficiencies with the Remote Vision System (RVS) and stiff air refueling boom. We are committed to ensuring these deficiencies are properly addressed without undue burden on the taxpayers or warfighters. The RVS 2.0 solution and start of fleet retrofit is now scheduled in fiscal year 2026. In addition, the stiff boom deficiency design solution is expected to start fielding in fiscal year 2026.

While the KC-46A program is addressing these challenges, Air Mobility Command (AMC) has accepted a certain level of risk and cleared the KC-46A for worldwide operations, using existing approved restrictions, operational guidance, and risk assessments for all Mobility aircraft. KC-46As must fill rotational deployments to ensure KC-135 units remain within deploy-to-dwell redlines and are afforded training opportunities to meet operational readiness requirements. The Air Force will utilize the capability the KC-46A can provide today, in order to support global operations and continue the KC-46A transition while we divest KC-10's and KC-135s. The A-10 is not cleared for operational refueling; the E-2D, C-32B, and B-21 are awaiting receiver certification. All other Joint aircraft have been cleared for operational air refueling.

The Fiscal Year 2025 President's Budget requests \$93.6 million in RDT&E funds to support the ongoing KC-46A EMD and post-production modification efforts, to include the boom telescope actuator redesign that resolves the stiff boom deficiency, continued test and receiver aircraft certifications, development for training system required updates, and increased effort on the KC-46A Pegasus Advanced Communications Suite (PACS) Block 1 program. In addition to PACS Block 1, AMC will accelerate the means to connect the Mobility Air Forces (MAF) via the fiscal year 2025 new start MAF Connectivity to optimize operations and close logistics and kill chains. These connectivity initiatives will provide the KC-46A with increased communications reliability using high-bandwidth, multi-waveform, multi-orbit, constellation systems of systems, including accelerating commercial satellite-based internet services. Additionally, the budget requests \$3.1 billion to fund procurement of 15 aircraft in Production Lot 11 and the associated support costs, along with increased depot standup and transition to organic sustainment efforts. The DAF is increasing the number of KC-46A programmed aircraft from 179 to 183 aircraft, which procures 4 additional aircraft in fiscal year 2027 Production Lot 13.

Tanker Recapitalization

Accelerating future tanker capability and recapitalizing the aging tanker fleet is a top priority for the DAF. Tanker Recapitalization is the second phase in replacing legacy tanker aircraft, following the KC-46A program that ensures continuous, uninterrupted tanker recapitalization. The DAF's goal is to use the Tanker Recapitalization program to replace up to 15 KC-135s per year as they retire between the

completion of the KC-46A contract and an accelerated Next Generation Air-refueling System (NGAS). The program received Joint Requirements Oversight Council (JROC) validated requirements and released a draft System Requirements Document (SRD) to industry in 2023. Market research and the Business Case Analysis (BCA) re-look is complete, the DAF is using the data to inform the program's acquisition strategy, scheduled to occur in June 2024.

The Fiscal Year 2025 President's Budget request of \$13.7 million in RDT&E funding will support fiscal year 2025 acquisition activities including the Future Tanker program office stand up, release of the program's Request for Proposal (RFP) to industry, Engineering Support, and Cost Analysis.

Next Generation Air-Refueling System (NGAS)

NGAS will deliver adaptive and agile platform(s) and mission systems as part of a tanker Family of Systems by the mid -2030's. The NGAS Analysis of Alternatives (AoA) will consider a wide range of designs including clean sheet design(s) and purpose-built aircraft to address projected threats and needed capabilities and leverage benefits of full and open competition. NGAS held its Materiel Development Decision (MDD) milestone in January 2024 and was approved entrance into the Material Solution Analysis (MSA) Phase. In addition, the OSD Cost Assessment and Program Evaluation approved the AoA study plan, and the 9-month AoA. It is currently underway, and will be completed in October 2024. The AoA will shape requirements and determine the technology development timeline. Finally, the DAF is standing up a Future Tanker program office to execute both the NGAS and Tanker Recapitalization programs.

The Fiscal Year 2025 President's Budget request of \$7.0 million in RDT&E funds draft requirements development efforts, prep for the acquisition strategy for the Technology, Maturation, and Risk Reduction phase and Milestone A prep, and post AoA studies, updates to tanker models and run high-fidelity modeling and simulation to further exercise Joint warfighting concepts and plans. The DAF is constantly evaluating technology acceleration opportunities for the program and is awaiting the AoA results and post-AoA modeling and simulation data.

KC-10 and KC-135

The Fiscal Year 2025 President's Budget requests \$32.0 million in RDT&E to continue KC-135 fleet communications suite modernization to enable digital and secure communications across the fleet. These modernization efforts include Aero-I SATCOM, Comm 2 Crypto and Data, High-Frequency Modernization, and Mobile User Objective System (MUOS). The funding will also be used for drag reduction initiatives to support DAF Climate Action Plan (CAP) initiatives in an effort to reduce fleet emissions. This funding will address critical DMSMS issues through the Center Console Refresh (CCR) program. This effort replaces the integrated fuel management panel, fuel management panel, tanker interface unit, multi-function display, and the control display unit which are all out of production and no longer able to be serviced.

The Fiscal Year 2025 President's Budget also requests \$161.6 million in procurement to continue installation of Real-Time Information in the Cockpit (RTIC), Comm 2 Crypto and Data, High-Frequency Modernization, and the safety of flight Rudder Position Indicator (RPI) modifications. These modifications will allow the KC-135 to meet NSA-crypto mandates. The RPI modifications will allow crews enhanced situational awareness into the actual rudder position, versus what is commanded, and provide advanced visuals so crews can avoid safety of flight situations. The KC-135 will also begin the installation of MAF Connectivity enhancement; allowing the tanker to close logistics and kill chains. The KC-135 fleet completed all Block 45 installs in fiscal year 2024. The KC-10 fleet will fully divest by the end of fiscal year 2024.

Executive Airlift

The Executive Airlift fleet supports the President of the United States through VC-25 and the Vice President of the United States, First Spouse of the United States, Secretary of State, Secretary of Defense, and Chairman of the Joint Chiefs of Staff through five different aircraft types. Modernization and recapitalization efforts of these aircraft will continue to provide reliable operational support and keep passengers globally connected while airborne.

VC-25A

The Fiscal Year 2025 President's Budget request of \$11.4 million in procurement is for Block Upgrade efforts (low-latency worldwide data connections, aggregated throughput bandwidth, and Multi-Role Tactical Common Data Link (MRTCDL) on one aircraft, low-cost modifications, and service bulletins.

VC-25B

The Fiscal Year 2025 President's Budget requests \$433.9 million in RDT&E to continue EMD, aircraft modifications, developmental test and evaluation, and other product support activities.

C-32 / C-40

The Fiscal Year 2025 President's Budget requests \$338.7 million in procurement funding to purchase one aircraft that will augment the current C-32A executive airlift fleet. The acquisition will modify a new-production, industry standard, business aircraft by integrating the military-specific modifications and Senior Leader Communications System-Airborne (SLCS-A) suite already present on the executive airlift fleet. The C-32A fleet supports the Top Five (Vice President of the United States, First Spouse of the United States, Secretary of State, Secretary of Defense, and Chairman of the Joint Chiefs of Staff). This fleet augmentation will alleviate pressure on the C-40B and C-40C fleets that currently support combatant commanders, the Cabinet, and Congress.

Strategic and Tactical Airlift

The stacked demand of global operations requires a set number of strategic and tactical airlift aircraft with specific connectivity, survivability, and agility capabilities now, generating at mission-capable rates to meet timelines and win the fight.

C-5M

The Fiscal Year 2025 President's Budget requests \$55.0 million in procurement, predominately for Crown Skins, as well as Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM), C-5 Core Mission Computer/Weather Radar (CMC/WxR) system equipment, and Mission Systems Equipment Lavatories (MSEL). Crown Skins replacement and lavatory modifications address corrosion issues decreasing availability of aircraft and causing grounding. CNS/ATM complies with civil airspace mandates for US National Airspace System and international civil airspace. CMC/WxR upgrades computer processor modules and addresses obsolescence issues.

Additionally, the Fiscal Year 2025 President's Budget requests \$33.0 million in RDT&E to support Replacement of the Multi-functional Controls and Display (RMCD), which mitigates the obsolescence of the current control and display units and increases capacity for future technology integration into the cockpit.

C-17A

The Fiscal Year 2025 President's Budget requests \$113.7 million in procurement funding to continue critical modifications to the C-17 fleet to address obsolescence and flight safety issues. These include Beyond Line of Sight (BLOS), Replacement Heads-Up Display (RHUD), and Filter Fire Mitigation (FFM) for Onboard Inert Gas Generating System (OBIGGS), and Aircraft Connectivity. The BLOS communication system effort modernizes multi-channel voice and data communication subsystems to address obsolescence issues and enables compliance with FAA and NSA mandates. The RHUD modification addresses obsolescence issues with the current HUD that will become unsupportable in fiscal year 2026 and could cause grounding of aircraft if the current scheduled is delayed. FFM includes a redesigned shut off valve that eliminates potential filter fires, improves fuel efficiency, and incorporates a Master Caution annunciation to warn aircrews of potential filter fire risk. MAF Connectivity is a new start program that will provide capability for increased aircrew situational awareness, real-time secure command and control of forces, and close logistics and kill chains. Additionally, the Fiscal Year 2025 President's Budget requests \$17.4 million in RDT&E funding to address obsolescence issues. Flight Deck Replacement prevents obsolescence in 16 existing C-17 flight deck parts. Four parts will significantly impact aircraft availability in fiscal year 2029 and deplete assets worldwide by fiscal year 2031.

C-130H

The fiscal year 2025 President's budget requests \$102.5 million in procurement funding to support the C-130H fleet. The Air Force continues to modernize the C-130H fleet to ensure aircraft safety, airspace compliance, and aircraft systems modernization. Our C-130H Center Wing Box replacement program breathes new life into some of our more frequently flown aircraft, enabling them to continue to safely operate well into the future. The Avionics Modernization Program (AMP) Increment 2 program improves the C-130H fleet maintainability and reliability by providing a new digital avionics suite, mitigating obsolescence and diminishing manufacturing source challenges, and provides Crypto Modification I capabilities to include MUOS/SATURN upgrades.

C-130J

The Fiscal Year 2025 President's Budget requests \$34.4 million in RDT&E and \$209.3 million for procurement and modification efforts. The Fiscal Year 2025 President's Budget also requests \$24.9 million in RDT&E for HC/MC-130J and \$231.9 million for procurement and modification efforts for HC/MC-130J.

The Air Force has partially recapitalized the C-130H fleet with C-130Js, which also supports our Special Operations missions by providing Special Forces with extra weight carrying capacity, longer range, and better fuel efficiency. These special mission variants of the C-130J conduct weather reconnaissance (WC-130J), search and rescue (HC-130J), and special operations (MC-130J and AC-130J). The Air Force has multiple modification efforts for the C-130J, including Center Wing Box replacement, Large Aircraft Infrared Countermeasures, communications upgrades, and Block 8.1. The C-130J Block 8.1 modernization program, currently in production, delivers new communication and data link capabilities, a modern flight management system, and other key capabilities to the field. In addition, the Air Force plans to upgrade both our C-130H and C-130J fleets with a MUOS and a Second-Generation Anti-Jam Tactical Ultra High Frequency Radio satellite communication system to ensure we maintain key communication links anywhere in the world.

*Rotary**HH-60G and HH-60W (Combat Rescue Helicopter)*

The Air Force is the only Service with a dedicated force organized, trained, and equipped to execute theater-wide Personnel Recovery. The HH-60G fleet currently accomplishes this mission by conducting day, night, and marginal weather Combat Search and Rescue (CSAR) operations to recover isolated personnel in hostile or permissive environments. The planned fleet of 96 HH-60W will replace the HH-60G in this role. The Fiscal Year 2025 President's Budget requests \$2.1 million in procurement for the HH-60G and \$52.3 million in RDT&E and \$193.5 million in procurement for the HH-60W program.

MH-139A

In April, the Air Force notified Congress of a critical Average Procurement Unit Cost (APUC) breach of at least 31.3 percent and a Program Acquisition Unit Cost (PAUC) breach of at least 43.1 percent. The breach is largely due to the reduction of 38 air vehicles in the fiscal year 2025 PB. The DAF intends to continue the orderly performance of the MH-139A program while we work with OUSD (A&S) to complete the Critical Nunn-McCurdy process and report to Congress on the Department of Defense's decision to certify or terminate the MH-139A program by mid-October, the timeline required by statute.

The MH-139A program will deliver 42 replacement helicopters, training devices, and associated support equipment to replace the legacy UH-1Ns for AFGSC. Air Force District of Washington, Fairchild AFB, WA, Kirtland AFB, NM, and Duke Field, FL, will continue to fly the UH-1Ns. The Fiscal Year 2025 President's Budget requests \$333.5 million in procurement for the MH-139 program, which will fund LRIP for eight aircraft, training devices, and support equipment. The first six aircraft continue to be used to finalize test and development. The first LRIP lot will deliver 13 aircraft in fiscal year 2025 and the second LRIP lot will deliver 7 aircraft in fiscal year 2026.

CV-22

The CV-22 is the Air Force variant of the joint V-22 tilt-rotor aircraft. It allows for long-distance, terrain following, vertical lift operations with increased survivability and is the only high-speed vertical lift platform in the Air Force inventory. The Air Force lost eight Airmen in a CV-22 Osprey mishap on November 29, 2023, off the shore of Yakushima, Japan. In response, Lieutenant General Tony Bauernfeind, Air Force Special Operations Commander, convened safety and aircraft investigation boards to determine the cause of the mishap and the tragic loss of life. On December 6, 2023, Lieutenant General Bauernfeind directed an operational stand-down of the Air Force CV-22 aircraft to mitigate risk during the mishap investigation. It has been determined that a materiel failure of a component led to the mishap. Furthermore, information from the Air Force Safety Investigation Board and an evaluation of historical data from over 750,000 V-22 flight hours identified the need for additional maintenance and procedural controls to mitigate risk. Institution of these controls and a safety focused, multi-phased approach for maintainers, aircrew, and aircraft enabled a return to flight authorization on March 8, 2024. Full operational capability of the CV-22 is expected in summer 2024. The Fiscal Year 2025 President's Budget requests \$84.8 million to continue development

and modifications to increase CV-22 fleet reliability, capability, and survivability. Investments in these areas will ensure the CV-22 fleet remains ready, reliable, and relevant in the future. Notable investments include the Block 20 Mission Computer Obsolescence Initiative to replace older mission computers and upgrades several avionics systems. Additionally, investments in Nacelle Improvement include redesigned wiring and structural improvements of the nacelles designed to increase aircraft availability by over 5 percent.

Trainers

T-1, T-6, and T-38

The Air Force is continuing investment efforts in its legacy trainer platforms, including critical modernization programs for the T-6 and T-38 fleets. The T-1A Fiscal Year 2025 President's Budget request of \$0.133 million in procurement funds low-cost modification efforts of the T-1A. The divestment of the T-1A fleet resumed on April 15, 2024, following SecAF certification of the Pilot Training curriculum in accordance with the fiscal year 2024 NDAA. Training of future Mobility pilots and Combat System Operators, currently being conducted in the T-1A Aircraft, will be accomplished in simulators.

The T-6 Fiscal Year 2025 President's Budget request of \$130.2 million in procurement and \$38.6 million in RDT&E supports the procurement of Crash Survivable Recorders and the continued development of Avionics Replacement Program (ARP). In fiscal year 2025, the T-6 will begin a major ARP to address DMSMS for critical avionics issues.

Continued investments are also required for the modification and sustainment of the T-38 fleet until the T-7A becomes operational. Programs include avionics updates, and structural life extension programs such as Pacer Classic III, and the Talon Repair, Inspections, Maintenance program. The T-38 Fiscal Year 2025 President's Budget requests \$115.5 million in procurement to support the procurement of kits that will update the T-38 avionics and extend the structural life of the T-38.

T-7A

The T-7A aircraft and simulators will fill training capability gaps for fourth- and fifth-generation fighter aircraft by replacing T-38C aircraft and simulators used in the advanced fighter/bomber track of Specialized Undergraduate Pilot Training, Introduction to Fighter Fundamentals, Euro-NATO Joint Jet Pilot Training, and Pilot Instructor Training. On September 27, 2018, a \$9.2 billion fixed price contract was awarded to the Boeing Company, providing for the anticipated delivery of 351 aircraft, 46 associated training devices, and other ancillary supplies and service. The first T-7A aircraft and simulators are scheduled to arrive at Joint Base San Antonio-Randolph (JBSAR) in 2025. All undergraduate pilot training bases will eventually transition from the T-38 to the T-7A. The combination of digital engineering and early prototyping enabled the T-7A program to identify and resolve unfavorable control and handling characteristics at the early stages of development. The utilization of Boeing owned T-7 prototypes has supported the Advanced Pilot Training acquisition schedule.

The Air Force and Boeing have made significant progress in resolving the egress system and flight control law issues that led to the delay of Milestone C from fiscal year 2023 to fiscal year 2025. Numerous studies and redesign have led to the increased safety of the egress system and refinement of the flight control software. The program will validate the design changes by conducting a total of 22 test shots. The Air Force and Boeing will continue to work together to ensure the timely resolution of issues as the T-7A progresses through the EMD phase.

First Flight of the T-7A occurred on June 28, 2023 at the Boeing facility in St Louis, Missouri. The Air Force accepted its first EMD aircraft (APT002) on September 15, 2023 and conducted its first flight test on December 20, 2023 at Edwards AFB. Since its first flight tests, APT002 has conducted multiple flutter flight tests. Additionally, APT003 has completed initial climatic tests at Eglin AFB. Boeing has also delivered APT001 and it will conduct loads test at Edwards AFB. Finally, in mid fiscal year 2024, the program will conduct critical High Angle of Attack (HAA) flight tests using Boeing-owned prototypes to validate design refinements to its flight control software. Boeing is expected to deliver the final two EMD aircraft by the end of the second quarter of fiscal year 2024.

The Fiscal Year 2025 President's Budget request of \$83.8 million in RDT&E funds the testing and development of the EMD aircrafts and Ground Based Training Systems (GBTS). Additionally, the Fiscal Year 2025 President's Budget request of \$277.8 million in procurement funds the first seven LRIP aircraft, associated spares

and GBTS devices. The Air Force remains focused on working with Boeing to enable the T-7A program to achieve Milestone C.

Command and Control

E-7A Wedgetail

Fiscal Year 2025 President's Budget includes \$418.5 million to continue rapid prototyping of the first 2 E-7 aircraft in support of a production decision in fiscal year 2026. To support Joint and coalition forces, the Air Force must provide a mix of space and airborne sensors and decision support capabilities for Command and Control (C2) and Airborne Moving Target Indicator (AMTI) in the air domain. AMTI investment is essential to countering advanced and emerging air threats fielded or in development by adversaries. While the E-3 lacks the capability to support high end operations and cannot be modified to close existing Airborne C2 and AMTI capability gaps, the Air Force is committed to sustaining and maintaining the remaining 16 AWACS to be operationally ready.

Boeing's proposal for the Rapid Prototyping Program (RPP) was much higher than expected, so the Air Force is evaluating courses of action to determine the best way forward. At this time, Air Force's primary focus is working with Boeing to get the E-7 platform to a level of affordability the Service can prudently pursue and to successfully demonstrate the Rapid Prototyping phase of the program. OSD and the Air Force have worked to rephase planned production decisions and funding to support RPP contract negotiations and definitization efforts.

The United States Air Force, the Royal Air Force, and the Royal Australian Air Force are committed to collaborating on E-7 programs for mutual benefit through cooperative capability development, evaluation and testing, interoperability, sustainment, operations, training, and safety.

E-3 AWACS

The E-3 Airborne Warning and Control System (AWACS) aircraft continues to be a worldwide integrated battle management command and control (BMC2) surveillance, target detection, and tracking platform. The aircraft has been in service since the mid-1970's. Due to its age and sustainability issues, the E-3 AWACS has become increasingly expensive to support. It also lacks sufficient capability and capacity to operate in a near-peer conflict to meet Combatant Commander needs. Divesting part of the fleet will temporarily improve sustainability by adding high demand-low availability parts back into the supply chain. As part of the previous Fiscal Year 2023 and Fiscal Year 2024 President's Budgets, the Air Force divested a total of 15 AWACS aircraft, leaving a total of 16 aircraft to remain operational until its replacement, the E-7 Wedgetail, is delivered to the warfighter.

The Fiscal Year 2025 President's Budget requests \$68.2 million in procurement to complete final modifications necessary to meet system operational mandates and address diminishing manufacturing sources as part of our commitment to ensuring E-3 AWACS mission readiness.

Electronic Warfare

EA-37B Compass Call

Compass Call is the DAF's only wide-area, standoff, Airborne Electromagnetic Attack (AEA) Command and Control Warfare/Information Operations weapon system. The Compass Call program is currently undergoing a re-host effort to transition the capability from the EC-130H to the EA-37B in order to maintain U.S. Electromagnetic Spectrum (EMS) superiority in future conflicts. The EC-130H was redesignated to become the EA-37B, which better identifies the platform's mission of offensive electromagnetic attack. The Air Force greatly appreciates the ongoing congressional support to the Compass Call program. To date, ten EA-37B aircraft have been procured and are at various stages of modification, with limited fielding for training only in mid-fiscal year 2025, and initial operational fielding in late fiscal year 2025.

With the Fiscal Year 2025 President's Budget, the Air Force will be focused on completing Developmental and Operational Test for the rehosted EA-37B capability, as well as furthering development of the mission system upgrade for fielding System Wide Open Reconfigurable Dynamic Architecture (SWORD-A) capabilities. The open and agile architecture of SWORD-A will enable a more rapid response capability against emerging threats and will be the foundation for future baseline upgrades.

*Intelligence, Surveillance, and Reconnaissance**MQ-9*

The Fiscal Year 2025 President's Budget of \$19.5 million aimed at providing needed capabilities to the Combatant Commands. To date, the MQ-9 fleet has flown over 3 million hours, with the vast majority of those hours supporting combat operations.

The Air Force will finalize the transfer of the remaining 6 of 10 Block 5 aircraft to the Marine Corps. The Air Force will remove high time Block 5 aircraft in fiscal year 2027. The AF has enough Block 5 aircraft to maintain current operations through the end of the FYDP.

RQ-4 Global Hawk

Fiscal Year 2025 President's Budget request focuses on maintaining the nine-airplane fleet, Multi-Platform Radar Technology Insertion Program (MP-RTIP) sensor, and ground systems at a minimum viable level until divestment. The Global Hawk will divest when replacement capabilities are available, a change from the Fiscal Year 2024 President's Budget request in which divestiture was scheduled for fiscal year 2027.

The Fiscal Year 2025 President's Budget requests \$9.5 million in RDT&E to support ongoing engineering and logistics effort for all Global Hawk projects required for sustainment.

DAF BATTLE NETWORK

DAF Program Executive Officer for Command, Control, Communications, and Battle Management (DAF PEO C3BM) is the acquisition lead alongside the Advanced Battle Management System (ABMS) Cross-Functional Team which is the operational lead for the development of the DAF BATTLE NETWORK, which aligns USAF and USSF command, control, and communications (C3) capabilities across 50+ core programs to fuse sensors, effectors, and sustainment grids for decisional advantage. The Advanced Battle Management System (ABMS) is the budget Program Element which funds key architecture development, software and applications, digital infrastructure, and aerial networking capabilities to the integration of C2 capabilities as part of DAF BATTLE NETWORK.

The Fiscal Year 2025 President's Budget requests \$743.8 million within the ABMS PE to support the continued development of the DAF BATTLE NETWORK architecture and enabling infrastructure. It allows for the additional development of a DAF architecture and analysis for relevant contested air, space and maritime mission threads. It also enables the design, testing and initial deployment of digital infrastructure to U.S. Indo-Pacific Command, U.S. European Command, and U.S. Northern Command (USNORTHCOM) delivered through five programs of record spanning the development of a software-defined wide area network, deployable, mobile and fixed digital infrastructure, and deployable systems.

Additionally, the Fiscal Year 2025 President's Budget request supports the continued development of key Command and Control (C2) software programs, including Cloud-Based C2 (CBC2) which is currently delivering capability for homeland defense to North American Aerospace Defense Command/USNORTHCOM, and two additional programs focused on the development of a common user interface for battle management command and control (BMC2) and sensor orchestration.

Finally, the Fiscal Year 2025 President's Budget request supports continued development of aerial networking capabilities through the Phalanx Griffon program, which will develop the technical framework to expand airborne edge networking capabilities to deliver both data and internet protocol routing between tactical aircraft and the DAF BATTLE NETWORK. These investments in fiscal year 2025 will enable broader fielding of C3 capabilities in fiscal year 2026 and beyond.

CONCLUSION

Thank you again for the opportunity to testify. We look forward to working with this subcommittee to ensure the Department of the Air Force maintains the necessary military advantage to secure our vital national interests and support our allies and partners in 2025 and beyond.

Senator KELLY. Thank you, General. Senator Cotton.

Thank you, Chairman. I apologize for my late arrival. I was at the ceremony to unveil the statue of Daisy Bates, the iconic civil rights leader of Little Rock Nine in 1957, which is the new statue that the State of Arkansas has chosen to place inside Statuary Hall.

In the interest of time, and with great disappointment to you all, I will enter my remarks into the record. I know you came here just to hear them.

Senator KELLY. I am very disappointed.

Senator COTTON. Thank you.

[The prepared statement of Senator Tom Cotton follows:]

PREPARED STATEMENT BY SENATOR TOM COTTON

Gentlemen, welcome and thank you for being here this afternoon.

Let me cut to the chase. Last year, I commended you for finally maximizing the tactical fighter production line to get the Air Force closer to the capacity it needs to fight the Nation's wars. This year's budget cuts the numbers, again. There is no apparent consistency in your force design. We should be producing F-35s at full rate production, ramping up F-15EX production, and expediting development of the E-7 Wedgetail, or some other way to conduct battle management in a modern battlespace.

We must also fix our dwindling inventory of missiles and munitions made even more serious by dozens of Air Force missions to defend Israel in the past months. This is a matter of life and death for those you protect with our Air Power—if an entire F-15E squadron and its missiles were absent from the Middle East, would you have been so successful in shooting down all those drones and cruise missiles? Your budget cuts the very aircraft that conducted those missions.

I would also like to understand how you are maintaining the lethality of the Air Force while we wait to field Next Generation Air Dominance aircraft and Collaborative Combat Aircraft. We must develop capabilities for the future, especially to maintain air superiority through the 2030's. However, we cannot continue to neglect the upgrades we need to “fight tonight,” especially on the fighters, bombers, and mobility aircraft we will rely upon for decades to come.

If your answer is that you cannot afford these things, then you need to advocate for more money, and loudly. We can't hear you.

The Air Force seems to be in danger of becoming overextended based on current events. I would like to know how you are planning to overcome existing gaps in capacity, while readying for great power conflict, without exhausting personnel and equipment.

I look forward to hearing what you have to say on these topics. Thank you.

Senator KELLY. Thank you, Senator Cotton. We will start with questions here. I am going to start with Secretary Hunter.

Secretary Hunter, as you know, 60 to 80 percent of lifecycle costs for the average airplane is sustainment, and at various times there have been press reports that the Air Force leadership is wondering whether you could afford to buy all 1,763 F-35s and pay for the lifecycle costs at the same time. Some estimates had the flying hour costs at \$39,000 an hour.

The F-35 is the most advanced weapons system in the world. I got to experience this just in January when I flew an F-16 against an F-35, and was very impressed with some of the F-35's capabilities.

This aircraft is critical to us maintaining our competitive edge over our near-peer adversaries. So Secretary Hunter, could you tell us what avenues the Air Force is investigating for reducing the lifecycle costs of the F-35 so that we can afford to operate the airplanes in the numbers that we need, and what progress have you made in reducing the operating and support costs?

Mr. HUNTER. Well, we work a very close construct with the F-35 Joint Program Office and with the Department of the Navy to really get after the issue of F-35 sustainment costs. We have a number of initiatives that we have been working on, some of which have been accelerated by the National Defense Authorization provisions Section 142 direction to us, to examine how we better lever-

age the enterprise sustainment capabilities of the services, Navy and Air Force, to more affordably sustain that aircraft. That is something that the Air Force is committed to. We are putting together a transition team to help us tackle some of those challenges.

The biggest one that the Air Force is focused on initially is the supply chain management part of the problem. We do supply chain management for a lot of large air fleets, a lot of large international air fleets, the F-16 being an example. We believe that there are savings to be had by leveraging some of our enterprise sustainment capabilities, in addition to the capabilities that Lockheed brings to the table, to the partnership.

Senator KELLY. Mr. Secretary, could you talk a little bit about the F135 engine and some of the challenges? I know the Air Force has faced turbine blade issues, also cooling problems that are tied to the expansion of capability. But is the engine one of the biggest components in trying to bring down the lifecycle costs?

Mr. HUNTER. Well, it is a huge component of lifecycle costs. You are absolutely right about that, and when I first came into this job we had huge issues of engines not being available because of the turbine issue that you talked about, and we had power modules that were just not functioning and had to be returned to the depot for repairs. A lot of aircraft sitting without engines.

We have largely worked through that issue, thanks to the incredible work of the folks at Tinker and the Air Logistics Center there, in close partnership with Pratt & Whitney. It was a team effort to really get through that issue. So now we are able to generate the number of power modules that it takes to keep engines in our fleet.

There is a longer term issue, as you identified. Because of the need for power for all of the systems of the F-35, that longer term, we are working through the lifecycle of the F135 engine faster than what was projected. That has led us to make an investment in the ECU upgrade to the F135 engine to get after restoring the full lifetime of the engine.

Senator KELLY. What is the current goal for per-flight-hour costs that you are trying to get to, from \$39,000 an hour?

Mr. HUNTER. I would have to do some translations. So we articulate that goal in the Air Force as a cost per tail per year of \$6.8 million, which is the goal that we have established. We are actually not far from that goal today.

Senator KELLY. How many hours does that give you?

Mr. HUNTER. I would have to go back and look. I believe it is 180.

Senator KELLY. Yes, that is \$37,000 per flight hour. That is still incredibly high. I am not sure what the F-22 is, but I cannot imagine it is as high as \$39,000.

Go ahead, General.

Lieutenant General HARRIS. So the F-22s, in particular, the Block 20's are in the neighborhood of \$75,000 per hours.

Senator KELLY. Wow.

Lieutenant General HARRIS. That is part of our challenge with those aircraft.

Mr. HUNTER. Yes, we will work—we will not stop trying to get that cost lower, but from my perspective it is not uncommon with

what we are seeing in our other fleets, what we are seeing right now with F-35.

Senator KELLY. Thank you.

Mr. HUNTER. That cost.

Senator KELLY. Senator Cotton.

Senator COTTON. I want to explore the topic of force design and Department plans. General Harris, you mentioned in your opening statement that Air Force fighters are older than the other services, with an average age of 26 years. Is that correct?

Lieutenant General HARRIS. I believe that was the comment that was made, yes.

Senator COTTON. Does that mean that sustainment cost are rising as the fleet ages, and thus reducing funds that are available for modernization needs?

Lieutenant General HARRIS. There is always a tension between the modernization and the readiness, and when you start putting upgrades onto them, how much can we do per tail, per upgrade, and still maintain pilot absorption. So that tension for readiness and modernization will still exist, yes.

Senator COTTON. That sounds like a yes.

Lieutenant General HARRIS. Yes.

Senator COTTON. Okay. How does the procurement of F-15EX, F-35, Next Generation Air Dominance manned fighters help you avoid that downward spiral of continued sustainment cost growth?

Lieutenant General HARRIS. So from a force design aspect, what we do is we look at where do we need to be with respect to the threat into the future. That mix of what is an inside force and what is an outside force is the balance that we are trying to maintain. That becomes the mix of the Collaborative Combat Aircraft, the CCA, plus the F-15EX. So if you think about the number of rails and the number of munitions you can put on the EX as an outside force, working your way into the contested environment, there has to be a mix of both.

When I mentioned in my comments about the force being out of balance, we have a great short-range fighter game right now, but it is not the inside force that we need. What we need to do is pivot to a more outside force, with more rails, the F-15EX, and the like.

From a force design standpoint, that is how I would answer the question. I think if there is an operational piece I would pass that off to General Spain or General Moore as far as the cost per tail.

Senator COTTON. Before that, how important is the Next Generation Air Dominance manned fighter to your future force design?

Lieutenant General HARRIS. The Next Generation Air Dominance family of systems is critical to what we do. What I mean by that is the technologies that are being developed within that portfolio and where we are going with the entire enterprise, it is feeding technologies and it has helped us create S&T and other areas that we are leveraging to put into other platforms and weapons systems.

Senator COTTON. I mentioned the manned fighter. You talked about the family of systems. Can you speak directly to the manned fighter?

Lieutenant General HARRIS. I can ask Secretary Hunter.

Senator COTTON. Do you want to jump in on that one?

Mr. HUNTER. On that one, so for our fiscal year 2025 budget request we are requesting significant funds for the crewed fighter part of the NGAD family of systems, and all the members of the family are leveraging the technology that General Harris described. But yes, we have requested significant funds in our fiscal year 2025 budget request to move to the next phase of the program when it comes to the crewed fighter.

Senator COTTON. What is your current assessment of whether the United States Air Force or the PLA Air Force will first field a sixth-generation manned fighter?

Mr. HUNTER. My assessment would be that it would be the United States, but the term “pacing threat” is, I think, a very apt term, because it is a race.

Senator COTTON. Okay. General Spain, every year the committee seems to receive a request to reduce the number of manned fighters. How many fighters do you need to do your mission?

Lieutenant General SPAIN. Thank you, Senator. I think that part of the last question hints at the answer to this question. The idea is that we are reducing the number of actual aircraft fielded in order to bring on new capabilities that are exponentially greater than those we are divesting.

There are limits to how much we are able to divest that we adhere to, and we continue to work with the Secretary of Defense and the combatant commands and the global force management process to ensure that the fighter fleet that we have meets the needs of the force.

Senator COTTON. Do you have a direct or specific answer about how many fighters you need?

Lieutenant General SPAIN. I can take that for the record, sir, but there is not a specific number of fighters. I can say that we retain between 1,900 and 2,000 fighters currently. That is the range that we are in. That is sufficient to meet today's commitments, and that will be sufficient to continue to meet the commitments going forward.

Senator COTTON. Okay. If the Air Force shuffles combat-capable aircraft like the F-15E and the F-22 into training roles, due to divestment, how is that going to affect your current combat capacity?

Lieutenant General SPAIN. We are still working through the details of how that would actually play out, if that were to occur. But the bottom line is combat-capable aircraft would be used for training, just like a training-tailored aircraft. However, in extremis, if they were needed to go into combat, if they were not T-coded tails, then we would be able to use them for combat missions, if necessary.

Senator COTTON. Okay. Well, this is one of the concerns I would have stated in my opening statement. I am sure you are all going to go read the record about it tonight. I just do not think we are buying enough stuff fast enough, whether it is fighters or the E-7 or munitions. I may have more on that later.

Senator KELLY. Senator Duckworth.

Senator DUCKWORTH. Thank you, Mr. Chairman. Secretary Hunter, General Moore, to continue the conversation, I wanted to chat with you a little bit on KC-135 recapitalization. I am aware of the significant risks that the Air Force faces in its ability to sustain

and protect the Joint Force across the globe with an aging aerial refueling fleet. It is vital and incumbent on the Air Force to provide the Air National Guard with the requisite equipment to support its aerial refueling mission.

I want to ensure that there is transparency in the decision-making process for the MOB 7 selection of the KC-46 and a plan for what comes next with the remaining Air National Guard with legacy aircraft.

Can you, Senator Hunter or General Moore, can you provide insight into how Air National Guard units that have an existing association with an Active Duty air wing will be scored on the basis of that association during the MOB 7 process, and if units will not be scored on their association with an Active Duty air wing, why did the Air Force not include this in the basing criteria for MOB 7 and was this scoring included in the basing criteria for MOBs 1 through 6?

Lieutenant General MOORE. Senator, MOBs 1 through 6 all included an Active associate where they went to Guard units. MOB 7 is not intended to include an Active associate necessarily.

Senator DUCKWORTH. Why?

Lieutenant General MOORE. That is just not what we decided to do with MOB 7. So there is—

Senator DUCKWORTH. But why did you decide to take that criterion out when it was in the previous six MOBs?

Lieutenant General MOORE. So we feel like we have the capacity with the first six that we needed to have in the KC-46 as we transition forward, past MOB 8 and into the future. We will look at this again. But for MOB 7 we elected not to include an Active associate. With the possibility of that coming, we did include scoring criteria for the facilities that go along with an Active associate in the event that that becomes an additive mission in the future. But the presence of the Active associate itself is not a part of the scoring criteria for MOB 7. For the units that compete but are not selected for MOB 7, we intend to replace every KC-135, one for one, eventually. It will take us some time to do that. But our intent is to replace all of the KC-135s with some form of a new tanker.

As you alluded to and as you well know, I am not telling you anything that you have not been watching for quite some time. The youngest KC-135 that we own was made in 1964, and so continuous recapitalization of the KC-135s is the top priority in the air refueling portfolio. We have the ability to complete the KC-46 buy. That will take us to 183, and then beyond that we will continue recapitalizing the KC-135s as the budget top line permits. But our intent is to recapitalize all of them.

Senator DUCKWORTH. Okay. Are you committed to continue to work with me on this?

Lieutenant General MOORE. Yes, ma'am. Of course.

Senator DUCKWORTH. Thank you. Over the last year I have discussed with Air Force leadership the importance of having a force design plan, a strategic document to guide the Air Force's modernization efforts. I want to thank you and just say how pleased I am that the Air Force has worked with me this past year on creating a force design process, and thank you for being very responsive to that. As you continue to refine this process and finalize your

force design plan, I do want to offer my continued support and willingness to engage in those planning discussions.

Pivoting to conversation in the Indo-Pacific, I am concerned about the unique challenges in the region and that the region will have on the Air Force's aeromedical evacuation and aerial refueling capabilities. The Air Force needs to coordinate and integrate modernization efforts with INDOPACOM and TRANSCOM to support a fight tonight mission and force design planning.

General Spain, General Harris, and General Moore, as you continue to develop the force design for the Air Force, how are you working with combatant commands like INDOPACOM and TRANSCOM to ensure our current and future operational requirements like aerial refueling and aeromedical evacuation are incorporated into the force design? I ask about this capability specifically because they are contingent on the Air Force's investment in the next generation air refueling systems and the KC-135 recapitalization.

Lieutenant General HARRIS. Senator Duckworth, thank you for the question, and also thank you for your continued support with this and working with us on the force design.

Since the last time we met, we have continued work on the force design. We now have the framework of it, which is the strategic context and where we are looking out into 2030, 2035. We also have, from the intel community, an assessment of that same timeline and what we think. What that does for us is it allows us to do an assessment, and these are the gaps and the holes that we have within the Air Force. Come of it could be a clean sheet new aircraft. Some of it is modifications we need to make to existing platforms, and we have a list of that, as well. We are happy to go over that at any time with you.

But the other parts of this that we continue to develop are the force structure pieces of it, and by the end of June we should have the manpower piece. So it is not good enough just to have the capability come and arrive, but you need the manpower to meet up at the same time, as well. So those are the next two efforts, and that should be done by June, and we are happy to circle back with you and have a meeting, and keep working with you and your staff.

But as far as the COCOM [Combatant Command] inputs on this one, I would say that the framework of the force design has three components. It is Homeland defense, strategic deterrence, and power projection, and from the we use the O-Plan, so this is the COCOM's input to that, to make sure that we are adhering to what NORTHCOM [United States Northern Command] needs, what STRATCOM [United States Strategic Command] needs, and what all the other combatant commands need under the power projection platform piece of this. So that is one way that we do it.

The second way is we work through our components, so PACAP, USAFE [United States Air Forces in Europe], to make sure that we are hearing their requirements and putting that into the force design.

We are just finishing up a wargame this week, to take a look at what that force structure looks like, to see if it is going to meet the needs of the future threat environment that the intel community has laid out.

Senator DUCKWORTH. Thank you. Can I just read out a question for the record, for Secretary Hunter and General Moore? I am concerned about the Air Force's operating and contested environment and the need to resource air mobility command. This is for the record. Can you explain how the new integrated capabilities command will allow the Air Force Air Mobility Command to modernize prioritization investments and resourcing decisions, and how much input will combatant commands like TRANSCOM [United States Transportation Command] have in these decisions? Just get that back to me.

Thank you, Mr. Chairman.

Senator KELLY. Thank you, Senator Duckworth. Senator Ernst.

Senator ERNST. Yes. Thank you, Mr. Chair, and thank you, gentlemen, for being here today, and, you know, obviously the Air Force is transforming to meet the needs of the NDS and of great power competition. As part of the transition the Air Force has been engaged in a series of open and closed tabletop exercises to get ready for that China challenges.

One of the key recommendations has been the urgent need to improve the resiliency of our air assets. Secretary Hunter, if I could start with you, how does the Air Force plan to prioritize when it comes to the construction and upgrade of hardened bases in response to some of these evolving challenges?

Mr. HUNTER. Yes, that was a huge part of our Operational Imperative 5 effort was to understand what are the bases that are most in need of hardening and how do we prioritize and rank among them. So there are significant funds that were included in our 2024 budget request and also in our 2025 budget request to procure equipment, supplies, construction material, and everything that is required to do that work. Then the issue is how do we prioritize where those materials and supplies then go. That has been a huge part of our OI 5 effort, in close coordination with Air Combat Command and the Air Force components that General Harris just reference, PACAF and others, as to how we deploy those assets.

Senator ERNST. Mm-hmm. I just want to make the statement, of course, we do have a KC-135 tanker unit in the Iowa Air Guard, so I just want to remind everyone not only do we see needs for the future in our Active Duty Forces, but please do not forget about our Reserve and Guard forces and their needs, as well. The concern that we have in Sioux City with that squadron is that they were promised by the Air Force years ago that the Air Force would pay for the runway to accommodate these 135 tankers. That has not happened. We divested fighter jets. We took on the tankers. The Air Force has not made those improvements to the runway, and we are very concerned that when KC-46s roll around, we will not be able to accommodate and we will lose that mission.

The Iowa Guard continues to give and give and give, and yet we have not received what the Air Force has promised.

I understand the need to move forward and harden structures in the future, but let's make sure we take care of the commitments that have already been made, as well.

Thank you. That was just an aside. I am fighting for my Iowa Air Guard.

Then, as well, let's move on to modernization. On the 13th of April, I think we all witnessed in horror the launch of over 350 missiles and drones at Israel from Iran. Fortunately a lot of the threats were neutralized due to the Israeli defense capabilities, which included the F-15E. General Moore, the Air Force currently plans to divest those Strike Eagles, over 100 of those, in order to modernize the Air Force.

What are we doing to make sure there is no capability gap?

Lieutenant General MOORE. Yes, ma'am. So we are very proud of what happened as Iran took on multiple countries' air forces. First of all, I would say that the command and control that went behind that, all of the things that are a part of that system, not just the aircraft and the pilots, the munitions command and control, there were no friendly fire incidents in that, in a very, very busy and very, very compressed airspace. That is amazing.

Not to take anything away from what happened that night but there was no air-to-air threat, there was no ground-to-air threat, and Iran is not a peer adversary. So those aircraft did not have to enter a highly contested environment, and they did not compete with an air force that was specifically designed to defeat them.

China is a peer adversary. Iran is not. Those aircraft averaged 33 years old, and as I said at the beginning, our strategy is not to divest aircraft. That is not the goal. However, we do see the need to modernize aggressively, and in order to do that we need to transition airmen as well as resources to the future.

So we are very proud of what happened in Israel, but those aircraft were not in a highly contested environment, and they were not taking on a peer adversary.

Senator ERNST. Yes, and I do appreciate the approach you are taking. I know we have to assume some prudent risk in doing this, so as long as the Air Force has a plan to close any gap that might exist out there, we trust that you are covering down on that. So thank you for that.

I do have a couple more questions. I will submit those for the record. But thank you, gentlemen, very much for being here today. I appreciate it.

Senator KELLY. Senator Peters.

Senator PETERS. Thank you, Mr. Chairman, and gentlemen, thank you for your testimony here today. Thank you for all the work you do for our country every day. We appreciate that.

General Spain, I would argue that the Air Force needs to continue to think outside of the box about potential KC-46 refueling tanker and the collaborative combat aircraft (CCA) teaming, and the potential that offers. I was particularly pleased during his SAS testimony last month when General Allvin shared that the Air Force now is exploring using KC-46s as a communications node with these efforts, potentially enabling their use as an airborne battle management platform for future CCAs.

So my question for you, sir, is how is the Air Force working to advance expanded KC-46 communication capabilities, and simultaneously, how can the Air Force begin to plan for potential CCA KC-46 interoperability?

Lieutenant General SPAIN. Yes. Thank you, Senator. I think operationally what I will talk to is the need to connect the mobility

fleet broadly and gain situational awareness within those platforms to help out in the battlefield.

One of the things that we are learning as we experiment with agile, expeditionary com capabilities is that the battle management function in the future could be done really from any platform and not an airborne early warning platform solely. So for the acquisition details I will kick it to Mr. Hunter, but from an operational perspective, getting the flexibility in the evolution of command and control down the road would be very beneficial to the joint force and coalition force.

Senator PETERS. Yes, great. Secretary Hunter?

Mr. HUNTER. One of the great things that happened last year was our mobility guardian exercise in which we did some relatively low-cost upgrades to enable some additional coms with the air refueling fleet that participated in that exercise, and demonstrated quite a bit of payoff, payback, operationally for those investments.

So that is something that we are absolutely looking at, how do we take that lesson learned and that approach and apply that across our fleets. KC-46 starts ahead. KC-135 is an older platform, has a little bit farther to go. But there is a need for some modernization in both cases, and make that part of our approach.

Ultimately what we characterize as our NGAS, the Next Generation Air-refueling System, it is designed, in principle, like our NGAD approach family of systems, technologies developed under that programmatic approach, which actually be utilized across the broader fleet, not just in the new aircraft that would be being procured as part of a modernization program.

So those are threads, all of which are currently in work to expand the coms capability of the air refueling fleet.

Senator PETERS. Great. Very good. Generals Spain and Harris, this is question is for you. CCAs will require comprehensive and integrated training certainly for all Air Force components, including the Air National Guard. Training should be planned and executed by all components to foster uniformity in skills, tactics, and most importantly, readiness for the Total Air Force.

As Air Force integrates CCA, it is crucial, I would argue, to ensure that our training programs are collaborative as the aircrafts themselves. So my question for both of you is, currently how does the Air Force integrate new platforms across the Total Force, including fielding, training, and maintenance, and does the Air Force plan on adopting a similar model to which you have used when it comes to CCAs?

Lieutenant General HARRIS. So I will start. First off, thank you for the question. The way that we are going to onboard CCAs, I do not think it is going to be too drastically different from the way that we have seen onboarding of other aircraft, with the exception of bringing something out into an experimental operations unit. Something we have not done before is having the aircraft fly with other unmanned aircraft in close proximity to it, so there is going to be some learning baked into this.

Using AETC [Air Education and Training Command] is going to be part of this journey with us. There are ways that as we are learning through tactics, techniques, and procedure, things we want to institute within the schoolhouse, so when we bring new pi-

lots on they become familiar with how to operate with these unmanned systems. So it is going to be the pairing and the learning plus the experimental operations unit that we can actually use to help harness some of this learning.

Lieutenant General SPAIN. Senator, from a training perspective and operational perspective I would say that the benefit and the value that is very clear by outfitting the Total Force with similar capabilities in particular mission areas is clear across all of our fleets, and CCAs would be no different. We would intend to ensure that those units, whether Active or Reserve component, have the same capabilities to operate for the Joint Force in any fight with our allies and partners, and on behalf of the Secretary of Defense, our combatant commander in any theater, regardless of the affiliation. So we would ensure that there is a baseline common across the Total Force.

Senator PETERS. Great. Wonderful. Thank you. Thank you, Mr. Chairman.

Senator KELLY. Senator Mullin.

Senator MULLIN. Thank you, Mr. Chairman. General Harris, just looking at you guys' reoptimizing for the future powers ahead, right, you guys are making some changes to the training processes for your pilots, which is great. You know, we have got new platforms, new technology we have got to work on. But as you know, Altus Air Force Base in Oklahoma and Vance Air Force Base, where Vance is one of the top five pilot training centers in the country, where are we at with changing those programs there, and where does it leave the Air Force bases, when you start talking about what is the future of Vance and what is the future of Altus and their current mission?

Lieutenant General HARRIS. I do not see the current missions changing. What I do see changing is as we look to reframe what a unit of action is and how we deploy, that will be different, and this is where we get into the in-place combat wings or the different types of combat wings that might be out there. There are still foundational things that we need to do within our Air Force, that Air Education and Training Command does for us today.

The changes that we are talking about under great power competition and reoptimization for this really are aligning things like the accessions part of it, or onboarding of the warrant officers and the other things that our chief has talked about in previous testimonies.

As far as the bases and the missions and the roles and functions, specifically the institutional ones that are aligned to that, I do not see those changing.

Senator MULLIN. Well, in Vance I have a concern because you are changing a lot of your flight times as simulators, which is, at first, to be quite frank with you, General Harris, I was thinking, how are you taking someone with the actual flight time to a simulator, and then your instructors down there actually spent time with me and said, "Listen, we can put these pilots now in simulations where they might have a 5 percent survivability rate because of a mechanical error. We can put them in the simulator over and over and over again, and we are going to see an increase of that survivability rate," and which I thought, okay, I totally understand

that now. I am not a video game guy at all. I never even won Mario Brothers way back when on Nintendo, so that is just not my world.

But when you start looking at the simulators and the way they are training, I totally understand it. But some of the simulators you guys have set up at Vance is literally in a warehouse. I was in there in the middle of summer and, wow. I mean, this warehouse was 100 degrees all day long, if not over, and these future pilots are sitting in these simulators for hours. I do not see the infrastructure meeting where you guys are moving toward. You are just taking them and putting stuff there, and I do not see the investment.

I definitely do not see it when you are going to your budget that the Air Force put out, I did not see anything new for Vance to develop and need the new training that you are asking them to do except using old infrastructure. So can you speak to that?

Lieutenant General HARRIS. Senator, I can speak to part of that. In terms of great power competition and the reauthorization you will not see money associated with any of the efforts that we are making into this one. A large part of that is the work is ongoing, and we are still uncovering what it is going to take to be able to do this effectively, and FSRM [Facilities, Sustainment, Restoration and Modernization] and some of these facilities will be one of them. The joint simulation environment is another piece of this. But it also speaks to a broader piece of the ranges, in general, and how we train and practice every day, and the modernization that it is going to need to keep all of those together.

Senator MULLIN. Go ahead, General.

Lieutenant General MOORE. Senator, I am not tracking the issue that you are talking about at Vance but I understand the concern. Let us take this for the record and come back to you and give you a more cogent discussion on this.

[The information referred to follows:]

Lieutenant General MOORE. AMF-S training devices are currently housed in a repurposed section of Vance AFB's Consolidated Logistics Complex. This facility was constructed in 2006, and simulators were installed in a repurposed section of this facility in 2022, accompanied by a \$94,400 investment. This investment ensured the area remained climate controlled and was supported by adequate electrical, fire detection, and required Americans with Disabilities Act (ADA) upgrades.

To date, there have been only been five HVAC service calls to this facility, all of which were corrected in less than 24 hours.

Based on our existing infrastructure options, a focus on future-mission bed down and the projected divestiture of the T-1A aircraft, this location remains the most optimal location on Vance AFB to house these devices.

Senator MULLIN. Let me explain this one too. I would love to invite you guys there. We take a lot of pride in Vance, and it is something that the community is 1,000 percent behind, it is something that the State is behind. We love the fact that there are more pilots trained there any anyplace in the country. We want to keep that that.

So with that being said, I am a hands-on type of guy. I want to see it. So we would love to make that invite. I will personally make sure I change my schedule to fit your schedule, if anybody wants to come down there and put eyes on it.

Lieutenant General MOORE. Yes, sir. We would love to do that. I am not tracking this particular issue, but we will take it for the record.

Senator MULLIN. They are not complaining to me. I picked it up.

Lieutenant General MOORE. Yes, sir.

Senator MULLIN. They never brought it to me and said, "Hey, we need to look at this." I just thought that if we are talking about retaining the best, sometimes conditions do matter.

Lieutenant General MOORE. Yes, sir. Fair.

Senator MULLIN. Real quick before I run out of time, and I hated to spend so much time on that. Secretary Hunter, we have got a problem at Tinker with providing our mission when we have an overrun of the E-7s while we are phasing out the E-3s. I have brought this up multiple times, and we get answers that go all over the place on how we are going to actually phaseout the E-3s when we cannot deliver the E-7s on time and still be mission capable.

We talk about utilizing space assets, which that is a possibility. But what are we actually going to do to make sure the mission that Tinker does—and we know Tinker provides a very vital role to us, and especially in a time of conflict. If we go into an eventual fight they are going to be our eyes and our ears, and yet we are not going to have the platform to provide the mission.

What is our actual plan? Are we going to plan on just keeping some of the E-3s around, because they are phasing out pretty quick, before we get the E-7s?

Mr. HUNTER. So our plan is to have E-7 as a replacement, and we are on contract with Boeing—

Senator MULLIN. But way behind and over budget.

Mr. HUNTER. So we have been executing on the work. What we have been behind on is we got a proposal from Boeing that was roughly twice what the budgeted funding, funds that were budgeted based originally on information from Boeing about what the cost was going to be.

I can tell you we have narrowed that gap quite considerably, and to an area where I believe we will soon have an agreement that will be something that is affordable for the taxpayer, affordable for the Air Force, and we will be able to definitize that contract with Boeing and know how that rapid prototyping program, which is what we are currently engaged in, is going to work over the next several years.

Then the issue—and we have seen some changes in our plan, if you are referencing accurately—is how do we move into production of those aircraft that we have taken through that prototyping process. That is where there have been some delays because not knowing that we had a design that was affordable we could not in good conscious budget for production of an aircraft that we did not yet have a design that we knew was going to work.

So we will be able to revisit the issue of what does the pace and tempo of E-7 production once we have that agreement reached with Boeing.

Senator MULLIN. Thank you. General Moore I think wanted to weigh in on this but I am out of time. So, Chairman, it is up to you.

Senator KELLY. Yes, go ahead.

Lieutenant General MOORE. Sir, you said the E-3 would be our eyes and ears. I think we all have to be honest about what the E-3 actually provides. The physics of the E-3 does not permit it to function in the highly contested environment. Nothing that we can do to upgrade the airplane will change a 10-second revisit rate. It will not change the range. It will not change the resolution, which allows it to see what we need. The mission computer in an E-3 weighs 25,000 pounds.

It is powered by TF33 engines. We did an extensive amount of research in the B-52 upgrade program to determine how long those engines were sustainable, and there are some heroics that could get some of those engines past 2030. But for all intents and purposes, 2030 is the end of the road for the TF33 engine.

So we are working, as Mr. Hunter said, as quickly as we can to bring the E-7 on, but the E-3 is not a part of the fight in the highly contested environment. That does not mean that it does not have use in other AORs [areas of responsibility] in other regions, Homeland defense in particular, but it is not a part of the fight in the highly contested environment.

Senator MULLIN. Thank you. I appreciate it.

Senator KELLY. Senator Blumenthal.

Senator BLUMENTHAL. Thank you. Thanks a lot, Mr. Chairman. Thank you all for being here. Thanks for your service.

Secretary Hunter, could you repeat for me the cost of flying the F-35. Did you say it was 180? I may be off on that.

Mr. HUNTER. We were saying it is 180 flight hours, but it is \$6.8 million cost per tail per year. Then I think we were trying to translate that into a flying hour cost, which I think we calculated was in the mid-thirties range.

Senator BLUMENTHAL. Mid-thirties. Is that a cost that our allies or the customers for this plane are going to be able to sustain? In other words, other nations that are buying the F-35 are paying \$30,000 an hour to simply train and fly, and then there is the cost of modernization of them. I am just wondering about the long-term viability in terms of our allies and partners with this plane.

Mr. HUNTER. Yes, obviously they have smaller fleets. I have not heard any of the allies indicate to me that the operating cost of the F-35 is something that is significantly challenging their budgets, beyond that we are all challenged by these operating costs. But I have not heard any of the partners talk about reducing their buy because of the sustainment cost.

It is something we continue to work to get after and to get down, and I think we will, and we are on a path. I give General Schmidt a lot of credit for the effort that he and his team have put into that. But to the contrary, most of the partners that I have talked to are talking about increasing their purchases of F-35s. So that suggests to me that they are finding it sustainable.

Senator BLUMENTHAL. Well, that was my next question. What is the likelihood of reducing the \$6.8 million per tail?

Mr. HUNTER. I think we can reduce it. I think we are currently on track to do better than that, and I would like to do quite a bit better than that if we can get there. I think there are some good approaches. As I said, the potential leverage, some of our Air Force enterprise sustainment tools, some of which we are already doing.

So the engine maintenance work we do in partnership with Pratt & Whitney at Tinker has really grown quite strong, and we can do similar type approaches on other subsystems of F-35 in the Air Force, and the Navy has many that they are focused on, as well.

Senator BLUMENTHAL. The number of planes this year, the procurement this year, is going from 48 to 42, and I understand your testimony that there are reasons for it, in part the modernization costs and, quote/unquote, “flexibility” I think is the word that you used to give Lockheed. What is meant by “flexibility” for Lockheed Martin to work through the issues related to Block 4 development and integration? What does that mean?

Mr. HUNTER. So the challenge we have specifically with the aircraft in our fiscal year 2025 request is they are of the variant that we are currently working to do the Block 4 upgrades, and working to deliver the technology, the design, the hardware, the software to make a Block 4 variant of the F-35. So specifically the lot of aircraft that we are funding in fiscal year 2025.

Right now it is huge challenge to Lockheed to make all of that integration work in time to meet the jets that are being produced on the production line, and so a slightly smaller buy does add some flexibility for making sure that production schedule is going to work.

Senator BLUMENTHAL. Last year, when we spoke about the F-35 procurement at the modernization hearing you indicated that Russia’s aggression in Ukraine has spurred numerous F-35 purchases by partners and allies, and I guess that trend is continuing. You indicated that those purchases were sufficient to mitigate the dip in procurement by our military, and by extension, to sustain the supplier base.

Have you analyzed what the effects of the current trends in purchases by allies versus our own military is going to be on the supplier base?

Mr. HUNTER. We have looked at what the likelihood is, based on, because there is obviously Air Force and Department of Navy both had some reductions in our fiscal year 2025 aircraft purchases. It is our current belief and understanding that there will not be a disruption to the production rate at the factory, or that the FACOs, primarily Fort Worth, but obviously some of the overseas ones, that they would be able to continue at rate, even with these purchase levels from the United States services.

Senator BLUMENTHAL. Is that true of the parts and components, the supply chain that provide what is necessary going into the plane?

Mr. HUNTER. Yes, sir.

Senator BLUMENTHAL. Thank you. Thanks, Mr. Chairman.

Senator KELLY. Thank you, Senator Blumenthal.

Secretary Hunter, let’s talk a little bit about electronic warfare here for a moment. We are seeing, in the war in Ukraine, just how critical modern EW [electronic warfare] is on a modern battlefield. Certainly in any conflict with a near peer adversary we would be faced with a significant challenging EW environment, hence the need for electronic warfare aircraft like the Compass Call. The Compass Call airplane today, the EC-130, is being replaced over time with the EC-37. This program is currently slated to replace

the 14 EC-130's with 10 EC-37s, the first one having been delivered already to Tucson, the Davis-Monthan Air Force Base.

It looks like the budget justification material shows that we are not going to get all 10 of the EC-37s until the end of the Fiscal Year Defense Program (FYDP) in 2029.

Secretary Hunter, what steps could we take right now to accelerate the delivery of EC-37s, understanding that this is an important capability that we would need in any conflict with a near peer adversary?

Mr. HUNTER. Well, Senator, that program has been executed again on a relatively short timeframe. It was only a few years ago that the decision was made to do the modernization, so the rehosting of the Compass Call combat system onto the EC-37 platform. So I would hold it up as an exemplar of some faster work, in general, compared to some of our production programs.

But to your point, to get all the way to fielding of the new capability, you have to go through the aircraft production process, the modification process, and then fielding to the units. So I will look to see what opportunities we might have to save some time on that process. But the work that has been ongoing has not been without challenge, but it has happened relatively on schedule.

Senator KELLY. The equivalent airplane in the Navy was the EA-6B Prowler and then later the EA-18 Growler, and each air wing typically had a squadron that had four aircraft. So with, let's say, a dozen battle groups there you had about 36 or more, 48, airplanes.

I was surprised when I saw that the Air Force had just 14 electronic warfare airplanes, and now going down to 10. So could you talk about—and Secretary Hunter, maybe one of the generals would be better equipped to answer this—but is 10 enough? I mean, it seemed to me when I heard this number, that there were going to be 10 at Davis-Monthan, my initial question was, well, where are the other electronic warfare aircraft? Then I found out, well, there are not anymore. There are just the 10.

Mr. HUNTER. Yes, like you I have a little bit of background on EA-6B from a prior portion of my career, and so when I started looking into the Compass Call program I had to understand it is extremely different conops from the way in which EA-6—

But I will take your suggestion and defer to General Moore.

Lieutenant General MOORE. Yes, sir. So the EA-37 is a highly capable aircraft, as you know, and it does some things that no other aircraft can do. It is far from the limit of the Air Force's electronic warfare capability. With the APG-85 on the F-35, the APG-32 on the F-15Es, EPoS on the F-15Es, there are a variety of other electronic warfare capabilities that we have in the fleet flying, and many of those at the front edge even in the highly contested environment.

Beyond that we have added a Spectrum Warfare Wing headquartered at Eglin with detachments in other places in the Southeast with the specific intent of being able to characterize a signal ingested by the F-35 and turn that back around in an F-35 mission data file in a time that we could talk about in a different forum. But suffice it to say the quickness with which we intend to be able to do that is eye-watering.

So the EA-37, it is unique in what it does, but the Air Force's electronic warfare capability goes far beyond that aircraft. Ten aircraft was intended to provide two caps. Depending on what you believe about the breadth of the AOR that we might have to fight in, you could discern whether or not you think two caps would be enough. But that was the force sizing construct when the program of record was set at 10.

Senator KELLY. Thank you, General, and thanks for the reminder. I have met with the commanding officer of the unit in Eglin, talking specifically in the SCIF about how they turn that signal around and how that can benefit the warfighter. So thank you for that response.

Senator Cotton.

Senator COTTON. Mr. Hunter, we have heard some talk about connectivity today, and in your written statement you talked about the need to develop command and control systems for relevant contested missions. What is the fielding timeline of a resilient network for all of these fighters, drones, and future systems to talk to each other?

Mr. HUNTER. It is a rolling timeline. In terms of that first increment of capability, probably in the 2027 timeframe, I would say, if you were to talk about something at the level of a network capability. We have capabilities that are rolling out prior to that, and they are meaningful. So we have that for air defense already. We have already rolled out increments of capability of that system that are meaningful.

But if you start talking about really being able to do entire mission threads at scale, anywhere in the world, it is going to be another few years before we can really say we have rolled that out to the warfighter.

Senator COTTON. All right. What is the impact of the Air Force's inability to certify basic network modernization today like Link 16, due to FAA roadblocks?

Mr. HUNTER. Well, we have a lot of challenges in test when it comes to FAA and their certification of Link 16, so that has impacted our acquisition programs, like the F-22, and several other. It is challenge that we share jointly with the Navy because many of our Link 16 capabilities are ones that the Navy is the program lead for, and they run into the same challenges that we do.

Senator COTTON. Okay. General Moore, I want to turn my attention now to munitions. I noted \$1 billion less in the Air Force missile procurement compared to last year, even though our munitions stockpiles are not where they need to be. Is the Air Force currently maximizing procurement of munitions?

Lieutenant General MOORE. Senator, we are close to maximizing procurement. What we are talking about here are the advanced munitions really, the ones that pertain to the highly contested environment. We are, in most cases, within single digits, or in some cases within 20 or 24 individual procurement units of maximizing procurement.

What I think is helpful for the future is, thanks to the Congress in the 2024 cycle there was additional facilitization that allowed us to increase what the defense industrial base is able to procure. So

as that facilitization money takes effect we will be able to increase procurement.

I would not say that we are buying every single round that is available, but we are really close. the facilitization money that came in 2024 will increase that capacity as we go through the FYDP.

Senator COTTON. I am sorry. I do not know what you mean by additional facilitization money.

Lieutenant General MOORE. Building an additional line, putting together the facilities that it takes to build more of the same thing.

Senator COTTON. Is the Air Force using multiyear procurement? Well, I should say, I know you are using multiyear procurement for critical munitions. Can you buy more of these munitions with additional fiscal year 2025 funds under that multiyear plan?

Lieutenant General MOORE. There is some additional procurement that is possible, and if it is okay we will take the specific numbers and the specific dollars for the record and provide those back to you, by individual item.

[The information referred to follows:]

Lieutenant General MOORE. The AARGM-ER, AIM-9X, and AIM-120D3 missile programs are funded to equal the production capability in the Fiscal Year 2025 President's Budget; no excess capacity is available in those programs. Production capacity above planned fiscal year 2025 procurement for other USAF weapons programs is detailed in the table below.

Program Name	Item	Prod Capacity	DOD* FY25 Proc Qty	Excess Capacity	Unit Cost (\$K)	Add'l Funds to Maximize Proc (\$K)
AARGM-ER	AGM-88G	228	228	0	1,500	0
AIM-9X	Missile	2,500	2,500	0	729	0
AMRAAM	AIM-120 D3	800	800	0	1,122	0
JASSM	AGM-158B3	810	550	260	1,294	336,440
JDAM	Guidance Kit	25,000	2,000	23,000	56	1,288,000
LRASM	AGM-158C1	240	205	35	2,957	103,495
SDB I	GBU-39	10,000	9,000	1,000	60	60,000
SDB II	GBU-53	2,100	1,155	945	219	206,955

* Note: Fiscal year 2025 procurement quantities include USAF, DON, and currently funded critical FMS (UkrAF) plans.

Senator COTTON. Please do.

General Harris, I want to talk a little bit about unmanned aerial systems and counter-unmanned aerial systems, C-UAS, known by normal people as drones. What is the plan to defend our air bases from small drone attacks? After all, we had three troopers killed in Jordan about 3 months ago from such an attack, and dozens of drones have overflown Langley Air Force Base in the last 6 months.

Lieutenant General HARRIS. Thank you for the question. It has been almost a year since I was back from the desert, where I was the Deputy Air Component Commander, and the drone problem was very much an everyday problem for us to deal with. For the program of record and what we have within the Air Force, the Ninja system onto this, is the one that we use primarily, but it has to be a joint solution for this one.

The Army has several systems that are out there, and quite frankly, is the detection piece as far as some of the smaller Group 1 and Group 2, and then for the Groups 3 and 5, as far as the Air Force doctrine and what we do, it is using some of our counter-air

tactics and air-to-air munitions to be able to mitigate the counter-UAS, or the drone, threat that is out there.

Some of the ones that you are seeing around Langley and the like, these are things that we have to get after. We are putting resources to those. But for right now, some of these that use the systems that I mentioned before, the Ninja system, that is one that we also have money that is in fiscal year 2025 to start looking at some other systems that might be effective for this.

Senator COTTON. Okay. What is the Air Force plan, if any, for low-cost, one-way large drones, like we have seen from adversaries from Russia and Iran and China? I guess by low-cost I mean numbers that have only one comma in them.

Lieutenant General SPAIN. Senator Cotton, yes, if I can.

Senator COTTON. Do you want to take that, General Spain?

Lieutenant General SPAIN. Yes, sir. Yes, sir. As was mentioned, the problem of counter-UAS is a joint, and really, frankly, a coalition problem. As we saw in Jordan, any loss of life is tragic, and our hearts go out still to our Army brothers and sisters who were impacted by that.

General Kurilla and General Grynkeiwich at the time, General France now, are implementing procedures in the theater to increase domain awareness, which is really a key limitation in that theater. The events in Langley, or in Virginia, really speak to the idea that the Homeland is no longer a sanctuary, and we have to continue to pay attention to it. The systems that we have been pushing forward have largely gone to the most contested and kinetic theaters, and we have still paid attention to systems in the Pacific and/or in Europe. But starting with the Pacific next year we will field some systems from a command and control perspective, from a sensing perspective, and from a non-kinetic effect perspective.

Currently what we are doing is we are nested under the Secretary of Defense's TIGER team for counter-UAS as a part of the service, and the Air Force has its own TIGER team at the half level that has initiated operations to support the wing commanders who are in the field today, if that problem becomes a factor, and they do not have the relevant capabilities at their wings. Air Combat Command has initiated its own TIGER team for the below-major-command level to ensure that there is support for the commanders to deal with this threat, as well.

Lieutenant General HARRIS. It looks like, I was going to say there are more things we could share with you in a different forum.

Senator COTTON. Yes, and I take all that, but some of these drones are not going to be for the little C UAS, right, but for the actual attack systems.

Lieutenant General HARRIS. Yes, there is more we could share on that in a separate discussion.

Senator COTTON. Yes. I fear that, no one at this table, but I fear that this Department of Defense is taking its name a bit too literally, and there is not enough thinking about how offense creates its own defense.

Senator KELLY. Yes, that is what I thought you were talking about, like what is the cheap offensive drone program, and I know we need to talk about that maybe in a different environment.

Secretary Hunter, I want to talk a little bit about the B-21, if you can give us an update. It was good to see it is going into low-rate initial production. Obviously, an essential capability that we need to get a lot of ordnance on target, on time. Any new developments, positive or negative, since last year?

Mr. HUNTER. Well, we are in the flight test program. The flight test program is proceeding well. It is doing what flight test programs are designed to do, which it is helping us learn about the unique characteristics of this platform, but in a very effective way. So we are working our way through the test objectives that we have for the platform, and I am encouraged with how that is progressing.

There are some key points still to come this year, and looking forward very much to talking to you when we can come back with data on those efforts and let you know where we stand. But as of today, good progress being made, the flight test program. We believe we are on track.

Senator KELLY. Is this the first airplane that would be considered to be fully digitally designed?

Mr. HUNTER. Well, if you get to the people who are the true experts on this topic there is always a point about, oh, was this really digital, or how was this done. I would say it is the first aircraft where it is far more digital than not, that you can say that we have taken where we are at this stage of production and moving toward fielding.

Senator KELLY. Can you attribute the timeline, and I imagine the relatively shorter timeline, in getting this airborne and starting flight tests to the fact that it was digitally designed?

Mr. HUNTER. I think it has helped us with being as on track as we are to demonstrating that the aircraft that we have built to test is meeting our requirements. So I think higher fidelity, a higher likelihood of success.

There were other things that we did that contributed, as well, which is we had quite a discipline in setting requirements and looking for mature technology. So a lot of good process things, but digital has been a key enabler, especially on the software side. So this platform is somewhat unique in the maturity of the software that we had available when the aircraft came out of the factory.

Senator KELLY. One capability that is critical for the system is the LRSO. Could you give us an update on where we are? Is it on track?

Mr. HUNTER. It is tracking well. The program is definitely on track to meet its timelines and deliver to the warfighter need date. We are also doing well on cost for that program, as well.

Senator KELLY. Right. Thank you, Secretary Hunter.

General Moore, in my opening statement I mentioned my concerns that the Air Force plans to truncate the HH-60 Whiskey program. It would leave the Air Force roughly 25 percent short of its original plan to modernize the combat search and rescue capability of the fleet. So I worked to add 10 aircraft last year to help alleviate the situation.

So for General Moore or General Spain, why do you believe that truncating the HH-60 Whiskey program will be an acceptable risk?

Lieutenant General MOORE. Sir, the HH-60 Whiskey was designed and purchased for warfare in the desert. Over the distances that we see in the desert and with the threat profile that we see it is highly effective in that AOR. It also does other good work. The HH-60 Whiskey will support manned space flight. It will support search and rescue inside the CONUS. But we have enough aircraft to do all of those missions.

When you then translate to the highly contested environment, I do not know that any of us think that we want to be flying around the Pacific in a machine that refuels at 115 knots behind a C-130. It is just not the combat search and rescue machine that we need for the highly contested environment.

So for what we do need and for the great work that the HH-60 Whiskey can do, we have plenty of them. We do not need any additional aircraft to support combat search and rescue in the Pacific. Personal recovery, as you know, certainly from many years of service, is a service responsibility, and there are literally thousands of aircraft in the DOD that can perform personnel recovery.

Senator KELLY. So you are planning on PJs out of a C-130, that kind of rescue in INDOPACOM?

Lieutenant General MOORE. That could be one of the options. I think that we will have to look at all of the relevant options. I think CV-22 could play a role here. I think there are several things that could be a part of personnel recovery. But for combat search and rescue, doing that in a highly contested environment with HH-60 Whiskeys, I do not see that that is a path that leads us to success, and for what the HH-60 Whiskey can do, we have plenty.

Another facet of this is as those aircraft continue to be added, in order for us to bring them into the Air Force, particularly if we are bringing them in as mission aircraft, we have had 10 added in the last 2 years. If another 10 were to be added, the bill for the FYDP for the Air Force to bring those aircraft in would be nearly \$1 billion.

So there is a balance here that we need to strike with other Air Force priorities, and this is not where we would put incremental investment dollars. There are lots of other higher-priority things. This is just not it.

We are not unappreciative, and we understand your perspective. I have heard you say that combat search and rescue is a moral imperative. We do not disagree with that. We just do not think that is going to be done in the highly contested environment with HH-60 Whiskeys.

Senator KELLY. Thank you. Senator Cotton?

Senator COTTON. I have got one more question here. I want to talk a little bit about the CCA program a little bit further. What do you expect the first delivery of a Collaborative Combat Aircraft that is operational?

Mr. HUNTER. So what we are anticipating is operational units ready to operate in the later 2020's, with production aircraft that are delivered and ready for operations.

Senator KELLY. Have you given any thought to, as we go and fly training missions with pilots in NGAD, certainly there will be times that you would want a full-up complement of however many CCA aircraft would be in whatever the strike package would look

like. I mean, that certainly does make sense. But from a cost perspective, you have got to also maybe see a scenario where you could fly NGAD in a training environment without the associated CCA, and, at the same time, simulate them. Is that part of the program? It was something I was thinking about today as, I think it was Senator Peters was asking his questions, that you would have within the airplane itself, within NGAD, have some kind of simulation mode so you are communicating with some CCAs, but they are actually not really out there.

Mr. HUNTER. There is absolutely a plan to have that as a capability, that CCAs will be able to contribute. We have talked about the joint simulation environment. We need to have CCAs represented in that. That is absolutely part of our plan.

As you suggest, Senator, the way in which one trains for the CCA could look very different from the traditional training, because the capabilities, what the pilot has to do to interact with the CCA, in operations they may not actually see those aircraft. They may not be within visual range.

So it is potentially going to look different from what we are used to, and we are thinking that through as we work into the CCA capability and with the experimentation that the Experimental Operations Unit is going to be doing. Thinking through those issue, how does it work best, not just for operations but also for training and sustainment.

Senator KELLY. This is a technological leap that we are about to take here, and to get there we are going to have to divest some systems that today can deliver ordnance on target. I am all for innovation, and I think it is one of the things we do well as a country, and I think we have to out-innovate our adversaries.

But do you worry about maybe we get to a certain point and realize this is not going to work as well as we thought, and then we went too far down the road, and we have divested of certain capabilities? Or are you starting to feel—and I know there has been some simulation done on this, some testing—are you starting to feel as if we are going to get there and we can make this work?

Mr. HUNTER. I have a very high confidence that the CCA capability will be a significant increase in our overall capability. But I think to your point, we will learn how to best use these assets and what exactly they can and cannot do. But let me defer to General Spain on that.

Lieutenant General SPAIN. Senator Kelly, operationally the CCA program, as it is currently moving down its path, gets us to a place where some of the risks that we are taking with manned platforms can be mitigated to a degree in less survivable platforms down the road in highly contested environments.

The other part of this that we are doing as pathfinders is in the training environment. So from an undergraduate pilot training perspective, we are pursuing augmented reality technology, artificial intelligence technology that can be embedded into the synthetic environment, potentially in the joint simulated environment specifically, to enable this capability down the road and enable the ability to train with it at a high end, in a relevant environment that, to your point earlier, allows our air crew to wring out the systems, both the systems and their tactics, techniques, and procedures, in

any relevant environment that we can no longer emulate and lifeline.

So we will have elements that are preserved for a lifeline that we still need to train to and put pressure on humans in cockpits to be able to do that and get to the skill sets required in those mission areas from a cockpit. But better we can, and the more we can bring this technology down the road to create synthetic targets that they are flying against, where the TTPs are not observable out in live fly, the better off that we will all be.

Senator KELLY. All right. Thank you, General. Anything further anybody would like to share? Anything you feel we need to know? [No response.]

Senator KELLY. All right. Well, thank you. Senator Cotton, anything else? [No response.]

Senator KELLY. Okay. This hearing is adjourned. Thank you.

[Whereupon, at 5:26 p.m., the Subcommittee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR TAMMY DUCKWORTH

INTEGRATED CAPABILITIES COMMAND

1. Senator DUCKWORTH. Secretary Hunter and General Moore, I am concerned about the Air Force operating in a contested environment and the need to resource Air Mobility Command. Can you explain how the new Integrated Capabilities Command will allow the Air Force and Air Mobility Command to prioritize modernization investments and resourcing decisions?

Mr. HUNTER and General MOORE. Currently, our modernization is planned and developed by each MAJCOM without the benefit of development efforts from other functional perspectives. Numerous commanders are simultaneously charged with both maintaining readiness and addressing the requirements to modernize their respective segments of the force (e.g., Mobility Aircraft, Fighter Aircraft, Electronic Warfare, etc.) without an enterprise-wide perspective on how these distinct capabilities come together to complete missions. This has led to suboptimal results. Future conflict will require integrated systems acting in concert across multiple domains. To ensure an integrated joint force solution, we must aggregate capability development accordingly.

ICC will be charged with executing a coherent and complete Force Design that accounts for all Air Force capabilities, prioritized and coordinated to align requirements and future capabilities with Air Force operating concepts. ICC will aggregate MAJCOM (e.g., AMC) requirements, ensuring coherence across systems, to provide a unified demand signal for materiel needs aligned to a singular Force Design.

This integrated approach ensures the development of operationally necessary capabilities, breaks down organizational stovepipes, and allows operational commanders to focus on warfighting readiness.

2. Senator DUCKWORTH. Secretary Hunter and General Moore, how much input will combatant commands like TRANSCOM have in these decisions?

Mr. HUNTER and General MOORE. The CCMD and Joint strategies, concepts, and operational plans are the foundation for Air Force strategies and concepts. The CCMDs, and Air Force Components therein, are included at various touchpoints throughout the Force Design and subsequent capability development processes—the introduction of the Integrated Capabilities Command (ICC) will only serve to enhance this.

Rather than addressing a single CCMD's requirements in a vacuum, the ICC will account for all from a global and integrated perspective, addressing tensions intentionally. We will ensure our Force Design continues to address each CCMD's annual Integrated Priority Lists of highest priority capability gaps and requested solutions. We will also continue to support rapid delivery of critical capabilities through the Joint Urgent Operational Need (JUON) requirements process.

Most importantly, the ICC will have Operating Locations embedded at the Air Force Component Commands to maintain continuous and early dialog with the

CCMDs and our joint warfighters as they build the Force Design to ensure alignment between AF and CCMD capability priorities.

**DEPARTMENT OF DEFENSE AUTHORIZATION
FOR APPROPRIATIONS FOR FISCAL YEAR
2025 AND THE FUTURE YEARS DEFENSE
PROGRAM**

WEDNESDAY, MAY 15, 2024

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

ARMY MODERNIZATION

The Subcommittee met, pursuant to notice, at 4 p.m. in room SR-232A, Russell Senate Office Building, Senator Mark Kelly (Chairman of the Subcommittee) presiding.

Committee Members present: Kelly, Blumenthal, Peters, Duckworth, Cotton, Ernst, Scott, and Mullin.

OPENING STATEMENT OF SENATOR MARK KELLY

Senator KELLY. The Subcommittee on Airland will come to order.

I want to welcome Mr. Doug Bush, Assistant Secretary of the Army for Acquisition, Logistics and Technology; General James Rainey, the Commanding General of the Army Futures Command; and General Karl Gingrich, Deputy Chief of Staff for Army in the G-8.

I want to welcome our witnesses. Thank you for your service, thank you for your willingness to appear before us today.

As we meet today to review the Department of the Army's investment and modernization strategy as presented in the fiscal year 2025 budget request, it is important to note that the Army remains heavily engaged, supporting Ukraine in its fight against the Russian invasion, conducting complex operations in the Middle East, and increasing training and exercises in the Indo-Pacific. I would like to acknowledge the work soldiers are doing across the globe and express our gratitude to them and their families for the vital role they play.

Through all of its endeavors, the Army is working to increase its readiness, accelerate its modernization, and improve its interoperability with allies and partners. The Army seeks to do this by focusing on four key areas: warfighting, delivering ready combat forces, continuous transformation, and strengthening the profession. We look forward to discussing modernization in this context.

I have had multiple opportunities to travel to Ukraine and the Middle East over the past 3½ years. Each trip has shown me the

importance of a modern and ready Army. Operations in Ukraine and the Middle East continue to demonstrate the need for ground combat forces in effective multi-domain operations as well as the power of joint and coalition operations.

They also provide an illustration of the complexities the joint force would face if compelled to conduct similar operations in a larger and contested maritime theater. I recently returned from a bi-partisan delegation to INDOPACOM where I had the opportunity to see firsthand how our forces are preparing. The Army will play a critical role in the defense of Guam and in enabling any future combat operations in the Pacific. This is why the Army remains focused on its six modernization priorities: Long Range Precision Fires; Next Generation Combat Vehicles; Future Vertical Lift; Network; Air and Missile Defense; and Soldier Lethality.

In the last year, the Army has made notable adjustments in some of these portfolios as it makes tough decisions to balance force modernization with maintaining enduring capabilities. Today, the Subcommittee seeks to better understand how the Army will address remaining gaps moving forward.

In its networking programs, the Army has shifted from a plan to insert modernized capabilities in 2-year “capability sets” to a more iterative, agile approach consistent with a necessary emphasis on continuous transformation. The Subcommittee supports this approach and looks forward to learning how the Army will balance iterative modernization while seeking big steps forward in efforts such as: long-range hypersonics, directed energy, mid-range missile capability and human-machine integrated formations.

With submission of the 2025 National Defense Authorization Act (NDAA) we recognize that the Army is required to operate with a largely flat budget. At the same time, the Army’s munitions support to Ukraine and Israel has exposed capacity limitations in our industrial base.

Mr. Bush, we have had occasion to discuss this work before, and today I would appreciate an update on how the Army is using the replenishment of these items as well as its own investments to build future capacity. Further, we are interested in how the Army is employing recently authorized multiyear procurement authorities as well as your assessment of any additional resources or flexibilities that would further improve munitions development and production.

Finally, the rapid growth of unmanned aerial systems (UAS) creates an urgent need for the Army to develop and field its own broad range of UAS, and also the ability to defeat similar systems at scale. We recognize the Army’s investments in these capabilities and look forward to better understanding how to accelerate these efforts.

It is in the Nation’s best interest to avoid going to war with a near peer adversary, and the best way to do that is to outpace on the cutting edge, while continuing to modernize current capabilities in a manner that makes clear to our adversaries that they cannot beat us on the battlefield. We must do this to meet challenges in the Indo-Pacific, in Europe, and in the Middle East. We would like to better understand how the Army is balancing risk between newer modernization priorities and supporting enduring programs.

The Yuma Proving Ground in Arizona has been a proud host for signature efforts like Project Convergence, which plays an important role in guiding Army modernization activity. We applaud the Army's work in this area, as such events inform and accelerate not only Army programs but joint and coalition operations as well. The Subcommittee is interested in an assessment of this year's Project Convergence and the capability and capacity of current testing and training facilities to support the modernized force to include the Army National Guard and Army Reserves, which are critical components of the Total Army.

The Army continues to make significant progress in its modernization efforts, but the environment only grows in complexity. I have great confidence in all of you and look forward to a productive year as we continue to field the world's best Army.

I will now recognize our Ranking Member, Senator Cotton.

OPENING STATEMENT OF SENATOR TOM COTTON

Senator COTTON. Thank you, Senator Kelly. Thanks to our witnesses for being here today. The goal of Army modernization is to get the very best vehicles, munitions, and weapons so our soldiers can defeat the Nation's adversaries in combat, which makes that combat less likely in the first place.

To prepare our soldiers the Army has to contend with limiting factors like cost, wait, obsolescence, and sustainment, among others, and of course it does not help that the Biden administration has once again cut the Army's budget for another year.

Fortunately, I believe that General George has taken some steps to put the service on the right track. For example, Project Convergence demonstrates how the Army is adjusting to the modern battlefield. This combined joint exercise showed that the continuous transformation is becoming a reality in our Army. I look forward to hearing about lessons learned from the latest iteration of Project Convergence.

During a visit to Fort Campbell this past year I saw firsthand how the Army is transforming one of its best fighting formations. Second Brigade, 101st Airborne is now the first experimental brigade designed to be more tactically mobile. I was particularly impressed by the brigade's new infantry squad vehicles. I would ask our witnesses to provide more examples of lessons learned from the 101st and other modernized units, including the light brigade combat teams in the 10th Mountain and 25th Infantry Divisions.

Since this same hearing last year, the Army has made significant changes in its modernization portfolio. The Army has canceled the Future Attack Reconnaissance Aircraft program, based on lessons learned from Ukraine about survivability. The Army has pivoted the Extended Range Cannon Artillery program toward open competition, stressing the Army's focus on developing a longer-range artillery. I would like to also hear more about these and other major program changes.

When adjusted for inflation, the Army's budget proposes to cut funding by over 2 percent compared to the fiscal year 2024 enacted levels. As a result, the Army has also submitted more than \$2 billion worth of unfunded priorities, including funding for counter-unmanned aerial systems, a fancy way of saying counter-drone war-

fare, munitions, and military construction. All of the chief's unfunded priorities will help modernize the Army, and I hope this Subcommittee and the full Committee will look to include as many as possible in this year's Defense Authorization Act.

I thank our witnesses for their appearance once again, and I look forward to your testimony.

Senator KELLY. We will now recognize the witnesses for their statements, starting with Secretary Bush.

STATEMENT OF THE HONORABLE DOUGLAS R. BUSH, ASSISTANT SECRETARY OF THE ARMY FOR ACQUISITION, LOGISTICS, AND TECHNOLOGY

Mr. BUSH. Chairman Kelly, Ranking Member Cotton, and distinguished members of the Senate Armed Service Committee Subcommittee on Airland, good afternoon. Thank you for the invitation to appear before you to discuss the Army's modernization program and the resources requested in the President's Budget for fiscal year 2025.

I am pleased today to be joined by my teammates, General James Rainey, the Commanding General of Army Futures Command, and Lieutenant General Karl Gingrich, the Army Deputy Chief of Staff, G-8. We appreciate you making our written statement part of the record for today's hearing.

With your support, the Army's fiscal year 2025 budget request puts us on a path to equip today's soldiers with modern equipment while we invest in the technologies and systems necessary to build the Army of 2030 and beyond. The budget request before you reflects the Army's comprehensive approach to modernize, allowing us to adapt to challenge of an unpredictable era, an era marked by rapid and disruptive technological change and great power competition.

As the Chairman noted, it represents our sustained commitment to our key modernization portfolios: Long-Range Fires, Next Generation Combat Vehicles, Future Vertical Lift Systems, Network, Air and Missile Defense, Soldier Lethality, and Synthetic Training Environment, while also investing in All-Domain Sensing and Contested Logistics.

It also continues modernization and procurement of our enduring platforms and equipment that will remain in the force for years to come, that has to stay up with the potential threats.

Mr. Chairman, in the invitation for the hearing you asked us to provide, in brief, an update of our modernization efforts as they relate to ongoing operations in the Asia-Pacific region, as well as across the globe. I will do that briefly and then in questions we can go deeper.

The fiscal year 2025 budget request fully recognize the Army's role in the Indo-Pacific. In terms of material, the request includes sustained investments in key missile programs such as Patriot, as well as other air missile defense, including, for example, the Lower Tier Air and Missile Defense Sensor, the new radar for the Patriot and other systems, as well as the Indirect Fire Protection Capability Increment 2, another critical system to add to our air defense capability.

Second, the hearing invitation asked us to address any significant portfolio adjustments made in the formation of the budget. Mr. Chairman, both yourself and the Ranking Member noted the biggest change, which was the proposed realignment of aviation funding out of the Future Attack Reconnaissance Aircraft and into continued production of the Black Hawk M model and going into production for the CH-47F Block II, as well as acceleration of unmanned aircraft. We are happy to talk more about the reasons for that and how things are going as we do Q&A. But that was our one biggest change.

Although the Ranking Member mentioned the extended range cannon artillery, which is also significant, we still need the range. We want to try to get at it in a different way, and thank you for your support for letting us continue on that path.

Third, the hearing invitation asked us for an update on Army efforts to expand production of critical munitions. Thanks to supplemental funding, in particular, and thank you and all the Members for providing the supplemental bill, which was absolutely critical to the Army's current and future readiness. We are going to dramatically expand production across the board for both precision munitions, things like Patriot—and the supplemental included specifically a \$750 million investment to increase production of Patriot—and other things like conventional munitions, including 155 artillery and other conventional munitions. All of those things are now fully funded and on track, thanks to passage of the supplemental, and we are making it happen. We are now in that phase, and I look forward to talking to you about that in more detail.

Fourth, the hearing invitation noted the proliferation of unmanned systems that we are seeing in Ukraine, and you asked us to provide an update on our efforts in that regard. The Army is taking significant steps to address this rapidly evolving threat against our troops, particularly in U.S. Central Command (CENTCOM) and working with our allies there. There is over \$400 million in the fiscal year 2025 request for procurement of our two lead programs of record, M-LIDs and FS-LIDs, and \$140 million for research and development of various directed energy systems.

In addition, the supplemental bill passed by Congress provides us with an opportunity to do further work in CENTCOM based on urgent needs, getting equipment to them right now as that theater is, of course, the most under threat from this capability.

We are also using authorities provided by Congress, including a new one in the NDAA, to let us rapidly move money around to address threats. We used that authority in October to put hundreds of additional Coyote interceptors on contract because of the scale of attacks we were seeing on our troops after October 7th. That kind of flexibility is exactly what we ask for support for in the future, as well.

Finally, the invitation asked that we provide an update on the Army's establishment of cross-functional teams in contested logistics and all the main sensing as well as Project Convergence. With your support I will ask General Rainey to provide that update in his opening statement.

In closing, I want to say thank you on behalf of the Army for this Subcommittee's very strong support of the Army in the fiscal year

2024 bill and the supplemental, and we look forward to answering your questions.

Senator KELLY. Thank you, Mr. Secretary. General Rainey.

STATEMENT OF GENERAL JAMES E. RAINEY, USA, COMMANDING GENERAL, UNITED STATES ARMY FUTURES COMMAND

General RAINEY. Chairman Kelly, Ranking Member Cotton, distinguished Members of the Subcommittee, thank you for your continued support to our Army's soldiers, civilians, and families. I appreciate the invitation to appear before you today alongside Honorable Doug Bush, Lieutenant General Karl Gingrich, great teammates, as well as opportunity to talk about the work the Army is doing on continuous transformation.

We are in the midst of the most disruptive period and technological change in the profession of arms in at least the last 100 years, maybe ever. The Army recognizes we have a responsibility to invest in systems needed to build the Army of 2030, of 2040, but at the same time be ready to fight tonight, and make sure our soldiers are absolutely as prepared as possible.

Army modernization remains on track due to Secretary Wormuth and General George's consistent prioritization and the tremendous teamwork across the Army staff, the Secretariat, TRADOC [Training and Doctrine Command], Army Materiel Command Force Com, and especially our commanders that are forward—General Williams and his team, General Flynn and his team, General Frank and his team in CENTCOM, and the input they provide back to us as we try and modernize and transform.

Additionally, our cross-functional teams remain one of the indisputable success stories, and in my opinion proof positive that the Army made a wise decision standing up AFC [Army Futures Command] almost 6 years ago now.

As Honorable Bush said in remarks today, I would like to take the opportunity to highlight the two CFTs [cross-functional teams] that AFC has stood up since the last time I addressed this Committee last year, the Contested Logistics Cross-Functional Team and All-Domain Sensing Cross-Functional Team.

The Contested Logistics CFT in Huntsville, Alabama, reached full operating capacity in October 2023. The Army challenged this CFT with finding ways to make our formations lighter and more sustainable while also increasing their lethality and survivability. Seven months into this, the team is already making significant progress. They have four key portfolios—precision sustainment, human machine integrated supply and distribution systems, advanced power, and demand reduction. These portfolios also present challenges to industry as well as Army, so AFC continues to work closely with our private sector partners, from startups to multinational corporations, to apply their lessons learned to the tactical logistics challenge.

In partnership with the United States Marine Corps and the Navy, the Contested Logistics CFT is working on a joint abbreviated capability to develop and document on an autonomous watercraft and resupply vessels that grew out of our partnership in Project Convergence. This autonomous watercraft provides a

smaller, lower cost, unmanned capability that will enable greater operational endurance and reach for both the Army and the Joint Force, especially in INDOPACOM [United States Indo-Pacific Command].

The team is also exploring technologies on regenerative power, alternative fuel source power production, and emerging battery chemistries. They are exploring ways to utilize advanced manufacturing, alternative fuels, and new materials that reduce weight and delivery time of required repair parts, energy resupply, and items like food and water.

The funding requested in the fiscal year 2025 budget reflect these priorities, accomplishments, and the resources needed to maintain our momentum. Me and my team are always available to provide more detailed briefings to Senators, their staffers, or to host anyone who wants to come to our facilities down in Huntsville to have a much deeper conversation on these efforts.

Most recently, the Army announced the All-Domain Sensing Cross-Functional Team, which has a small headquarters here in Washington, DC, with the main body of the organization remaining in Huntsville, Alabama. This cross-functional team is not a new build, new soldiers. It is capitalizing on the success of the Assured Position Navigation and Timing CFT, which stood up, basically solved that problem, has been able to transition it to our teammates in Mr. Bush's organization, so continuing to evolve the cross-functional teams. This cross-functional team evolution allowed the Army to transfer all the experience and expertise to a new set of challenges. By keeping all that talent in place they contribute to our initial success.

So they are just getting started, but we have scoped the All-Domain Sensing Cross-Functional Team portfolio to address multi-sensor dominance. So, not just Army sensor but across the Joint Force, sensing architecture, and advanced processing and dissemination to facilitate successful understanding and decisionmaking in multi-domain operations.

The battlefield has become increasingly transparent, and the U.S. Army must remain on the forefront of these technologies and their military applications. The work of these two new CFTs, as well as the incredible efforts from the rest of the transformation enterprise, was on display in February and March of this year during Project Convergence Capstone 4. Which, as you know, was an Army-hosted but wholly joint and combined experiment. We had all the services, six different allies and partners, and also for the first time incorporated OSD's [Office of the Secretary of Defense's] guide experimentation effort, wholly integrated into Project Convergence. It was hosted by our Marine Corps teammates at Camp Pendleton and then also at the National Training Center in California. This experiment tested our latest developments in offensive and defensive fire integration, joint command and control, contested logistics, and developments in human-machine integrated formations and next-generation command and control, as well as counter-UAS efforts. Both on the joint side and on the Army-specific side. We pushed the bounds of our network capabilities as we worked to design and implement the resilient, data-centric systems needed to operate on the modern battlefield as a joint force.

We had about two dozen professional staff members attend Project Convergence, which we truly appreciate. I would like to take this opportunity to invite anybody that would like to come out to Capstone 5, which is scheduled for March and April 2025. We would be glad to host anybody who is interested.

For the Army to capitalize on the technological advances made by our CFTs and the lessons we are learning from watching what is going on in the world and also during our experimentation campaign, we believe we need greater institutional agility. Specifically, as you heard General George testify on April 18th, we need increased flexibility to fund and field the unmanned systems, counter-UAS, and electronic warfare systems. This increased flexibility will allow us to rapidly integrate critical technologies more quickly into our combat formations so that our number one asymmetric advance, the American soldier, has everything they need to fight and win our Nation's war.

In closing, I want to thank you for your commitment to the soldiers serving our Nation. Thank you for your time, and I look forward to your questions.

Senator KELLY. Thank you, General Rainey. General Gingrich.

**STATEMENT OF LIEUTENANT GENERAL KARL H. GINGRICH,
USA, DEPUTY CHIEF OF STAFF, G-8, UNITED STATES ARMY**

Lieutenant General GINGRICH. Good afternoon. Thank you, Chairman Kelly, Ranking Member Cotton, and the distinguished Members of the Senate Armed Services Committee Subcommittee on Airland, for the opportunity to appear and testify regarding the Army's fiscal year 2025 modernization effort. A special thank you to all the Committee Members for your enduring support to our soldiers, civilians, and their families. They play a vital role in our Nation's defense, a position they have maintained faithfully for nearly 249 years.

Our request for investments in modernization for fiscal year 2025 is synchronized with the Secretary of the Army's operational imperatives, which seek to place transformational capabilities in the hands of our soldiers to allow our Army to dominate in the land domain. As we learn lessons from the modern battlefield, our Army must transform continuously to be better prepared to defeat an evolving array of threats.

Our investments will allow the Army to become leaner, more agile, and most importantly, more lethal. These investments will strengthen deterrence in the Indo-Pacific and other regions critical to our Nation's security. As the linchpin of the Joint Force in the Indo-Pacific, these investments will contribute directly to the Joint Force's ability to deter, and when called upon, fight and win decisively.

As we transform for the future fight we are making generational investments while working with a sense of urgency to continuously transform. We remain committed to our signature modernization priorities, essential to the Army's broader transformation efforts.

Army formations are transforming and modernizing rapidly through teamwork, engaged senior leadership, process refinement, and the authorities and resources you provide the Army. We continue to modernize responsibly, maintaining readiness now, while

continuing to transform at a pace informed by the available resources.

For several years, the Army ruthlessly prioritized its modernization portfolio. We have eliminated, reduced, and divested legacy capabilities, enabling investments in higher priority modernization programs. As such, we ask for your continued support of the requested resources essential to maintaining and sustaining the Army's modernization path.

In closing, I would like to offer thanks to you and your staff and Committee who professionally facilitate the engagement necessary to advance our shared commitment to the defense of our Nation. Again, thank you for the opportunity to appear, and I look forward to your questions.

[The joint prepared statement of The Honorable Douglas R. Bush, General James E. Rainey, and Lieutenant General Karl H. Gingrich follows:]

JOINT PREPARED STATEMENT BY THE HONORABLE DOUGLAS R. BUSH, GENERAL
JAMES E. RAINEY, AND LIEUTENANT GENERAL KARL H. GINGRICH

INTRODUCTION

Chairman Kelly, Ranking Member Cotton, distinguished Members of the Subcommittee, thank you for your continued support to our soldiers, civilians, and families. On behalf of the Secretary of the Army, Hon. Christine E. Wormuth, and the Army Chief of Staff, General Randy A. George, we thank you for the opportunity to appear before you today to discuss the Army's modernization program.

The Army's fiscal year 2025 budget reflects the Army's comprehensive approach to modernization, so the Army can adapt to the challenges of an unpredictable era marked by rapid and disruptive technological innovation and great power competition. The budget request sustains momentum in our modernization initiatives, including the ability to invest faster in rapidly developing technology, while simultaneously prioritizing our role as the Joint Force linchpin in the Indo-Pacific, improving our Nation's industrial base and relationships with its innovation base, and continuing to support our allies and partners. Most importantly, this request will provide our soldiers the materiel solutions needed to fight and win our Nation's wars as part of the Joint Force.

THE SECURITY ENVIRONMENT

The security environment is marked by efforts of the People's Republic of China (PRC) and Russia to reshape the international system to suit their authoritarian aspirations and coercive methods and by accelerating technological innovation that is proving to be the locus of the great power competition for technological superiority and economic and military advantage.

As highlighted in the 2022 National Security Strategy, while Russia remains an immediate and ongoing threat, the PRC is the Nation's most consequential strategic competitor and the pacing challenge. The PRC is the only revanchist great power with both the stated intent to reconfigure the international system and the diplomatic, informational, military, economic, and technological instruments of national power to do so.

The PRC is leveraging innovative technology not just to modernize its military and create asymmetric advantages across all the warfighting domains and the electromagnetic spectrum, but also transform it by effectively aligning its military Doctrine, Organization, Training, Materiel (including weapons systems), Leadership and Education, People, Facilities, and Policy.

The Russia's war against Ukraine and events in the Levant demonstrate how the character of war continues to change rapidly and unpredictably. The unrelenting pace of technological innovation in these conflicts, as well as the competition between great powers, is placing a premium on the ability of nations, governments, and military institutions to adapt materially (including the industrial base), conceptually, and fiscally while also leveraging the comparative advantages of their citizen-soldiers and private sector innovation base. What we are seeing in Ukraine and Israel validates our six modernization initiatives: Long Range Precision Fires, Air

and Missile Defense, Next Generation Combat Vehicles, Soldier Lethality, Future Vertical Lift, and the Network.

MODERNIZING AND TRANSFORMING OUR ARMY

Materiel modernization is an essential part of the Army's broader transformation effort. Transforming our Army to ensure war-winning future readiness requires more than just fielding materiel solutions such as new technologies and platforms. It requires "continuous transformation," which is a framework for exploring opportunities particularly with the private sector's innovation base and reshaping the institutional processes to invest in and realize leap-ahead capabilities faster than our adversaries. Those opportunities and enabling processes may be different according to the timeframe—whether in the next 18 to 24 months, the next 2 to 7 years (the timeframe for defense budget planning), or concept-based capabilities in the decade beyond that.

The balance of current and future readiness requires advanced analytical methodologies to understand more comprehensibly the tradeoffs and associated risks between Modernization, Enduring, and Legacy program requirements and associated Army budgetary bins. To fully realize the potential of new capabilities on the battlefield requires integrating materiel modernization with non-materiel efforts. These include Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy.

Only by transforming and modernizing our Army in such a holistic, formation-centric manner and leveraging the Nation's industrial and innovation bases can we deliver more rapidly the relevant capabilities, such as human-machine integrated formations, needed to ensure the Army will continue to dominate the land domain in a period of disruptive technological innovation and great power competition.

MODERNIZING THE FORCE

The fiscal year 2025 budget request puts the Army on a sustainable path to equip today's soldiers with modern equipment while we invest in the technologies and systems necessary to build the Army of 2030–2040. We have also ensured that our requested resources are synchronized with the Secretary of the Army's six operational imperatives around which we are building the Army of 2030–2040:

- First, to sense deeper and more persistently than our enemies at all echelons.
- Second, to concentrate combat forces from dispersed locations to overwhelm our adversaries.
- Third, to deliver long range precision fires as part of the Joint Force.
- Fourth, to deliver air and missile defense at echelon to protect our forces.
- Fifth, to reliably communicate amongst ourselves and our Joint and coalition partners and secure ourselves from enemy cyber and electronic attack.
- Last, to sustain the fight for whatever the duration.

Front and center in this effort is our sustained commitment to our key modernization portfolios—Long Range Precision Fires, Next Generation Combat Vehicle, Future Vertical Lift, Network, Air and Missile Defense, Soldier Lethality, Synthetic Training Environment, All Domain Sensing, and Contested Logistics—and we are grateful to Congress for the stable funding provided to advance these initiatives.

Long Range Fires Programs:

- The Army demonstrated the Precision Strike Missile's (PrSM) capability to achieve ranges well beyond the legacy Army Tactical Missile System and began production qualification testing in 4Q fiscal year 2023.
- We successfully tested the Land Based Anti-Ship Missile seeker and the Extended Range Propulsion ramjet, setting conditions for subsequent increments of the PrSM program.
- The Army concluded the Extended Range Cannon Artillery (ERCA) Middle Tier of Acquisition (MTA) Rapid Prototyping effort in October 2023, with a determination that the current effort required further maturation and redesign. As part of a shift in strategy, the Army is planning a "commercial off the shelf" performance demonstration in the summer of 2024 that will provide decision-makers a better understanding of the artillery systems available and capable of meeting the Division Artillery Lethality capability gaps validated by Army Futures Command led Tactical Fires Study.

- The Army's Rapid Capabilities and Critical Technologies Office, in partnership with the Navy, is on track to deliver the first Long-Range Hypersonic Weapon (LRHW) battery in CY 2024.
- We delivered the Army's Mid-Range Capability (MRC) initial hardware in 1st quarter of fiscal year 2023 and are on track to equip three MRC batteries between fiscal year 2024—fiscal year 2026. The MRC prototype effort leverages existing Service missiles, launchers, software, and offers a maritime strike capability. MRC is projected to operate in the U.S. Indo-Pacific Command (USINDOPACOM) area of responsibility (AOR).

Next Generation Combat Vehicle Programs:

- The Army remains fully committed to the XM30 (Formerly Optionally Manned Fighting Vehicle) program, executing a multi-phased acquisition approach to maximize competition. In 3Q fiscal year 2023, the Army awarded the competitive contract to two vendors for the Phase 3 (Detailed Design) and Phase 4 (Prototype and Test) portions of program. Final vendor selection targeted for 2Q fiscal year 2028.
- The Robotic Combat Vehicle (RCV) program continues to make progress, informed by extensive experimentation with the RCV Full-System Prototype effort. At the end of fiscal year 2023, the Army awarded four contracts for demonstrator vehicles. Final vendor selection is scheduled to occur in 2Q fiscal year 2025.
- The M10 Booker (Formerly Mobile Protected Firepower) program began low-rate initial production in 3Q fiscal year 2022, with the first LRIP vehicles arriving in 2Q fiscal year 2024 and fielding planned for fiscal year 2025.

Future Vertical Lift Programs:

- The Army is committed to the Future Long Range Assault Aircraft (FLRAA), which remains our highest aviation modernization priority. FLRAA will provide effective assault and MEDEVAC capabilities, with significantly increased speed, range, and endurance.
- The Future Tactical Unmanned Aerial System (FTUAS) is leveraging a competitive rapid prototyping approach to deliver transformational reach to ground forces with an organically sustained, rapidly deployable, runway-independent, and on-the-move control platform. FTUAS provides the BCT organic airborne reconnaissance and security with real-time situational awareness and effects vital to cross-domain maneuver at the speed required in Multi-Domain Operations. FTUAS will use an open systems approach to continually upgrade the system with the latest technology.
- The Army continues development of Launched Effects, a family of operationally consumable Uncrewed Aircraft Systems that are launched from both air and ground platforms to extend tactical and operational reach across multi-domain operations and enhance the overall range of lethal and non-lethal effects. This will include loitering munitions, additional sensors, and a vast array of payloads to support varying mission requirements.

Network Programs:

- The Army is transforming our command and control (C2) network to ensure we have the right capabilities at echelon to fight and win in Large Scale Combat by delivering simpler, more intuitive, lower signature, and more flexible capabilities.
- The Army is adapting its electromagnetic spectrum training, operations, and technology for Large Scale Combat, including equipping commanders with the materiel they require to see, understand, and reduce their electronic signature to manage risk to mission.
- Over the next year, deployed Army units will conduct real-world experiments to reduce network complexity and get the right capability in place at the right echelon.
- The Army is also accelerating delivery of the Unified Network through unified requirements, unified governance, a realigned PEO, and centralized delivery of services.
- Fiscal year 2025 continues the fielding of modernized C2 network capability while evolving to more agile methods of development and deployment.
- In fiscal year 2025, the Army is investing in key capabilities that increase network resiliency, modernize backhaul, and upgrade post/camp/station network infrastructure worldwide.

- In total the Army is fielding more than 450 Army, Army Reserve and Army National Guard units with modernized network and/or C2 capability in fiscal year 2024 to 2025.

Air and Missile Defense (AMD) Programs:

- The Army fielded the Initial Operational Capability for the Integrated Air and Missile Defense Battle Command System (IBCS) in 3Q fiscal year 2023 and recently completed the Full Rate Production decision for this critical Air and Missile Defense system that will link Army and Joint sensors to shooters.
- The Army is improving the Maneuver-Short Range Air Defense capability, which was fielded to the first battalion, with the second battalion fielded in 1Q fiscal year 2024.
- The Army continues to make progress on its Directed Energy Maneuver—Short Range Air Defense (DE M-SHORAD) effort, a 50 kilowatt-class laser on a Stryker. Four prototypes have been accepted by the Army.
- We are advancing directed energy efforts for Indirect Fire Protection Capability (IFPC) by developing high-energy lasers (HEL) and high-power microwaves (HPM) for a layered defense of fixed and semi-fixed sites against an array of threats. As of 2Q fiscal year 2024, the Army has accepted four IFPC-HPM prototypes. Two prototype IFPC-HEL 300kW-class laser weapon systems will be delivered by the end of fiscal year 2025.
- Six Lower Tier Air and Missile Defense Sensor (LTAMDS) prototypes have been manufactured and are in developmental testing, with residual operating capability first demonstrated in 1Q fiscal year 2024. Testing will continue to validate additional capabilities through an Operational Assessment with Warfighters in 1Q fiscal year 2025.
- In November 2023, the U.S. Government leased the two Iron Dome Defense System Army (IDDS-A) Batteries to the Government of Israel for a period not to exceed 11 months.
- The Army has accepted the first set of Indirect Fire Protection Capability (IFPC) launchers for test and evaluation and is on path to complete delivery of all 16 launchers to begin an operational assessment in 4Q fiscal year 2024.
- The Army continues to procure Counter-small Unmanned Aircraft Systems (C-sUAS) to address Unmanned Aircraft Systems threats. In 1Q 2024, the Army began procuring one Division C-sUAS set with 172 Coyote interceptors, complete with procurement of 59 fixed sites that cover globally prioritized critical sites. In fiscal year 2025, the Army will procure a second Division set of C-sUAS systems, seven Family of Counter-Unmanned Aircraft Systems to provide C-sUAS capabilities for USASOC, continue to field C-sUAS capabilities to protect Secretary of Defense approved covered facilities and assets, and support emergent requirements in support of Joint Urgent Operational Needs. Additionally, the Army will finish fielding C-sUAS capabilities to the first two Army Combat Divisions.

Soldier Lethality Programs:

- Based on results from Integrated Visual Augmentation System (IVAS) fiscal year 2022 operational testing, the Army conducted a program re-plan to address areas of improvement. The Army and Microsoft have identified solutions to address these areas through refinements driven by soldier-centered design. The Army initiated IVAS 1.0 fielding to Training and Doctrine Command (TRADOC) units in late fiscal year 2023, and is on pace to field IVAS 1.1 systems to the Combat Training Centers in fiscal year 2024. The Army intends to field IVAS 1.2, the full rate production goggle, to the Close Combat Force as early as 4Q fiscal year 2025.
- The Army has procured approximately half of its Enhanced Night Vision Goggle Binocular (ENVG-B) procurement objective. Additional procurement funding in fiscal year 2023, along with programmed funding in fiscal year 2024, facilitated the purchase of an additional 10K ENVG-B systems and maintains ENVG-B production through 4Q fiscal year 2026.
- Production of the Next Generation Squad Weapon (NGSW) Rifle, Automatic Rifle, Fire Control, and General Purpose Ammo began in fiscal year 2022, and First Unit Equipped occurred in 2Q fiscal year 2024.

Synthetic Training Environment (STE) Programs:

- STE Software (STE-SW) and Reconfigurable Virtual Collective Trainers (RVCT) delivered initial prototype capabilities in fiscal year 2023 and is on track for

First Unit Equipped (FUE) in 4Q fiscal year 2024 to Army Fort Cavazos, Fort Moore, and Fort Novosel. One World Terrain, a key component of STE-SW, is in the hands of soldiers now providing operational battlefield visualization.

- We continue progress on the Squad Immersive Virtual Trainer which remains aligned with IVAS, with development focused on hardware productization, cybersecurity, reliability, and other enhancements.
- The Army's Live Training System (LTS) to conduct force-on-force and force-on-target live training will deliver initial capability to the Joint Readiness Training Center in fiscal year 2024.
- The Soldier Virtual Trainer (SVT) conducted its first Soldier Touchpoint in 1Q fiscal year 2023, with a second STP scheduled for 3Q fiscal year 2024. The program is on track to deliver initial capability in 1Q fiscal year 2025.

All Domain Sensing Programs:

- The Army transitioned to M-Code Global Positioning System (GPS) and alternative Position, Navigation, and Timing (PNT) beginning in fiscal year 2022, following the first fielding of Dismounted Assured PNT Generation I Quick Reaction Capability System, fulfilling the Directed Requirement.
- The Mounted Assured PNT System Generation II Program of Record, an M-Code GPS capable system, will initiate fielding in fiscal year 2024.
- Success in the APNT/S Cross-Functional Team (CFT) allowed the Army to transition the team and its efforts into the All-Domain Sensing (ADS) CFT. The ADS CFT will address multi-sensor dominance, sensing architecture, advanced processing and dissemination, and other operational enablers to facilitate successful understanding and decisionmaking in multi-domain operations.
- The Army continues to invest in the ground segments of space-based technologies that close operational gaps in deep sensing and targeting activities. The Army prototyped and live-fire demonstrated the first-ever use of Low-Earth Orbit Satellite-based Alternative Navigation technology to guide a Precision Guided Munition in a totally GPS-denied environment and successfully engage a target at long range.

Contested Logistics Programs

- AFC instituted the Contested Logistics Cross-Functional Team (CL CFT) to lead a deliberate transformation effort by developing Army and Joint Signature Sustainment Modernization Capabilities aligned to pacing threats associated with contested Multi-Domain Operations (MDO) and Large-Scale Combat Operations (LSCO).
- The CL CFT reached Full Operational Capacity (FOC) on 31 OCT 2023.
- The CL CFT is currently addressing the challenges presented in a contested environment through four key portfolios: Precision Sustainment, Human Machine Integration (HMI) Supply & Distribution Systems, Advanced Power, and Demand Reduction.
- Recently, an Army Requirements Oversight Council (AROC) approved Predictive Logistics with an initial focus on firing platforms, specifically Abrams, Paladins, and Bradleys.
- The CL CFT pursues continuous transformation with autonomous/robotic solutions and HMI to increase operational reach and endurance for commanders.

The Army's budget request also continues procurement and modernization of our key systems for our operational aviation platforms, Ground Combat Systems, Intelligence programs, Logistics, Armaments, and Ammunition. We carefully balanced the overall Research, Development, and Acquisition portfolio, including fine-tuning between Research, Development, Test and Evaluation funding, and Procurement funding, as we transition from enduring systems to our new modernized systems.

The Aviation portfolio strikes a balance between prudent investments to maintain the viability of the enduring fleet, while also investing in future aircraft and capabilities designed to provide reach, standoff, and overmatch against peer competitors in Multi Domain Operations. Beyond investments in FLRAA, the Army is making key investments in Apache, Black Hawk, and Chinook helicopter modernization, to include CH-47F Block II for conventional units and MH-47G for special operations units. The Army also continues investments in munitions and aircraft protection by sustaining Joint Air-to-Ground Missile production, an improved lethality option to the current Hellfire missile, and through continued investment in Aircraft Survivability Equipment, a suite of systems that protect Army aircraft from threat infrared missiles, radar guided missiles, and lasers through detection and defeat systems.

Armored Brigade Combat Team modernization and combat vehicle protection remain a priority. With this budget, the Army will procure 30 Abrams M1A2SEPV3s Tanks, 51 Strykers, 20 Self-Propelled Howitzer Paladin Integrated Management (PIM) vehicle sets, and 26 Joint Assault Bridges.

The Intelligence and Electronic Warfare (IEW) Portfolio enables Commanders to see and sense more, at greater distance, and more persistently at every echelon. The IEW portfolio is making key investments in critical Multi-Domain Intelligence capabilities to provide better analytics, Deep Sensing, and Indications and Warning (I&W) in support of Targeting. These investments include the Terrestrial Layer System which will provide electronic warfare and cyber enabled effects; the Army Intelligence Data Platform (AIDP) that is the Army's first cloud native web based intel program of record; The Multi-Domain Sensing System-High Accuracy Detection and Exploitation System (MDSS-HADES), which will provide collection at extended ranges; and the Tactical Intelligence Targeting Access Node (TITAN), which will provide processors to exploit and disseminate critical intelligence, at every echelon. These critical investments are required to meet our pacing threat challenges.

The Air and Missile Defense portfolio invests in integrated command and control, sensors, and shooters to provide 360-degree, tiered, layered defensive fires against a wide range of air and missile threats. It continues to invest in Counter-small Unmanned Aircraft Systems (C-sUAS), Lower Tier AMD Sensor prototypes, Patriot radar upgrades, and procurement of critical AMD munitions, such as the Patriot Missile Segment Enhanced. The Fire Support portfolio continues to invest in modernization priorities to address long-range missiles fires and capabilities needed for today, with a focus on the INDOPACOM AOR. In fiscal year 2025, we will procure 236 PrSM Increment 1 missiles, support PrSM Increment 2 seeker development, and begin procurement of 19 Maritime Strike Tomahawks (MST) to support the priority theater.

The Command and Control portfolio continues to align resources required for networks and command posts to be simpler, more intuitive, lower signature, and more flexible. The portfolio will increase Command Post mobility and survivability through investments in modular command posts, on-the-move and low earth orbit SATCOM, and secure wireless capabilities. The portfolio procures modernized radios to meet the National Security Agency cryptographic modernization requirements and joint and coalition interoperability; continues investments in Unified Network Operations, software-defined network capabilities, and network security to enable data centricity. It will also continue to procure and develop Assured Position, Navigation, and Timing capabilities.

The Logistics portfolio invests in Army Watercraft, a combat multiplier in support of Army operational concepts and the Geographical Combatant Commander in large scale combat operations; invests in contested logistics capabilities to reduce demand and provide point of need production and sustainment; and realigns funding to support critical ammunition program lines and Army Training Strategies to ensure contractual requirements are met to maintain Industrial Base Minimum Sustainment Rate capacities; and procures of 1,353 Joint Light Tactical Vehicles, 16 High Mobility Multipurpose Wheeled Vehicles (HMMWVs) and 2,167 HMMWV antilock braking system/electronic stability control kits to improve our existing tactical wheeled vehicle fleet.

Finally, the Human Machine Integration (HMI) portfolio consolidates Army efforts to bring autonomous and machine learning advantages to our tactical formations. Integrating virtual training capacities in emerging weapon systems and enduring systems with add on modules/effects ensures continuous training of soldiers and formations to operate efficiently and effectively as part of the joint force. Observations from ongoing conflicts in Europe and the Middle East, as well as an understanding of the significant threats in INDOPACOM demonstrate a need to rapidly develop an HMI capability inside our Army formations at echelon. Our investments in autonomous and semi-autonomous ground and aerial systems are essential to extend our battlefield effects, maintain an advantage over the enemy, and enhance the lethality and survivability of our formations. The Army will employ robotic systems to offload risk from soldiers onto machines and leverage autonomy and machine learning to reduce soldier mental and physical loads. This allows our number one asymmetric advantage, the U.S. Army soldier, to focus on those tasks that only humans can do—the ethical application of force, utilize curiosity and intuition, and apply the art of command. The ability to make first contact with the enemy using a robot instead of a soldier is essential to continue to protect our most precious resource. Investment in the HMI portfolio allows the Army to do this.

MODERNIZING OUR BUSINESS PRACTICES

The Army has embraced industry best practices, such as the use of soldier-centered design and rigorous experimentation with prototypes, to enable feedback from soldiers and commanders earlier in the development process. This is accomplished in phases—first by getting prototype equipment into the hands of soldiers from the operational force early, through soldier touchpoints, to refine requirements before more investments are made. In subsequent phases of experimenting with prototypes in increasingly complex scenarios, we assess how we would organize and fight using this technology. This provides the Army not only valuable feedback on the technology itself, but we learn how we need to train and integrate across Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy.

The Army continues Project Convergence, a Joint and multi-national experimentation campaign of continuous learning to inform capability design with soldier touchpoints that culminates in a major field experiment. Working closely with our counterparts from the other Services, we identify Joint warfighting problems to solve. Experimentation objectives, operational scenarios, and data collection plans are managed by the Project Convergence Board of Directors, which includes representatives from all the Services, the Joint Staff, and coalition partners. Events range from field experimentation with the signature modernization capabilities from the Army's Cross-Functional Teams to embedding experimentation objectives in annual operational exercises, such as Northern Edge, Valient Shield, Balikatan, and Avenger Triad. These events include focused learning on integration with multi-national partners, including FVEY, NATO, and many Pacific partners (Japan, Republic of Korea, Philippines, Singapore, etc.). The PC series also features a Capstone event that establishes an Army-hosted Joint experimental venue. The Capstone event is designed to inform the Joint Warfighting Concept, the OSD vision for CJADC2, and CCMD priority areas (such as the Joint Fires Network from INDOPACOM).

The Army continues to implement and employ the reform initiatives granted by Congress that were designed to streamline and gain efficiencies in the acquisition process. In recent years, Congress has authorized more flexible approaches to acquisition, which have resulted in the establishment of DOD's Adaptive Acquisition Framework (AAF). The AAF provides the Army with six acquisition pathways that enable the acquisition workforce to tailor strategies to deliver better solutions faster. For example, the Army is judiciously using Middle Tier Acquisition (MTA) rapid prototyping authority to experiment with innovative, mature technologies to quickly demonstrate new capabilities. The Army is using MTA rapid fielding authority to quickly field production quantities of new or upgraded systems with minimal development, potentially resulting in faster capability delivery and lower costs. In all, the MTA pathway enables a "try before we buy" framework that reduces risk, reduces cost, and accelerates capability development and deployment. The Army currently has 32 programs executing MTA rapid prototyping or rapid fielding efforts and is using these authorities to accelerate select Army modernization priorities including FLRAA, XM30, MRC, and IFPC.

The Army also benefits from the establishment of the Software Acquisition Pathway (SWP). The SWP is a new acquisition pathway used to facilitate rapid and iterative delivery of custom software capabilities to users, recognizing that technology development cycles are more rapid in software systems. Programs using the SWP will demonstrate the viability and effectiveness of the capability within 1 year. The Army currently has 17 programs executing on the SWP, and we continue to seek more opportunities to use this tailored pathway. In addition to the SWP, the Secretary of the Army issued a new policy in March 2024 to drive adoption of agile software development practices. The directive institutionalizes modern software development approaches across the Army, in line with industry best practices. These approaches—which include agile and lean practices—focus on iterative development and delivery of software in close coordination with users. This type of development allows software to be rapidly developed and refined over time, accelerating the Army's ability to deliver needed capabilities to soldiers. To enable broad adoption of these modern approaches, the directive reforms many of the institutional processes that underpin the software development lifecycle, from requirements through sustainment, which have historically been cumbersome and time intensive. This represents one of the first significant efforts across the Department to comprehensively adjust legacy software development processes in line with private sector best practices.

Rapid Acquisition Authority (RAA) continues to enable the Department to quickly acquire and deploy capabilities in response to urgent operational needs. This author-

ity applies to capabilities that can be fielded within 2 years and are based on already proven or available technologies, or to capabilities that can be developed or procured under MTA authority. RAA significantly streamlines acquisition requirements to enable a rapid response to existing threats. The Army most recently used this authority to award a production contract for 600 Coyote Interceptors to help protect U.S. forces from Unmanned Aerial System attacks. Congress further enhanced RAA in the fiscal year 2024 National Defense Authorization Act (NDAA) to better enable the Department to respond to emergent technological advancements or threats, or to U.S. allies and partners who have been subject to an armed attack by a "country of concern," respectively.

The Army also benefits from expanded use of Other Transaction Authority (OTA), which can include follow-on production awards. OTAs are contractual instruments other than standard procurement contracts (i.e. FAR), grants, and cooperative agreements that lend themselves to working with small companies and non-traditional defense contractors, two known sources of technological innovation. The Army effectively uses OTAs to streamline the acquisition of basic and advanced research activities, prototype projects, and follow-on production efforts. In fiscal year 2023, the Army awarded more than 1,767 OTA agreements valued at \$6.9 billion. The Army updated its OTA Policy in February 2024 to address recent statutory changes, including the expanded definition of prototype efforts and incorporate innovative pilot programs to use OTAs for construction.

Congress also made permanent the authority for Commercial Solutions Opening (CSO) in the fiscal year 2022 NDAA. Since its establishment as a pilot program, the Army has leveraged the CSO authority to obtain innovative commercial products and solutions to fulfill requirements, close capability gaps, and provide technological advances. The streamlined nature of the CSO procedures also serves to lower barriers to entry and incentivize small and non-traditional vendors who have not previously worked with the Department. The Army used CSO authority extensively as part of its pandemic response efforts.

In addition, in the fiscal year 2016 NDAA, Congress encouraged delegation of Milestone Decision Authority (MDA) for most acquisition programs from the Office of the Secretary of Defense to the Military Departments. The Army further delegated MDA for some of these programs to the Program Executive Officer level, when appropriate. This delegation allows the Army to appropriately align program oversight with risk, resulting in reduced bureaucracy and increased efficiency.

Last, Congress recently provided temporary authorities to streamline acquisition and contracting requirements to support Ukraine, Taiwan, and Israel, and to replenish domestic stocks of equipment. Section 1244 of the fiscal year 2023 NDAA, as amended by section 1242 of the fiscal year 2024 NDAA, enables the Army to reduce procurement lead times by several months. It also provides streamlined multiyear procurement authority for select munitions, which the Army is using to stabilize the industrial base. These flexibilities have been critical in helping the Army move quickly to deliver capabilities in response to Russia's war against Ukraine and to replenish U.S. stocks.

All these initiatives, individually and in combination, allow for better and faster modernization decisions and faster requirements development.

CONCLUSION

The Army is modernizing and adapting to ensure we can deliver leading-edge capabilities to our soldiers at the speed of relevance and innovation. With continued support from Congress, we are building a force capable of competing across the spectrum of competition and conflict to deter war and, failing that, prevail in war. With stable funding, newly enacted authorities, forward-leaning leadership, and fiscally agile processes, as well as a rigorous technology experimentation regime, we are even further down the modernization path than envisioned at this point last year. Modernization is a central element of Army transformation, translating materiel modernization into capability and lethality in our formations. The nature of our adversaries and their ability to harness if not control the direction and pace of technological innovation to achieve overmatch across the warfighting domains demands that we adapt continuously in how we modernize and transform. With your support, we are committed to doing that.

Thank you again for this opportunity to discuss Army Modernization and for your strong support of our soldiers, civilians, and their families.

Senator KELLY. Thank you, General. Again, thank all of you for your service and being here to testify today.

I am going to start with General Rainey. General, in your opening comments you mentioned how this is the biggest or greatest transition an Army has had to make in, I think you said, 100 years, or maybe ever. I agree with you. It is a steep hill we are trying to climb here.

I am concerned that our ability to test some of these new capabilities, ranging from new electronic warfare systems to directed energy, which you mentioned, to hypersonics, are constrained by the current limitations in our ability to conduct open air, as well as hardware in the loop and simulated tests and evaluation and experimentation. Facilities like the Electronic Proving Ground at Fort Huachuca in Arizona and the Yuma Proving Ground, which often hosts Project Convergence, are crucial to the Army's efforts.

General Rainey, how is the Army ensuring that it has sufficient capacity and capability to proceed on its modernization requirement at the pace that our National Defense Strategy demands?

General RAINEY. Thank you for that question. So if I could take it in two parts, the ability to test is one of the critical steps in the ability to transform, just like requirements and acquisition, as you know, Senator Kelly. So being able to do that in an innovative, fast way that keeps pace, so that we are not waiting on tests. We are innovating two different ways there, and there are resources applied in our budget to fully modernize Army Test and Evaluation Command, because if we do not do that we are going to end up with modernized equipment and waiting around for old-fashioned testing.

I think maybe more important than that is the other part of the question about being able to train the force. So one of the things that keeps me awake is, because I believe we will deliver all these modernization efforts, but we cannot train with them. Then it is almost pointless, right? We are the best Army in the world because of our people and the way we train. That is something that we are passionate about.

Places like the John Fox Range at Huachuca, and that being a world-class training environment where we can train in different domains than we have traditionally is something that is essential, and that is a priority for General George and the Secretary. Not to speak for my teammate, General Brito, but the person who is responsible for Fort Huachuca has a laser focus on that one. Camp Grayling, Michigan, is another place, looking cross-COMPO. Some of the best facilities we have are not in COMPO 1. They are in COMPO 2. So it is a great opportunity to work across the total force.

Senator KELLY. Has there been any, that you are aware of, any limitations on access to ranges or facilities that have impacted a timeline for any kind of development programs, because you have not had access to a place to test the new equipment?

General RAINEY. I am not aware of a specific example yet, but as we modernize and increase the fielding of these capabilities we are going to need to grow our ability to both test and train. So not yet but it is a potential thing if we do not continue to invest in it.

Senator KELLY. I was down at the U.S. Naval Test Pilot School about a month ago, of which I am a graduate, and it was really interesting. I was talking to the commanding officer, and he said

he either had there now, or a student that was coming from the Army, not a helicopter pilot, but a guy that is an Abrams tank commander or officer, that is going to go through the flight test engineering program at the Naval Test Pilot School, just to be able to better learn how to conduct developmental tests. If it works out well it might be something that you would consider expanding upon.

Do you have plans to enhance any of the test capability or leverage some of these areas like Yuma Proving Ground or Fort Huachuca, to get further capacity?

General RAINEY. Yes, we do, both capacity and then also testing is expensive. So within the fiscal stewardship aspect of this, we believe there is an opportunity to use simulation to a much greater extent than we currently are, and we have facilities at Aberdeen Proving Ground, the National Simulation Center that is a Fort Leavenworth. So it is not just making the John Fox Range awesome and making Camp Grayling awesome, and being able to train at Fort Bliss, Texas, is how do you link them together and do 100 reps in simulation, so when you do test we are getting the max effect for the dollars and soldiers that we actually use.

Senator KELLY. You mentioned Capstone 5. You said it was going to be in March or April?

General RAINEY. March and April.

Senator KELLY. Where will that be?

General RAINEY. Right now it will be spread across not just the United States but we are going to link it distributively to INDOPACOM all the way out to the Philippines in an exercise, also into CENTCOM and EUCOM [United States European Command] for the joint portion, so distributed command and control modes. Then the Army portion will be primarily at the National Training Center, but as you know we use Yuma Proving Grounds, Fort Bliss, and other places for both lead-up events to it and then to distribute the experiment.

Senator KELLY. Thank you, General. Senator Cotton.

Senator COTTON. Mr. Bush, I want to talk about the IVAS system. It is kind of like a bad penny. It keeps turning up, but it costs a lot more than a cent, hundreds of millions of dollars per year.

The Army bought 10,000 copies of the first two variants, which made soldiers sick and did not work. Those systems, I presume, will never see combat. Now the Army is asking for \$250 million to buy 3,000 of the latest IVAS iteration, Version 1.2, that is still not guaranteed to fix these problems. The Army recently tested 10 of these units with one squad from the 10th Mountain. Has the Army tested IVAS 1.2 with any platoon or company-sized element yet?

Mr. BUSH. Senator, not yet, but that is coming imminently, larger-scale tests. There is a plan to move from squad to platoon to company as we progress with testing 1.2, to determine, your question, of whether or not it is worth spending those procurement dollars on.

I would not say we know for sure, but I believe we have a plan to inform such a decision, if Members provide the funds.

Senator COTTON. Could you provide an actual timeline to flesh out your answer, "imminently"?

General RAINEY. Third quarter of fiscal year 2024, so late summer is when we are going to get our hands on 1.2, and make sure that it goes through the rigor of soldiers using it and getting their feedback, Senator.

Senator COTTON. Third quarter of fiscal year 2024, if I am not mistaken, would be April, May, or June. Is that correct?

General RAINEY. Yes, Senator. I will come back to you with the exact date we are going to get 1.2 and the way ahead for who is going to test it and where.

Senator COTTON. Today is May 15th, so that is 46 days until the end of the third quarter. So you expect to conduct tests with IVAS 1.2, at platoon and company-size elements, by June 30th?

General RAINEY. To be clear, Senator, I believe that is the time we are scheduled to receive it, and I will have to come back to you, if I may, on the plan to get the soldiers' touch points and platoon and company.

Senator COTTON. To receive the systems—

General RAINEY. To receive the systems.

Senator COTTON.—not to test them at the platoon and company level.

General RAINEY. Correct.

Senator COTTON. So you will receive the systems by June 30th.

General RAINEY. Yes.

Senator COTTON. Okay. Do we know a timeline for when we will test them with platoon and company-sized elements?

Mr. BUSH. It is over the remainder of this year, sir.

Senator COTTON. Fiscal year or calendar year?

Mr. BUSH. Calendar year, sir, in a series of events. I apologize for not having it to hand, but we can provide it by the end of today, a detailed schedule for you.

Senator COTTON. Okay. So you will have them delivered by June 30th, and you expect to test them with platoon and company-sized elements by the end of 2024 calendar year.

Mr. BUSH. Yes, sir.

Senator COTTON. Thank you. My understanding, from the results, is that soldiers who have tested these latest systems could not read or open a lock in low light. Most soldiers had cable malfunctions. The remote keys got stuck. The mission shield is not ballistically rated. There are other issues. I could go on but my time is running short.

General RAINEY, do you think these systems are going to prove suitable for combat use once you start testing them?

General RAINEY. Senator, I don't know. I am very interested in receiving 1.2. We have high expectations that it is going to be much better than what we have received and tested so far. When it comes to IVAS, as a former infantryman, I realize the potential. I mean, if it works it is a legitimate 10x upgrade to our most important formations. But if it does not work then I think we would have to take a very hard look at whether we continue down that path or use that money for other critical aspects of our night vision strategy, because we have to make sure the entire Army can own the night, and there are other very good systems, like ENVG [Enhanced Night Vision Goggle], for example, that have demonstrated really strong supports.

Senator COTTON. Well, in a big old Federal budget, and even in a DOD budget, \$250 million is not a lot, but the Army is not the Navy or the Air Force, and \$250 million buys a lot of other stuff for you that is needful.

Mr. Bush, do you think at this stage we should go forward with the \$250 million purchase of 3,000 units when only 10 have been tested so far?

Mr. BUSH. Sir, I do support the President's Budget because I will give the Chief and Secretary the option, if testing goes well, to keep this capability on track. But there is an "if" there, and, of course, we would not make such a decision without informing them of the test results so they can make the call. But I would ask the Committee's support to consider that funding so that if it does work out it does provide improved capability for infantry forces, which is greatly needed.

With regard to the specific problems, sir, I think this 1.2 is designed to get at the three major flaws you pointed out, which are all very well-articulated. The one that concerned me the most was the form factor, meaning how a soldier wears it. The first version I agree was not something that was usable in an infantry context. This version, I believe, gets at that very much, and is much closer to what our soldiers are used to wearing with night vision devices they wear, but does more than just night vision. However, sir, it is a new technology, and it may not work out, but we are hopeful that it will.

Senator COTTON. Yes, I share those concerns. More than once soldiers have wondered who could have possibly designed an article of clothing or a piece of equipment that they are expected to wear on long marches or riding in small vehicles or jumping out of an aircraft. Thank you.

Senator KELLY. Senator Mullin.

Senator MULLIN. Thank you, Chairman, and thank you guys for being here.

General, I see that you had shoulder surgery?

General RAINEY. Yes, Senator.

Senator MULLIN. How long ago?

General RAINEY. Three weeks.

Senator MULLIN. Well, thank you for being here. I have had multiple shoulder surgeries, and it is never a fun process. Enjoy the rehab. If someone does not make you cry they are not doing their job right.

Anyway, thank you guys so much.

General Rainey, I want to start with you. Has the Army's Future Command mission changed since sequestration?

General RAINEY. I would not say changed fundamentally. I would say expanded, Senator. So the initial start of Army Futures Command was almost totally focused on modernization, so materiel only. Secretary Wormuth adjusted that, in my opinion, in a broader context, so the overall responsibility to transform the Army, not just modernize.

So I have a part of the modernization responsibility for the Army, and that is determining the requirements and working closely with Mr. Bush and his team to do acquisition. At the same time, General George, when he became the Chief of Staff of the Army,

assigned all of his major commands a responsibility and designated AFC as the Army lead for transformation.

None of those things are holy within my organization, but the overall responsibility to work closely with Mr. Bush and his team, General Gingrich and his team on materiel, but also work with General Brito to make sure that the training organization and leadership of all those critical aspects all come together in a way that makes sure the Army can continue to dominate the land domain.

Senator MULLIN. So would you say that the Army is kind of rescoping the command base on the change of mission then?

General RAINEY. I don't know if I would use the word "rescoping" but adapting.

Senator MULLIN. Should it be looking at rescoping?

General RAINEY. I am very comfortable with what I am accountable for to the Secretary and Chief, the resources that I have that accomplish my mission and the relationships and teamwork that I have. So my answer would be no, Senator.

Senator MULLIN. Okay. Good enough.

Secretary Bush, how effective has the Directed Energy Maneuverable Short-Range Air Defense prototypes proven in the field?

Mr. BUSH. Sir, so we have deployed—

Senator MULLIN. By the way, I would have used the acronym but I do not know how to pronounce it.

Mr. BUSH. Yes, sir. So we have deployed the prototypes. That was a request from CENTCOM, and we have done that, and we are learning a tremendous amount because of that. I think what we are finding is where the challenges are with directed energy at different power levels. So that power level, 50 kilowatts, is proving challenging to incorporate into a vehicle that has to move around constantly. It is the heat dissipation, the amount of electronics, kind of the wear and tear of a vehicle in a tactical environment versus a fixed site.

Senator MULLIN. Right.

Mr. BUSH. However, sir, that learning, though, on those prototypes is informing all of our other prototyping efforts in directed energy. We have deployed other systems at lower power levels that are proving successful—20 kilowatts, for example, in some fixed-site type setups. Then we have still to be delivered some higher power, 300 kilowatt systems that would also be more of a fixed-site type defense but maybe capable against a cruise missile, not just a UAV [unmanned aerial vehicle].

So, sir, I think all this prototyping is going to tell us how to get a real directed energy system actually in the real Army as soon as we can.

Senator MULLIN. So, the change, is that coming directly from the soldiers in the field? Is that the feedback they are giving you, saying this is the issues we are having?

Mr. BUSH. Yes, Senator. I mean, there is, of course, no better feedback than that. They will tell you everything, and they are not worried about your feelings. So we are getting that feedback, which is what we need.

As I mentioned, we are learning that directed energy in a lab environment or in a test range is different from a truly deployable,

tactical environment. But it is the future, and we are committed to it as part of our overall counter-UAS approach.

Senator MULLIN. So what do you figure the benefits are from some of the high energy lasers versus the high-powered microwaves?

Mr. BUSH. Yes, sir. So the lasers, the key technology is really the ability to control the beam and keep it on the target, get it on the target and keep it on the target long enough to have the effect.

Senator MULLIN. Well, that is good for one-on-one, but the swarms that you are seeing, it is not effective, correct?

Mr. BUSH. So, Senator, to your point about, high-powered microwave has the potential to give you kind of an area weapon versus a precision weapon against drones. What we are learning there is it is kind of like how do you apply that tech in a safe way on a battlefield where other things are flying around, including our aircraft, and how do you target it using other systems like a radar, to make sure you are point it at the right place and it has the effect.

I would say the high-powered microwave systems are showing promise. We have four prototypes now. We are learning from them. I think if they show enough promise they could be part of a layered approach that looks at both approaches, the lasers and microwaves.

Senator MULLIN. So you see them working together and deployed on the same battlefield?

Mr. BUSH. Potentially, sir. I think for fixed-site defense, for example, the high-powered microwave systems could make a lot of sense because they do not have to move around. But they give you a capability that individual laser systems do not.

Senator MULLIN. Thank you. My time is running out. Thank you so much.

Senator KELLY. Senator Ernst.

Senator ERNST. Thank you, Mr. Chair, and thank you, gentlemen, for being here today and for your testimony, and just making sure that our force of today is ready for the fight of tomorrow. So truly appreciate that.

Mr. Bush, we had a really great conversation earlier in my office, and I would love to get that on the record today. This is important to me because, as you are aware, the focus of our conversation was the Iowa Army Ammunition Plant. Last year the Army announced plans to increase 155 artillery munitions production, and their focus was to be on the Iowa Army Ammunition Plant.

During a recent SASC [Senate Armed Services Committee] hearing, Army Chief of Staff General George stressed the need to bolster our organic industrial base and push forward with the Army's investment in establishing the future artillery complex in Middletown, Iowa.

Mr. Bush, may I have your assurance that this construction is still proceeding to meet the Army's targeted production of 155 millimeter artillery rounds?

Mr. BUSH. Yes, Senator, I will.

Senator ERNST. Thank you, and given the magnitude of this project, particularly as our allies are relying on us to lead and serve as the arsenal of democracy worldwide, the supply of munitions remains a crucial factor, especially when it comes to that 155.

Can you commit to keeping me informed with any updates or issues through the modernization efforts at the Iowa Army Ammunition Plant?

Mr. BUSH. Yes, Senator, absolutely.

Senator ERNST. Thank you very much. Mr. Bush, as you know, our supply chains are very much linked to all different defense acquisitions, and the vulnerabilities in the United States defense supply chains are particularly due to China's dominance in critical minerals and certain technologies.

Can you provide us some of the insights into how the U.S. Army's acquisition processes are currently working to mitigate these challenges?

Mr. BUSH. Yes, Senator. So I think if I could start with critical minerals. The OSD, through funding provided by Congress for Defense Production Act investments has been making those targeted investments in having both mining and processing capacity for certain critical minerals in the United States, and that has been a huge initiative, and a very important one, strongly supported by Congress. I can get you more details on projects that have already been awarded, and now that we have 2024 funding again, what they have planned to do. But we, of course, support all of that.

With regard to the Army and our responsibility for conventional ammunition across DOD, we have the task from the fiscal year 2024 NDAA—to ensure that all of our supply chains for subcomponents, including baseline chemicals, by 2028, are completely either in the United States or with friendly countries, and we are on a path to do that. That will require some continued investment, but it is critical to avoid any dependence on potential enemies for production of ammunition.

Senator ERNST. Well, I do appreciate that because as we look to the civilian sector, as well, most of that mining and refining happens outside of the United States. So the Hardrock Act, I believe, is what you were referencing, through the NDAA, but making sure that we have enough for our own national defense. So thank you for that.

How does the U.S. Army assess the impact of these supply chain vulnerabilities on the timelines and operational readiness?

Mr. BUSH. So, Senator, the way we have mitigated in the past, and are doing now, in some cases, where downstream, for example, there might be an unfriendly country that provides us materials, we stockpile. So the goal of that stockpiling needed by time in an emergency or if that source became untenable to produce somewhere else or to get it from another ally. And we have done that across the board, which has allowed us, as part of this ramp-up, to stay on track.

However, and Congress has provided the funds, especially in the last supplemental, we are now, just for 155, over \$4 billion of investments in America, frankly, in production capacity. Those kinds of investments—and we have also gotten them for precision weapons like Patriot and other things—are foundational for the future, not just this emergency.

I think what we have learned from this ramp-up is the longest pole in the tent of increasing production is the big machine tools and some of the critical materials that are refined and take time.

Those things you need stockpiled or you need additional capacity you can localize quickly, on hand, and not building it from scratch, which is what we are doing now.

So if I had one lesson learned, ma'am, it would be that for the next time around we need to have more of that ready to go so we are not building new buildings. We are just activating cold sites.

Senator ERNST. Absolutely. I think there are 18 minerals that are listed that we are supposed to, as the United States, have on stockpile for our national defense, and we have depleted those over decades. So glad to know that we are working on that. I would love to visit with you more at a future point about some of that. But I appreciate the time, and again, gentlemen, thank you very much for being here today.

Thank you, Mr. Chair.

Senator KELLY. Senator Blumenthal.

Senator BLUMENTHAL. Thank you, Mr. Chairman. Mr. Secretary, I think it was about 3 months ago the Army announced the cancellation of the Future Attack Reconnaissance Aircraft (FARA), as it is known, following about 15 years of planning and investment, more than \$1 billion in the X-2 technology, to replace the aging Apache and Kiowa helicopters. The Army said it was necessary for your service to be capable in the 21st century. For more than a decade, the industrial base relied on the commitment of FARA as a long-term program that enabled companies to recruit the most capable and technically invested workforce in the Nation, or at least one of them.

So this decision has shaken the industrial base to its core. Hundreds of engineers are going to be without work. Probably they will be employed elsewhere, but the Army will not be able to get them back. My two questions are, number one, is the FARA decision irreversible? Second, what will be done to develop FARA's X-2 technology?

Mr. BUSH. Senator, from an acquisition and contracting perspective the existing OTA agreements that are actually tailing off but still under work right now with our two vendors, those will just end naturally later this year. So we would have to have a new contract award to continue with the program in some way.

To your second question, right now the U.S. Army does not have a plan to invest in that particular technology for that capability. But I would say that that technology, in my view, if effective, could have a future in unmanned aircraft, for example, that might be something the Army would very much be interested in, depending on the way it was used.

Senator BLUMENTHAL. The decision on FARA followed the decision on FLRAA, which was questionable in my view, both as to the cost and the capability. The relevant companies decided not to challenge it. Obviously it is part of what we need to assess going forward in the National Defense Authorization Act.

But what will the Army do to retain and support the workforce that will be displaced as a result of the FARA termination?

Mr. BUSH. Yes, sir. So I think as part of the larger decision, and it was a difficult decision, on FARA—and I would, if I could, defer to General Rainey on the operational aspects of why that judgment call was made—from an industrial base standpoint the continu-

ation of Black Hawk production was our primary focus to retain capacity and talent, as you mentioned, to just do rotorcraft well, not just build them but design them. Number one, sir.

Number two is we are still, thanks to Congress, we are supporting providing the fiscal year 2024 funding for FARA, even though the program was ending, has allowed us to invest that in the teams. Between the two teams we have had them nominate good work to do with that workforce right now, that helps other Army agencies and programs, and we are embarking on that work.

Senator BLUMENTHAL. Can you assure us about the commitment to the Black Hawk program?

Mr. BUSH. Senator, we are 100 percent committed, as the Secretary said, to that follow-on multiyear of a better Black Hawk than we have now. So that research work will go into that new, better Black Hawk, that will go into production in that multiyear.

Senator BLUMENTHAL. You will need the engineers displaced from the FARA program for that work on the Black Hawk program. Is that what you are saying?

Mr. BUSH. Sir, some of that would be up to the contractor, of course, but we need the talent to be able to make a better Black Hawk, yes, because if we are going to go into production for 120 more aircraft we want it to be the best possible one.

Senator BLUMENTHAL. But it will not be 400.

Mr. BUSH. Sir, there will potentially be workforce impacts. Yes, sir.

Senator BLUMENTHAL. So it might be near that number.

Mr. BUSH. Sir, I have heard numbers in that range.

Senator BLUMENTHAL. Thank you. Thank you very much, Mr. Chairman.

Senator KELLY. Senator Peters.

Senator PETERS. Thank you, Mr. Chairman. Thank you, gentlemen, for being here today and for your service to our country. We appreciate you.

Secretary Bush and General Rainey, the Infantry Squad Vehicle is a proven platform that clearly demonstrates how leveraging the existing commercial products, which we talked about just before the hearing here, General, leads to both schedule procurement and cost efficiencies. The Army has recognized the ISV's value by including \$44 million in procurement funding on the unfunded priority list to supplement the President's \$34 million request.

So my question for both of you is given the request for an additional \$44 million for the Infantry Squad Vehicle. Can Congress conclude that the Army needs to field the ISV more rapidly than originally planned, and how does this acceleration of the platform help the Army achieve its latest force design initiatives?

Mr. BUSH. Senator, if I could start on the kind of budget part and let General Rainey, if I could, let him talk about operations.

Senator PETERS. That would be great.

Mr. BUSH. From a budget standpoint, yes sir, it is proving to be a very good vehicle. We are investing in it. I would also add that the recently passed supplemental, I expect some of that funding to end up buying ISVs because we are sending Ukraine older things. That is one of our best, newest platforms, and we will use some of

that supplemental funding to buy vehicles sooner than even the 2025 budget being approved.

Senator PETERS. Good. General?

General RAINEY. Senator, the feedback is we have started fielding the ISV from our operating forces. Not in touch points but actually fielding it to our brigade combat teams, has been overwhelmingly positive. The 2d Brigade of the 101st, because of the way they are coming in, instead of peanut butter, slicing them all over the Army, we are massing them on one of our brigades, and that brigade is experimenting with the motorized infantry brigade combat team. Based on what we have learned from Ukraine and now the technology, it is finally to the point where we can bring a system like the ISV to bear.

How many we buy and as fast as we buy I would defer to Mr. Bush. But as an infantryman and as a transformation guy, I would like to see them fielded to as many of our infantry brigade combat teams as we can, as fast as we can.

Tactical mobility is something that has eluded the light infantry force for a long time, and this is a great capability.

Senator PETERS. Great. Great. Thank you for your assessment.

General Gingrich, the fiscal year 2025 budget request for the Stryker family of vehicles, comprising 8 Stryker brigade combat teams, proposes a reduction of \$210 million for fiscal year 2024, enacted level, limiting procurement to basically 51 vehicles. This many hinder the Army's plan to modernize the half brigade each year, which would impact training and fielding schedules of these units.

So my question for you, General, this substantial reduction in funding for the Stryker combat vehicles impacts a significant portion of the Army's deployed inventory. What is the rationale behind decreasing the budget for these vehicles, and how does this reduction align with the Army's overall modernization goals?

Lieutenant General GINGRICH. Thank you, Senator, for that, and you are absolutely right. Fifty-one Strykers is in the fiscal year 2025 request.

I think I would best characterize this as one of the hard decisions that we had to make. Based off the priorities that were established by the Secretary and the Chief, the resources that are allocated, we had to carefully balance sort of today's risk in an enduring platform like the Stryker with some of our more modern programs that are under development but will bring game-changing technology.

So I would call this one of high regret that we had to do, but we thought through the risk and thought this was an appropriate place for now. We are not walking away from the Stryker, just buying a little time and space so that we can address other priorities, sir.

Senator PETERS. So what do you see as the future?

Lieutenant General GINGRICH. I see the Stryker in Army formations for quite some time. It is a very versatile vehicle, not only as an infantry troop transport but also some of the other technologies that we are bringing in, that it could be the base platform. So I think the Stryker will be in our inventory for a long time, Senator.

Senator PETERS. Great. Thank you, General. Thank you, Mr. Chairman.

Senator KELLY. Senator Duckworth.

Senator DUCKWORTH. Good timing, huh? Thank you, Mr. Chairman and Ranking Member. I appreciate having this hearing today.

The Organic Industrial Base, or OIB, is the backbone of the Army sustainment capabilities. The Army's industrial base comprises 23 depots, arsenals, ammunition plants that manufacture to maintain critical materiel support for the warfighters across the Joint Force. These highly technical facilities and skilled workforce help to generate readiness and operational capability throughout the Army.

Illinois has had the privilege of being home to Rock Island Arsenal, which has supported this Nation since 1862—we are very proud of it—and continues to play an essential role in our national security, contributing to the Army's efforts to accelerate 155 shell production, for example.

As the Army executes its 15-year modernization implementation plan it must continue to use and partner with the 14 DOD Advanced Manufacturing Institutes across the country, including institutes like MxD, located in Chicago, which will help enable the use of advanced technologies in other continuous improvements across the Army's OIB.

Assistant Secretary Bush, you know I have been talking about Rock Island since our time together on the House Armed Services Committee. Maintaining global leadership in advanced manufacturing is vital for ensuring the strength of our OIB. How can the Army strengthen its relationship with DOD's Advanced Manufacturing Institutes, such as MxD, and our additional resources needed to do so?

Mr. BUSH. Thanks, Senator. I think Congress has shown leadership in pushing all the services and the Army to look more real terms at advanced manufacturing, and as you know, Rock Island is our center of excellence for that. It is where we have the most 3D printing machines. We have one of the biggest in the world there, that Congress was able to provide us.

There is good work going on to do the hard work of figuring out which parts we can make with those machines and then also make those things even more forward in the field. So the idea of being able to print parts, so to speak, forward is the idea.

I think we need to continue to stay at it. We are also, though, counting on industry, because they are also moving, if you go to any modern factory they are starting to use these techniques, as well, to work with them to get this done.

So I think it is a question of just staying at it, staying up with industry, and, though, having Government expertise like we have at Rock Island, so we know what we are looking at. Otherwise you can be told all sorts of things but not know what is real, and the folks of Rock Island know.

Senator DUCKWORTH. So in addition to that, Secretary Bush and General Gingrich, a challenge that will hinder modernization of our OIB is the mix of legacy and modern equipment—you touched on that just a little bit—and a lack of data connectivity with systems. How does this impact our production capabilities for critical materials, which is those 155 rounds, and what recommendations do you have to strengthen the Army's OIB?

Mr. BUSH. Senator, if I could start and let General Gingrich help, I think on the ammunition part of the organic industrial base, the investments we have been able to make, thanks to support from Congress, both before the Ukraine conflict and since it started, are going to leave us with a generational improvement in the ammunition part of the organic industrial base. I would not say that about the rest. If I have a concern it is about our other depots and our ability to keep them modern, good places to work, and busy, given the resources we have, so that if there is a major mobilization for a large-scale conflict those depots, which are an insurance policy, can meet the need. I do worry about that.

I think we have provided Members with a list of ideas for potential adds for all the depots, not just the ammo ones. That could certainly help. Also just continuing to work with us to make sure we know when we are doing something we should not be doing at those depots, meaning we are not investing the right way. That input from members is vital to know, so we get on the right track.

Senator DUCKWORTH. General?

Lieutenant General GINGRICH. Senator, I would offer a couple of things. I think the balancing between legacy and modernization, as you lay out. I would say it is actually balancing between enduring and modernization, because frankly, we have walked away from a lot of legacy systems that are no longer relevant on the battlefield. I think 155 falls into that enduring capability for the foreseeable future.

I think that is what the two gentlemen to my right, along with myself, try to balance, is that balance between enduring and modernization, and try to get that balance just right, to acceptable risk levels.

The second thing I would say is we have invested quite heavily, through our base budget, and with your support, as well as supplemental appropriations that you have provided, we have invested in our organic industrial base, especially the ammunition.

We are going to, frankly, my last point, is we are going to need your support in the foreseeable future. As we build this capacity and we struggle with budgets, we may look for congressional help to maximize that capacity that we are building.

Senator DUCKWORTH. Okay. Thank you.

Looking to the Indo-Pacific, that region is going to require the ability to rapidly deploy military forces, equipment, and supplies to the region, both within CONUS [Continental United States] and OCONUS [Outside Continental United States]. As the Army Service Component Command to TRANSCOM [United States Transportation Command], the military service deployment distribution command, SDDC, plays a vital role in the efficient flow of resources delivering readiness and lethality at speed across surface distribution network nodes.

Assistant Secretary Bush, General Rainey, and General Gingrich, a toss-up ball. Concerning SDDC's role as the global intermodal surface connection and its mission to seamlessly link the joint deployment and the distribution enterprise with Army Materiel Command's materiel enterprise, what specific efforts is the Army undertaking to prioritize and modernize SDDC's capabilities? Because again, we are going to have to push all this stuff out there,

and if they are not modernized efficiently we are not going to be able to meet the need.

General RAINEY. Thank you, Senator. You obviously have a deep understanding of this complicated challenge, and I would add that there is a good chance, depending on who we fight, that it will be contested—

Senator DUCKWORTH. Yes—

General RAINEY.—inside the United States. We are not going to get a free pass until we show up in the South Pacific. So everything the Army is working on in terms of contested logistics is holistic, so SDDC is as important as the watercraft unit that is going to cross the beach in INDOPACOM. I think we do have a holistic. We are doing several things, tabletop exercises, bringing the enterprise together. Army Futures Command is hosting a contested logistics event June 12th down in Austin, and SDDC has been invited, and we will make sure they are represented there. So we have to transform together.

It all comes down to the challenge of we have to be able to position supplies, not the old iron mountains, but we have to distribute resources, ammunition, throughout the South Pacific. The limitation on that is the ability to protect it, so things like high powered microwave, IFPC [Indirect Fire Protection Capability], offensively.

So it is a very, very complicated problem. We are working very hard on our watercraft strategy, autonomous and robotic supply, working with the Joint Force, because as you know this is not an Army—we do title 10 for the Joint Force, but TRANSCOM, the whole enterprise is going to be involved in this.

I feel like it is a very hard problem that we have a pretty solid understanding of the complexity of, and we have a whole lot of work to do to make sure that General Flynn and Admiral Paparo get the resources they need in a very, very tough environment to do logistics.

Senator DUCKWORTH. On tabletop exercises, is that going to include some of our friends and allies, as well? Because we are not going to be able to do this on our own.

General RAINEY. In the INDOPACOM ones they do. Yes, Senator. Not currently. The one in Austin that I referred to is focused on linking up joint teammates, Army teammates, and the best industry partners we have in Contested Logistics, because in a lot of areas the private sector is ahead of autonomous watercraft, for example, the offshore oil industry is ahead of where the Army is. So we are trying to make those connections. But I will take that in mind for the next iteration.

Senator DUCKWORTH. Thank you.

Mr. BUSH. Senator, if I could just add, I just want to thank the folks who work there. They work some miracles supporting Ukraine and Israel. America has many superpowers, but Logistics is one of them, and you have to have people who know how to do that, and we do it better than anyone in the world. I have been stunned by how quickly we can do things when we have the resources.

Senator DUCKWORTH. Yes. Thank you. Thank you, Chairman.

Senator KELLY. Thank you. We will go to a second round of questions here.

I got to see firsthand part of a logistics training, I guess, essentially, to the border between Poland and Ukraine. There were some things that stood out. One was, Secretary Bush, you mentioned the 3D printing. We sent them a couple of printers, I think they are using in Ukraine now to print some parts. The other thing that stood out to me was the telemaintenance, kind of like telehealth but we are doing telemaintenance.

General, you mentioned as part of the cross-functional team I think you mentioned regenerative power and advanced power. I would like you to comment a little bit on that. Obviously, to folks that follow this it is pretty obvious that one of the most challenging things for an Army to do is to move fuel forward. That long logistic train to get fuel forward where it is needed is complicated. So I am interested in hearing a little bit about the regenerative and advanced power stuff that you had just mentioned in your opening statement.

General RAINEY. Thank you, Chairman. So fuel and ammo are the two things that are the most important thing in taking care of our casualties coming back, so those three pieces are just non-negotiable, essential things if you are going to have a good military. So that is why we chose those. In fuel, specifically, the biggest opportunity in the near term is to not move fuel that we do not have to, which sounds like a "no kidding," right? But our current systems, our tanks and Bradleys, are dependent on verbal and digital reports of how much fuel they have.

If you think about any car in America has the ability to tell you all kinds of stuff with sensors. So the near-term opportunity is to put systems that generate those data base reportings off of our vehicles so that our great sustainers are moving only the absolute amount of fuel they need, which takes unnecessary convoys off the roads. So that would be the example of demand reduction.

Then our science and technology, we have numerous ongoing efforts to come up with alternatives to batteries, lower the weight, longer shelf life, light, solar. We just put an incredible new weapon into our light infantry formations, but it is 3 pounds heavier. So that means 4 pounds have to come off the back of that soldier, and the biggest opportunity to do that is make them not carry 3 days' worth of radios. How do we turn that into one radio? That is primarily in the research and development, S&T space, but will rapidly turn into a requirement document from that CFT, move over to Honorable Bush's professionals to acquire it then.

Senator KELLY. Thank you. Secretary Bush, we obviously learned a lot here from ground operations that the Ukrainians are conducting against the Russians. But this is at a time when we are trying to rebuild our force for conflict in the Western Pacific, which, by the way, I do not think it is not inevitable, and we want to avoid it, and in my view the best way to avoid it is to make sure that we have a force that no adversary feels they can beat. But we have a lot of lessons learned from Ukraine.

Is there anything that stands out that we will apply to INDOPACOM, that we have learned in Ukraine, that might be applicable in one way or the other, or maybe not, to conflict in the Western Pacific?

Mr. BUSH. Senator, if I could start and then have General Rainey chime in, if that is okay. I would point to two. When this Army modernization wave started, two of the initial focuses were long range fires and air defense. Those two capabilities are proving absolutely critical in Ukraine. So air defense is not just tactical but a strategic level difference whether you can do it or not, to protect your facilities and your people. So we are seeing the need for advanced air defense systems in Ukraine, which I believe underscores very good decisions made before I arrived, to focus on that in the early kind of first wave of the Army's current modernization efforts. That is number one.

With regard to long range fires, I think it is the same. We have seen in Ukraine mass precision at range has fundamentally altered the battlefield for both sides. The Army's investments there also apply to the Pacific. Again, that is where our procurement dollars are now. They are in air defense and long range fires, in terms of this wave of modernization. It was very thoughtful of the people who realized that those things needed to be first, and I think Ukraine is showing they were right.

But General Rainey can offer much more.

General RAINEY. Thank you, Chairman. Obviously I am very proud of the Army. We have actually had people collecting observations and lessons learned around Ukraine before the Russians invaded, our partners in TRADOC, and we take that very seriously.

One of the most interesting things, I think, is what is not changing. So while we are a joint force—that is the only way we fight—but the fact that war is still a contest between humans and the resolve of the Ukrainian people, the importance of leadership, that tells me that preserving our people, so maintaining an All-Volunteer Force is as important to the future of war as some of the technological solutions.

While, again, joint, there are fascinating things happening in space. There are fascinating things happening in the cyber domain. But the land domain remains absolutely relevant, you know, the tough fighting.

The third one is while the technological stuff is disruptive and fascinating—so Industrial Age warfare did not stop and then we start this high tech warfare. So HE 155 is still the indisputable, number one killer of both Ukrainians and Russians on the battlefield.

But to answer your specific question, the ubiquitous sensing, the thing that is the most alarming is that on the future battlefield the absolute saturation of sensors is making it almost impossible to hide, and a lot of our tactics and doctrine are based on maneuvering and hiding. When you couple that with a good enemy that has precision-guided munitions, so now you are confronted with the problem of pretty much guaranteed you are going to be observed by an enemy that can hit you. In China, they have a magazine depth advantage that even if you defend yourself you are eventually going to run out of munitions.

So that is the absolute problem that we are facing in INDOPACOM or Russia or anywhere else that we fight, and that is what we are working very hard on, Mr. Bush covered. It is a combination of defensive and offensive fires. We have absolutely

got to get better at defending ourselves, counter-UAS, but the United States Army is best when it is not playing defense at the point of need. So we need to protect our tanks and especially our light infantry formations. But what we are best at is sensing where the ground control stations are, sensing where their EWs [electronic warfare] are emitting from, and then employing ruthless Army offensive fires, joint fires, to destroy them as opposed to waiting until it is on top of you to try and defend yourself.

Senator KELLY. I want to come back to the long range fire question, but for now I want to turn it over to Senator Cotton.

Senator COTTON. Mr. Bush, I am glad to see that the budget requests 230 Precision Strike Missiles (PrSM) Increment 1, the surface variant, but last year's NDAA directed the Army to submit a plan to procure 400 PrSM per year. Budget documents show that PrSM Increment 1 procurement peaks in fiscal year 2027 at only 296. What are the Army's options to increase PrSM Increment 1 procurement over the future years' defense plan?

Mr. BUSH. Senator, in the near term it will be the supplemental replenishment funding. So as you know, we provided ATACMS [Army Tactical Cruise Missile System] missiles. The replacement is going to be PrSM Increment 1's. So that will give us a pool of funding to aggressively maximize that production rate in the near term.

In the long term, sir, it is going to require our investment across the FYDP [Future Years Defense Program] to prioritize that system. But I can tell you it is a very high priority for the Secretary and Chief to get that much improved capability at scale as fast as we can.

Senator COTTON. This investment across the FYDP sounds like more money. How much more money are we talking about?

Mr. BUSH. Senator, the goal is to maximize that production capacity. I could get back to you with a hypothetical delta between what you see across the out years and then what we believe the maximum you could put in those years would be. This is the kind of thing we are doing right now as you build a 2026 budget. But I would be happy to show you the math and what it looks like, based on what we know now.

Senator COTTON. Please do. That would be helpful. I am also concerned about PrSM Increment 2, the land-based anti-ship variant. Can you explain the delay in procurement in the budget's request of only 10 Increment 2 missiles?

Mr. BUSH. Senator, one thing to keep in mind with Increment 2 is that it is a fundamentally new missile in that the seeker is entirely different, which changes the design of the front end of the missile. So while we call it an increment, it is a substantially different weapon.

The reason for the timeline it is on is we have needed the science and technology work on the seeker to prove out of the labs. It has. What you see now is our first steps to actually getting to production, and we just have to get through testing, sir, to make sure it works.

I agree. Having more of those as part of a family of PrSM systems we can shoot out of HIMARS [High Mobility Rocket System], especially in INDOPACOM, would be a very good thing, to put lots of Chinese ships at risk.

Senator COTTON. Thank you.

Senator KELLY. Just a couple of more questions. As you were talking about artillery, it occurs to me that just like air-to-air missile systems, the length of the stick is critical. I mean, who has the bigger stick in the fight? You know, we think about that a lot in air-to-air combat, and certainly the same is true with artillery. I think some of the Russian artillery outrages our 155 millimeter.

We had the 70-kilometer extended range cannon in development. That program recently ended.

General RAINEY, the Army has referenced a Tactical Fires Study as informing the decisions related to long range fires. How has that study informed and validated the Army's decision, and to the extent that you can talk here in an open setting, what is the plan beyond, you know, where do we go from here, essentially on longer range artillery?

I was at Project Convergence a couple of years ago and I saw what I think was about a 40-kilometer shot, which was pretty impressive. It hit the vehicle dead on. But I want to find out what are we thinking here, going forward.

General RAINEY. Thank you, Chairman. The Tactical Fires Study, unlike a lot of studies that are directed, that was actually an internal Army thing that I started as the AFC Commander. Mainly because the success of our long range fires efforts, which are in really good shape and one of the highlights of our modernization, started with a detailed analytic effort, and I thought it just made sense to do that same thing on the tactical side. Plus the absolutely observations coming out of Ukraine. So it was a prudent effort.

Any lack of communication is entirely my responsibility. So we have sent people over, and I am available, at a secret level, to go into whatever level of detail would be necessary.

But at this level your point about the range is fascinating. First of all, the requirement for extended range artillery remains valid. The prototyping effort that we went through was incredibly informative, and we learned a lot from it.

One of the most interesting things is just by focusing on the round itself we got over halfway from 30 to 70, and I can share that range. It has been a long time since we have updated things like propellant and energetics. Industry is very good at it. At the same time, big, heavy, armored Paladins are costly. We have a lot of great systems now.

One of the big findings is let's innovate at the round. Let's work with industry and see what kind of range we can get without having to redo the barrels, which makes you redo the turret, which makes the platform.

Another one is we need to continue to upgrade our armored Paladins that we have, both their auto-loaders, ammo carriers. Some of our partners and allies have some phenomenal armored artillery systems, and we have a plan that Mr. Bush could explain about how we are going to invest in that.

Mobile Howitzer, our NATO [North Atlantic Treaty Organization] allies and watching the battlefield in Europe, there are some very good wheeled Howitzers that are having great effect in a place

like Europe where the road systems are pretty mature, for example.

There is also autonomous. Another one of our partners has a very capable autonomous and robotic cannon that I would like to look at. So we are going to invest in that.

Our mortar systems, we have had the same three mortar systems the entire time I have been an infantry officer, and we are having great success with one of them, and we are going to expand that extended range and lethality efforts to the other one.

Then the biggest thing probably with our tactical fires is capability is nice, but unlike precision munitions where it is sinking a handful of ships or closing a piece of ground, the most important thing in tactical fires is not just capability but it is capacity, the capability and capacity. So range and the ability to concentrate. No rounds are cheap, and every dollar matters, but traditional HE 155, if you can put 50 of those on a formation as opposed to paying hundreds of thousands of dollars to kill one tank at a time, so capability and capacity. The sum of those efforts is what we are doing to innovate in the tactical fires space.

I would love a chance to come back and lay out the physics and ranges and things like that.

Senator KELLY. I will take you up on that.

Senator Cotton, anything else?

Well, thank you, all three of you, for being here. Was there anything that you expected to hear from us that we maybe did not ask that you think should be mentioned here in this open hearing? Secretary Bush?

Mr. BUSH. Well, Senator, you alluded to it. I just would want to say that the Chief's unfunded priority list has some counter-UAS and UAS on there that I would highly recommend to members. In a classified setting I think we could tell you a story about CENTCOM counter-UAS that is actually a pretty good news story. The Army, very quietly, did the diligent work for years, because we have been under attack by various people in the Middle East, that is protecting our troops right now, with Congress' support. So the Army, I believe, has the most capable counter-UAS systems available. With more resources we could go even faster.

So, sir, I would be happy to, if of interest, give Members options on what those things might be, starting with the Chief's list.

Senator KELLY. Okay. We will set that up, and I am going to submit some other questions for the record on electronic warfare, CJADC-2, and some air missile defense questions.

With that the hearing is concluded.

[Whereupon, at 5:25 p.m., the Subcommittee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR MARK KELLY

ELECTRONIC WARFARE

1. Senator KELLY. General Rainey, reporting from credible observers of the conflict in Ukraine suggest that Russian electronic warfare systems are fielded at scale across the frontline and that tactics in this area change at least every 6 weeks. While the Army has significant expertise in electronic warfare, does it have sufficient capacity in personnel and equipment across its electronic warfare enterprise?

General RAINEY. The Army must continue to increase investments in electronic warfare (EW) personnel, equipment, and training to ensure readiness and more quickly adapt to current and future threats. Based on observations from Ukraine and internal studies and exercises, the Army understands that our EW capabilities need to be agile, tailorable by theater and formation, and reprogrammable at the tactical edge. The Army is expanding the delivery of modernized EW capabilities across multiple theaters and moving to an adaptive, software-defined approach, in which electronic warfare capabilities are dynamic and can be quickly modified for different platforms, threats, and effects. Regarding EW personnel, the Army continues sturdy growth across the enterprise, while working to grow our capacity of senior commissioned officers and to retain highly trained EW warrant officers. Additionally, the Army's newly formed EW platoons will train with highly capable commercial EW solutions, improving technical proficiency at home station while generating feedback on future system designs and functionality.

2. Senator KELLY. General Rainey, are Army systems and supporting infrastructure sufficiently agile to adapt in real time to a contested electromagnetic environment?

General RAINEY. The Army understands the need for systems and infrastructure to be agile and adaptive in real time to operate in a contested electromagnetic environment and is actively investing in and developing those capabilities. Current systems and supporting infrastructure provide some agility, but face constraints that the Army is addressing through new start program requirements. The Army is focusing on Soldiers' ability to communicate and pass data in contested environments with the development of electromagnetic protection capabilities, as well as integrating EW capabilities into decoy and obfuscation systems, counter-UAS, and other systems to protect our Soldiers. The Army has demonstrated success through its Air Vigilance program in the USCENTCOM theater to adapt to quickly changing contested environments and adversary tactics. Additional details are available via higher classification.

3. Senator KELLY. General Rainey, based on what we are seeing of the Russian's electronic warfare systems capabilities in Ukraine, how would our electronic warfare capabilities perform against Russia?

General RAINEY. The Army has leveraged EW capabilities originally designed for use in a counter-insurgency fight to meet the emerging EW threat in Europe. Additional details on both can be provided at higher classification. As a result, in fiscal year 2025, the Army is making investments in EW capabilities to provide a competitive advantage in Large Scale Combat Operation (LSCO) and multidomain operations. There are also several on-going initiatives and opportunities for acceleration under the Transform in Contact concept to bring mature industry solutions into formations for employment and experimentation. These will require a deliberate, coordinated resource strategy led by the newly established Army EW Board of Directors, and clearly communicated with Congress.

INTEGRATED AIR AND MISSILE DEFENSE

4. Senator KELLY. General Rainey, one of the critical capabilities that the Army would bring to the joint force in any conflict in the Pacific is integrated air and missile defense. Novel technologies such as the Multi-Domain Artillery Cannon promise to provide high-volume and low cost-per-shot options to commanders, while efforts to network existing sensors and shooters enhances the efficiency and resilience of the current force. As the Air Force implements novel concepts such as Agile Combat Employment, how is the Army working with the Joint Force to provide appropriately scaled air defense options for larger numbers of dispersed operating locations?

General RAINEY. In addition to the Multi-Domain Artillery Cannon System, the Army is also prototyping High-Energy Laser (HEL) and High-Power Microwave (HPM) systems. These systems potentially reduce cost-per-shot, preserve exquisite interceptors for hard targets, and simplify and/or reduce logistics by eliminating expendable munitions—all qualities that would be especially useful in defending dispersed operating locations. Through the Army's IAMD Battle Command System (or IBCS), the Army is networking existing sensors and shooters to provide the appropriate capabilities to Joint and Army Commanders in a more flexible manner while potentially reducing the required AMD footprint. Additionally, the Army is growing its Air Defense capacity, including additional Patriot, IFPC, SHORAD, and Counter-small Unmanned Aircraft System (C-sUAS) units to better protect critical assets and forces across dispersed locations. The Army continues to work with the Services

to develop a wide range of systems to defeat the growing threat of sUAS, both in dedicated Air Defense capabilities and with capabilities that can be operated by non-Air Defense units.

MODERNIZING COMMAND AND CONTROL (JADC2)

5. Senator KELLY. General Rainey, the Combined Joint All Domain Command and Control, or CJADC2, initiative is a critical capability for the joint force of the future. Real and continuous improvement is essential. The Army has recently completed its Project Convergence Capstone 4 exercises and experimentation. What are your primary take-aways from this year's efforts?

General RAINEY. In Project Convergence Capstone 4 (PCC4) which the Army hosted in the 2d quarter of fiscal year 2024, we achieved 56 experimental "firsts" across the Joint and combined force, employed 99 technologies in support of integrated fires and expanded maneuver, and collaborated with OSD Global Information Dominance Experiment's (GIDE) capabilities for CJADC2.

PCC4 was able to integrate technologies and networks to deliver operational synchronization, accelerate sensor to shooter, and empower commanders in their decisions directly enabling the CJADC2 concept.

- *Multi-National Collaboration:* The PCC4 environment demonstrated increased integration with Joint and Multinational Partners employing a collaborative teaming approach to data management and sharing. The U.K., Australia, Canada, New Zealand, France, and Japan participated and contributed to advancing multi-national collaboration regarding core services and Command and Control.
- *Enhanced Multi-Domain Effects:* PCC4 combined Special Operations, conventional forces, Joint, and Multinational systems to accomplish a functional CJTF and provide Multi-Domain Effects.
- *Data-Centric Technologies:* PCC4 saw an increased use of data-centric technologies with the integration of external data from Army Data Platforms and commercial sources, enhancing tactically produced data to support Combined Joint All Domain Situational Awareness (CJADSA), CJADC2, and data-driven decisionmaking.
- PCC4 partnered with the Chief Digital and Artificial Intelligence Office (CDAO) Global Information Dominance Experiment (GIDE) series which enabled Multi-Domain Battle Management Command and Control (BMC2) at Echelons 1—3 (Strategic to Tactical) inclusive of Maritime, Air, and Land components. Our integration with GIDE continues as are already underway with planning the next iterations of the Project Convergence Capstone experiment.

6. Senator KELLY. General Rainey, how will this improve not only the speed of operational decisions but also increase the range of options for threat engagement?

General RAINEY. At Project Convergence Capstone 4, we successfully demonstrated improved fires distribution methods for our Combined and Joint partners, both in terms of decision speed and engagement options. By utilizing automated fires distribution technologies, 5th Gen Fighters could detect target data and send it to the Combined Joint Task Force Commander, seamlessly sending a call-for-fire cross-service and to our multinational partners. We took what was typically a lengthy decision process that required humans in the loop, automated it, and reduced the process time by 85 percent, getting us closer to the decision speeds that we require. Project Convergence will continue to refine such capabilities and other options for threat engagement in collaboration with our Joint and multinational partners.

7. Senator KELLY. General Rainey, why is developing these capabilities so critical?

General RAINEY. Project Convergence scenarios, technology and experimentation are designed to advance our Nation's ability deter aggression and prevail in conflict, if necessary. The experimentation will accelerate our ability to achieve a more resilient Joint Force and defense ecosystem. Project Convergence is nested with the National Defense Strategy (NDS) Defense Priorities and the CJADC2 strategy. Through experimenting, we serve to empower Joint Force Commanders with the capabilities they will need across all warfighting domains, across echelons, and with our combined and multinational partners to deter or defeat any adversary at any time and in any place around the globe.

QUESTIONS SUBMITTED BY SENATOR TOM COTTON

ITEP

8. Senator COTTON. Secretary Bush, is it correct that the original ITEP program of record was established prior to FARA and was set forth to modernize the AH-64 Apache and UH-60 Black Hawk?

Secretary BUSH. Yes. The Improved Turbine Engine Program of Record was established at Milestone B in 2019 and only accounts for qualification and integration onto the Apache and Black Hawk programs. Future Attack Reconnaissance Aircraft (FARA) integration was not included in the program of record. Though the Army has decided to end FARA prototyping efforts after fiscal year 2024, we will still leverage lessons learned from the integration activities of the Improved Turbine Engine into the FARA prototypes and the testing that is planned to occur this year for the Black Hawk platform.

9. Senator COTTON. Secretary Bush, what are the validated requirements for the T901 under ITEP?

Secretary BUSH. The Joint Requirements Oversight Council (JROC) validated the ITEP Capability Development Document (CDD) on 26 October 2017, and the Army Requirements Oversight Council (AROC) validation of the ITEP Capability Development Document (CDD) on 23 April 2018. Some of, but not limited to, the Key Performance Parameters (KPPs) and Key System Attributes (KSAs) extracted from the ITEP CDD include the aircraft must perform worldwide in an array of environments, improvement of logistics supportability and significant increase in aircraft range, payload, speed, and endurance.”

10. Senator COTTON. Secretary Bush, what is the current assessed test performance of the T901 against these requirements?

Secretary BUSH. Testing is ongoing; however, initial results indicate the T901 design meets all performance threshold requirements for power, fuel efficiency, survivability, sustainment, cybersecurity, and training defined in the validated Capability Development Document.

11. Senator COTTON. Secretary Bush, of the total government funding projected to be required for T901 EMD, what percentage has already been expended?

Secretary BUSH. The current estimate at complete is \$781 million on the T901 Engineering and Manufacturing Development (EMD) contract. To date, the Army has expended \$611 million (78 percent) on the T901 EMD contract. The Army is assessing resources and timelines associated with an EMD extension given resource adjustments in the fiscal year 2025 budget request.

12. Senator COTTON. Secretary Bush, what is the estimated government funding required to complete EMD?

Secretary BUSH. The Army is currently assessing resources and timelines associated with Engineering and Manufacturing Development (EMD) phase due to resource adjustments in the fiscal year 2025 budget request and the decision to delay production.

13. Senator COTTON. Secretary Bush, what is the projected impact to Milestone C and full rate production from a partial or full reduction in funding in fiscal year 2025?

Secretary BUSH. The fiscal year 2025 budget request removed of all procurement funding and the reduction of the fiscal year 2025 Research, Development, Test, and Evaluation funding for ITEP by approximately \$104 million has resulted in a projected shift in Milestone C from fiscal year 2026 to beyond the Future Years Defense Program (FYDP); however, the Army is evaluating options to possibly pull the Milestone C to an earlier date.

14. Senator COTTON. Secretary Bush, what is the projected disruption to the supply chain through a delay to the production schedule?

Secretary BUSH. A delay in the production schedule has the potential to disrupt the industrial base through the loss of suppliers, skilled labor, and qualified production processes. The Army is working with our industry partners to mitigate risk as much as possible as the effort continues in additional development.

15. Senator COTTON. Secretary Bush, what is the Department’s plan to ensure the T901 supply chain remains strong?

Secretary BUSH. In coordination with our industry partners, the Army has taken several mitigation steps to ensure the T901 supply chain remains strong. The joint team has conducted activities such as revising engine production rates during Engineering and Manufacturing Development (EMD) to enable continuous manufacturing, conducting a comprehensive risk assessment to determine at-risk suppliers and develop get-well action plans, and developing courses of action to leverage long lead item contract actions to support further engine development.

16. Senator COTTON. Secretary Bush, are there any alternative engines that can provide the same modernization benefits to the Apache and Black Hawk for that amount of investment?

Secretary BUSH. The Army awarded the Engineering and Manufacturing Development (EMD) contract in 2019, following down-select from two Technology Maturation and Risk Reduction-phase vendors, originally selected through full and open competition. No existing engines provide the same modernization benefits for the amount invested as no other alternatives achieve power, fuel efficiency, and weight requirements and can integrate within Black Hawk and Apache platforms without additional significant engineering costs.

