

DEPARTMENT OF DEFENSE AUTHORIZATION
REQUEST FOR APPROPRIATIONS FOR FISCAL
YEAR 2023 AND THE FUTURE YEARS DEFENSE
PROGRAM

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

ONE HUNDRED SEVENTEENTH CONGRESS

SECOND SESSION

ON

S. 4543

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 2023 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 10 AND MAY 17, 2022



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**DEPARTMENT OF DEFENSE AUTHORIZATION
REQUEST FOR APPROPRIATIONS FOR FIS-
CAL YEAR 2023 AND THE FUTURE YEARS
DEFENSE PROGRAM**

TUESDAY, MAY 10, 2022

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

ARMY MODERNIZATION

The Subcommittee met, pursuant to notice, at 2:38 p.m., in room 222, Russell Senate Office Building, Senator Tammy Duckworth (Chairman of the Subcommittee) presiding.

Subcommittee Members present: Senators Duckworth, Blumenthal, Peters, Kelly, Cotton, Scott, Blackburn, and Hawley.

OPENING STATEMENT OF SENATOR TAMMY DUCKWORTH

Senator DUCKWORTH. The Airland subcommittee will come to order. I would like to welcome our witnesses to the hearing this afternoon, Mr. Douglas Bush, Assistant Secretary of the Army for Acquisitions, Logistics and Technology. It is good to see you again. Lieutenant General James Richardson, Deputy Commanding General, Army Futures Command, welcome, and Colonel Christopher Grice, Director of Materiel, Force Development, Army G-8.

I welcome each of you and thank you for your service and willingness to appear before us today. As we meet today to explore the Department of the Army's investment and modernization strategy as presented in its fiscal year 2023 budget request, I would like to take a moment to acknowledge work that soldiers are doing across the globe and express my gratitude for military families and the vital role that they play.

Soldiers and their service counterparts remain engaged in operations and training events that test equipment and identify needed capabilities. Today, thousands of soldiers are deployed to the European continent in support of Ukraine and deterring expansion of Russian aggression. These missions validate the importance of prepositioned stocks and the complexity of contested logistics. Operations in Ukraine demonstrate the criticality of competent combined arms operations for a ground force and the power of joint and collation operations for our Nation.

As we begin work on the 2023 National Defense Authorization Act (NDAA), we recognize that the Army is operating with a large-

ly flat budget. In this budget submission, the Army continues to prioritize its signature modernization efforts, slowing procurement of enduring capabilities. Reduced procurement quantities of capabilities critical to today's Army drive something significant—sometimes significant increases in cost per unit.

The committee plays a crucial role in the oversight of these programs and would like to better understand how the Army is ensuring it makes best use of its resources with this strategy. The recently submitted classified national defense strategy sets out the Department of Defense strategic priorities and identifies the ways that the Department would advance its goals.

The NDS [National Defense Strategy] ranks China as the most consequential strategic competitor and the pacing challenge for the Department. Russia remains an acute threat. Additionally, the Department must manage persistent threats such as North Korea, Iran, and violent extremist organizations. We are interested in the specific investments and capabilities the Army included in its fiscal year 2023 budget request that support implementation of the 2022 NDS.

The Army continues its modernization effort across its six modernized Nation priorities, long range precision fires, next gen combat vehicles, future vertical lift, the Army network, air and missile defense, soldier lethality, and its rapid capabilities development efforts in hypersonics, directed energy, indirect fire protection, and mid-range capability. We understand that 24 of the Army's priority efforts are set to be in soldiers hands, systems, or prototypes by 2023.

Successful introduction of these capabilities will be in part due to significant employment of digital design and digital prototyping. This practice helps to validate capabilities and refine requirements in advance of physical prototyping. Soldier centered practices such as soldier touch point in the prototyping phase and try before you buy partnerships with industry improve functionality and soldier acceptability and make more rapid fielding possible.

I applaud the Army's progress in this area. A transformation of capability this significant will certainly trigger changes to Army structure, operating concepts and postures in order to best meet the threat environment. We are interested to hear what changes the Army is considering.

Additionally, we must understand the impact of these decisions on the modernization of the Army National Guard and Army Reserves, critical components of the total Army. Finally, I want to acknowledge the Army's recently published organic industrial base modernization strategy. This plan would invest \$16 billion over the next 15 years in facility modernization, with the mission to enable current material readiness, maintain surge capacity, and to support future weapons platforms for the Army and Joint Force.

The organic industrial base remains critical to the Army's modernization strategy. We would like to better understand how the Army is nesting its material modernization efforts with this industrial base initiative. The Army continues to make both steps in its effort to modernize, but hard decisions lie ahead.

I have great confidence in you all and look forward to another productive year as we continued to field a world class Army. I am—

do we have time in for Senator Cotton by any chance? If not, we will continue and let the witnesses provide their statements and then I will reserve time for the ranking member to give his remarks. I will start with——

[Laughter.]

Senator DUCKWORTH. I am glad it wasn't me. We will begin with Mr. Bush.

**STATEMENT OF HON. DOUGLAS BUSH, ASSISTANT SECRETARY
OF THE ARMY FOR ACQUISITION, LOGISTICS AND TECHNOLOGY**

Mr. BUSH. Chair Duckworth, thank you for that statement and your kind words about what our soldiers are doing every day overseas. That is a great reminder for all three of us that that is what we are here. That is what our job is to actually get them equipment. So thank you for mentioning that.

Thank you for the invitation today to appear before you to discuss the Army's modernization programs and resources requested in the President's Budget for fiscal year 2023. I am pleased to be joined today by my teammates, Lieutenant General James Richardson, Jim from Army Futures Command, and Colonel Chris Grice from the Assistant—or the Deputy Chief of Staff, G-8.

We appreciate your making our written statement a part of the record for today's hearing. Chair Duckworth, the Army continues to transform and provide the Joint Force with the land warfare capabilities needed to accomplish the missions of the Department of Defense.

The Army's fiscal year 2023 budget can be described in two words, continuity and momentum. It maintains the readiness of the Army and establishes a sustainable path to transform to the Army of 2030.

Our transformation requires a strategic pivot from two decades of counterinsurgency operations toward adaptation to meet our top pacing challenge in China, and the acute threat of Russian aggression, all while continuing to defend the homeland and be prepared for other missions around the world.

As outlined in a written statement, we remain committed to our six modernization priorities, long range precision fires, next generation combat vehicles, future vertical lift, the network, air and missile defense, and soldier lethality. The Army's budget also continues modernization and procurement of our enduring platforms, albeit in some cases at reduced levels, as you noted, in aviation, ground combat systems, intelligence, logistics, and ammunition.

Overall, I believe the budget request reflects an approach that prioritizes our most important modernization efforts. However, all budget proposals require making choices, and this one is no different. One of the questions asked of us in the hearing invitation was, "how the Army is managing risk while prioritizing future capability over enduring force modernization efforts." That is a critical issue, so let me address that briefly.

As you are aware, in order to protect the Army's highest priority modernization efforts, the Army did reduce requested funding in other areas, specifically in the pace of modernization of our armored brigade combat teams. That decision was not made lightly.

I am confident that Army leaders understood the potential challenges of that approach.

However, in doing so, the Army sought to ensure that we didn't go so low on any systems that we put the industrial base at risk to a degree that it forecloses the ability of the Army to ramp back up someday if more funding becomes available. In short, we sought to ensure that we did not close off options for Army leaders or Congress to make adjustments to our plans in the future, if they judge that is the right thing to do.

That is a careful balance to strike, and I acknowledge we don't always get it exactly right. So I look forward to working with you and other Senators on your views of where the Army landed on this issue. A second question asked in the hearing invitation was management of risk in the industrial base.

There are two parts of that important issue I can address. First, the Army must monitor the privately owned industrial base, that base of suppliers and manufacturers owned by our industry partners. As I mentioned, one way we manage that risk is during the budget process, carefully analyzing the potential effects of the industrial base of any changes we are considering.

That includes trying to ensure that we understand the downstream effects on second and third level suppliers. Often, what we see is little—is less risk at the level of the largest companies, but greater risk as we look further down the supply chain. The second aspect of the industrial base is the organic industrial base you mentioned in your statement. The depots, arsenals, and ammunition facilities that are Government owned.

In this case, the Army recently completed a new 15 year modernization plan that seeks to significantly upgrade our capabilities to match 21st century needs, prioritizing improved safety and expanded capacity within our current facilities. This plan also led to a historically high level of funding in the budget for upgrading these facilities across the board. For example, the Army is requesting more than \$200 million in upgrades just for Watervliet Arsenal in fiscal year 2023.

That facility is one of the only places in America where gun tubes and cannons can be made, so it is a vital single point of failure in the supply chain that we have to protect. We also include, if you look across the fight hub, about \$500 million a year in upgrade efforts for the Army's ammunition plants.

The Army is the single manager for conventional ammunition, and that is primarily a joint responsibility because most of what we produce in energetics, for example, goes to the Navy and Air Force for their needs. That is an Army responsibility we take very seriously, and this budget invests more in that. I worked closely with General Daly at Army Materiel Command on this effort, and I think it is a well done plan for improving the industrial base.

A final issue I would mention is the Army is trying to use all of the new acquisition authorities provided by Congress in recent years to make the Army's acquisition system more responsive to the needs of soldiers and to get equipment into their hands much more quickly than in the past.

In particular, the use of the new urgent need pathway, middle tier acquisition pathway, and software acquisition pathway provide

the Army with greatly expanded options to move faster. As an example, as you cited, many of the more than two dozen systems the Army plans to field to soldiers in 2023 use those new authorities to move at accelerated timelines. I know change in the DOD [Department of Defense] can be very slow. You should know that it can happen and that it is happening in the Army.

The Army is changing and is committed to continuing this approach in the future with the support of members. As Senators consider the fiscal year 2030 legislation, I would ask you to be cautious about adding additional complications or additional elements of the acquisition system, as adding anything to the system that is already difficult to move quickly and can sometimes slow it down further.

I am aware, however, that that is a balance, and that oversight matters, and taxpayer dollars must be protected, and the Army must use these authorities responsibly, and that is something I am committed to.

In closing, I would like to say thank you for the funding provided to support our many modernization efforts in recent years, and we believe that the fiscal year 2023 budget request builds on this progress we have made across all modernization priorities.

Thank you for your time today and I look forward to your questions.

Senator DUCKWORTH. Thank you. At this time, I would like to recognize the ranking member for any opening statement.

STATEMENT OF SENATOR TOM COTTON

Senator COTTON. Thank you, Chairwoman Duckworth, and thanks to the witness for your service. We appreciate your willingness to take on substantial challenges the Army faces, but I want to cut to the chase.

The recently released defense strategy rightly highlights the accelerating threat of communist China and its unprecedented military modernization, and recognizes Russia remains an acute threat given its invasion of Ukraine. But the Administration's budget request falls far short of providing the resources required to face these threats.

The Administration's budget not only doesn't keep pace with the rate of China's modernization, it doesn't even keep pace with our own inflation. Specifically for the Army, the Administration request cuts to the research and development budget by 6 percent and cuts Army procurement by 7 percent from the most recently enacted levels.

Army leadership absorb these cuts by dramatically slowing the modernization of critical, enduring capabilities, such as the Abrams tank that are the backbone of our armored brigade combat teams, deterring further Russian aggression in Europe at this very moment.

Unfortunately, the substantial quantity reductions requests in this budget also drive up the per unit cost of these multimillion dollar platforms, somewhere between 15 and 40 percent. I suspect that Army leadership would not have taken this pennywise and pound foolish approach if they had been given an adequate top line

by the Office of the Secretary of Defense, the Office of Management and Budget, or the White House.

Unsurprisingly, therefore, the Army's unfunded priorities list seeks to restore \$5.1 billion in critical requirements to mitigate the risk of the inadequate request for the Army. We have a lot of work to do to ensure that the Army receives the resources it needs to modernize for the threats we face.

So I look forward to the hearing from our witnesses—from hearing from our witnesses today about the progress the Army is making on its highest modernization priorities, such as long range precision fires, and what we can do to overcome the challenges we are experiencing in replenishing advanced munitions transferred to Ukraine.

Again, I think Chairwoman Duckworth for calling the hearing, and I look forward to the testimony.

Senator DUCKWORTH. I thank the ranking member. General Richardson?

STATEMENT OF LIEUTENANT GENERAL JAMES M. RICHARDSON, USA, DEPUTY COMMANDING GENERAL, UNITED STATES ARMY FUTURES COMMAND

Lieutenant General RICHARDSON. Chair Duckworth, Ranking Member Cotton, distinguished members of the subcommittee, on behalf of the teammates here at this end of the table and the soldiers and civilians of Army Futures Command, thank you for the opportunity to testify about Army modernization.

Our country is engaged in strategic competition with determined adversaries. Part of that competition is the struggle among the militaries to out-innovate one another. Army Futures Command and our partners are on the front lines of that struggle. Innovation is about more than materiel.

Armies win or lose by a combination of their doctrine, organization, and equipment. All three start with AFC. We develop concepts that become doctrine, design future organizations, and develop requirements for materiel all based on assessments of the future operational environment, emerging threats, and technologies.

The soldiers and civilians of AFC are making significant progress in each of these areas. AFC, working very closely with our ASO partners in supporting the delivery of 24 transformational systems into the hands of soldiers by 2023, based on the Army's six modernization priorities.

Through soldier centered design and strong support from Force Comm, we are getting equipment into the hands of soldiers early so that we can inform requirements before significant investments are made. In fiscal year 2021 alone, we conducted 113 soldier touchpoints.

Looking ahead, we are seeking even more opportunities to integrate the lessons from the operational force, such as the continuing and collaboration of 18th Airborne Corps, III Corps, and I Corps. AFC leads Project Convergence, the Army's campaign of learning and experimentation, which informs requirements, concepts, and future force design.

In Project Convergence 21, we learned that we must take a system of systems approach in developing our requirements docu-

ments. We also learned that we need to move from interoperability to integration of systems with the Joint Force and our allies.

In Project Convergence 22, we will scale the technologies we are testing, integrate our allies and partners, and build on the lessons of Project Convergence 21. AFC is helping pave the way to a data centric Army, fully integrated into a data centric Joint Force.

PC 21 taught us that data is the new ammunition, and the network is the center of gravity of the future fight. We are working to fully implement common data standards and joint message formats in our requirements documents to ensure a systems approach among the Army, Joint Force, and our allies and partners.

Furthermore, we are moving the Army towards a future network that is transport agnostic, cyber resilient, and underpinned by a modernized security architecture. AFC is designing the Army of 2040 and supporting the delivery of the Army of 2030. We start by describing the future operational environment.

Then, through our future studies programs, we bring together concept writers, intelligence professionals, and S&T experts to build our next concept, focused on how the Army of 2024 will organize, equip, and fight. Stable and consistent funding from Congress supports our ability to serve our Nation, take care of our people, and continue the momentum of our modernization efforts.

Thank you for your consistent support of our Army and our families. I look forward to answering your questions.

Senator DUCKWORTH. Thank you, General, and now taking the place of General McCurry, Colonel Grice, thank you for stepping up.

STATEMENT OF COLONEL CHRISTOPHER GRICE, USA, DIRECTOR OF MATERIEL, FORCE DEVELOPMENT, DEPUTY CHIEF OF STAFF OF THE ARMY, G-8

Colonel GRICE. Thank you, Chair Duckworth, and thank you, Chair Duckworth and Ranking Member Cotton, distinguished members of the Senate Armed Services committee on Airland. On behalf of Lieutenant General Peterson, Brigadier General Mac McCurry, and the headquarters Department of the Army Deputy Chief of Staff G-8 team, thank you for the invitation to appear before you to discuss Army modernization and the resources request for the President's Budget for fiscal year 2023.

Our requested investments in modernization for fiscal year 2023 reflect a deliberate, multi-year effort to accelerate focused modernization and place transformational capabilities in the hands of our soldiers. These capabilities support our national defense strategy for integrated deterrence, active campaigning, and help us build and maintain an enduring advantage over peers and potential adversaries.

The Army's efforts contribute directly to the Joint Force's ability to deter, and when called upon, fight and win decisively. Modernized capabilities reduce risk imposed by an increasingly aggressive competitors and foes to help us achieve decision dominance, range, and lethality that provide overmatch against any adversary.

The Army remains committed to maintaining momentum for our modernization priorities while sustaining our enduring fleets. We

continue to invest in upgrades to our enduring systems that will fight alongside our modernized capabilities.

Through 4 years of prioritization, the evaluation of capabilities, and difficult decisions on funding, we maintain that momentum to achieve a sustainable strategic path to the Army of 2030.

We are grateful to Congress for the stable funding provided to support our modernization efforts, and with your sustained support, we will deliver advanced capabilities that enable the Joint Force to win in large scale combat and multi-domain operations.

Thank you for your time today and I look forward to answering your questions.

[The joint prepared statement of The Honorable Douglas R. Bush, Lieutenant General James M. Richardson, and Colonel Christopher Grice follows:]

JOINT PREPARED STATEMENT BY THE HONORABLE DOUGLAS R. BUSH, LIEUTENANT GENERAL JAMES M. RICHARDSON, AND COLONEL CHRISTOPHER GRICE

INTRODUCTION

Chair Duckworth, Ranking Member Cotton, distinguished Members of the Senate Armed Services Subcommittee on Airland, thank you for your continued support and enduring commitment to our soldiers, our civilians, and their families. On behalf of the Secretary of the Army, the Honorable Christine Wormuth, and the Army Chief of Staff, General James C. McConville, we thank you for the invitation to appear before you today.

Our shared mission is to make sure that the Army continues to achieve overmatch against all potential adversaries, ensuring that our Army can fulfill its mandate to compete successfully, deter, and, if necessary, fight and win our Nation's wars as part of the Joint Force.

The Army's fiscal year 2023 budget request both maintains the readiness of the Army and establishes a sustainable path to transform into the Army of 2030. This transformation will require a strategic pivot from two decades of focus on counterterrorism, toward adaptation to meet our top pacing challenge in China and the acute threat of Russian aggression. The Army is boldly transforming to provide the Joint Force with the speed, range, and convergence of the cutting-edge technologies that will be needed to provide future decision dominance and overmatch for great-power competition.

THE STRATEGIC ENVIRONMENT

The new classified 2022 National Defense Strategy highlights the People's Republic of China as our most consequential strategic competitor and the pacing challenge for the Department of Defense. It also recognizes the acute threat posed by Russia, as illustrated by its brutal and unprovoked further invasion of Ukraine. Both states are applying all instruments of national power, including military modernization, as they compete aggressively with the United States.

China continues to progress in artificial intelligence (AI), robotics, and cyber research and development. Advancements in hypersonic technology add to its strategic reach, endangering some of our traditional force projection assets. Both China and Russia have committed to an increased pace and scope of military exercises, honing their joint warfighting capabilities. In its further invasion of Ukraine, Russia has brought a level of brutality and destruction to the continent of Europe at a scale not seen in a long time. The Army's modernization efforts take these new realities into account as we define capability requirements and develop new concepts.

HOW WE FIGHT

Our Multi-Domain Operations (MDO) concept describes how we fight—by continuously converging effects across all domains to create and exploit relative advantages over the adversary. The Army is currently codifying MDO into doctrine to ensure the Army is capable and ready to support Joint Force operations. At the same time, we are developing a new future operating concept—how we will fight beyond MDO—based on future threat assessments, emerging Science and Technology and experimentation.

WHAT WE FIGHT WITH

The fiscal year 2023 budget request puts the Army on a strategic path to modernize our organizations and equipment and build the Army of 2030. Front and center in this effort is our commitment to our six modernization priorities: Long Range Precision Fires, Next Generation Combat Vehicle, Future Vertical Lift, Network, Air and Missile Defense (AMD), and Soldier Lethality. The Army will continue to focus on building a multi-domain force by putting 24 new systems into the hands of soldiers by fiscal year 2023, in the form of either prototypes for soldier feedback or the initial equipping of units.

We are grateful to Congress for the stable funding provided to support our modernization efforts. The fiscal year 2023 budget request builds on the progress we have made across all modernization priorities. Within each area, we highlight our partnership, recent progress, and the way forward with continued, steady funding.

- *Long Range Fires Programs:*
 - The Army demonstrated the Precision Strike Missile's (PrSM) capability to achieve ranges well beyond legacy Army Tactical Missile System.
 - We successfully tested the Land Based Anti-Ship Missile seeker and Extended Range Propulsion ramjet, setting conditions for subsequent increments of the PrSM program.
 - We have demonstrated that the Extended Range Cannon Artillery (ERCA) can now shoot in the 70-kilometer range with accuracy and are on track to field the first ERCA battalion in fiscal year 2023 to support an Operational Assessment in fiscal year 2024.
 - The Army's Rapid Capabilities and Critical Technologies Office, in a partnership with the Navy, plans to deliver the first hypersonics battery in fiscal year 2023.
 - We also anticipate delivering the Army's Mid-Range Capability (MRC) initial hardware to the unit in 1st quarter fiscal year 2023. The MRC prototype effort leverages existing Service missiles, launchers, software, and hardware to fill a critical capability gap identified by the U.S. Indo-Pacific Command.
- *Next Generation Combat Vehicle Programs:*
 - The Army remains fully committed to the Optionally Manned Fighting Vehicle program, executing a multi-phased acquisition approach to maximize competition.
 - The Robotic Combat Vehicle (RCV) program continues to make progress, informed by extensive experimentation with the RCV-Light Full-System Prototype effort.
 - We are on track to field the first Armored Multi-Purpose Vehicles in 2nd quarter fiscal year 2023, to replace the 1960s-era M113 Family of Vehicles.
 - The Mobile Protected Firepower (MPF) program will begin low-rate production this year, with first fielding of MPF vehicles planned for fiscal year 2025.
 - We are supporting the Army's climate strategy and the administration's greenhouse gas policies with the Bradley Hybrid Electric Vehicle, High Mobility Multi-Purpose Hybrid Wheeled Vehicle, and Joint Light Tactical Vehicle Hybrid Electric Vehicle projects.
- *Future Vertical Lift Programs:*
 - The Army is committed to ensuring both the Future Attack Reconnaissance Aircraft (FARA) and the Future Long Range Assault Aircraft (FLRAA) achieve First Unit Equipped in fiscal year 2030.
 - FARA will close the gap left by retirement of the Kiowa with transformational battlefield reach, lethality, and survivability.
 - FLRAA will provide more lethal and effective Assault and MEDEVAC capabilities with increased speed, range, payload, and endurance.
 - The Future Tactical Unmanned Aerial System is leveraging a year-long Soldier Touchpoint "Buy, Try, Inform" effort to replace the RQ-7 Shadow with a runway independent, CH-47F transportable, and weather hardened system with advanced acoustics.
 - The Army is also developing Air Launched Effects, a critical component of the FARA ecosystem, providing a low-cost asymmetrical advantage that will transform the battlefield geometry against our near-peer adversaries.
- *Network Programs:*
 - The Army is currently fielding Capability Set 21 to Infantry Brigade Combat Teams (BCTs) and a modernized tactical network transport tool suite to Expeditionary Signal Battalions-Enhanced.

- We have also fielded modernized network technology, such as upgraded mission command and fires applications, mobile mission command upgrades, resilient satellite communications equipment and modernized cryptographic systems.
- *Air and Missile Defense (AMD) Programs:*
 - The Army is leveraging the Integrated Air and Missile Defense Battle Command System (IBCS) to integrate the full suite of Air and Missile Defense capabilities, including both theater and short-range air defense.
 - The Army is improving the Maneuver-Short Range Air Defense capability with requirements to add future kinetic effectors.
 - The Army continues to make progress on its Directed Energy Maneuver-Short Range Air Defense effort, a 50 kilowatt-class laser on a Stryker.
 - We are advancing directed energy efforts for Indirect Fire Protection Capability (IFPC) by pairing high-energy lasers with high-power microwaves for a layered defense of fixed and semi-fixed sites against an array of threats.
 - The Army Integrated Air and Missile Defense initial operating capability is planned for 1st quarter fiscal year 2023, with fielding on track for one battalion.
 - We have produced two Lower Tier Air and Missile Defense Sensor (LTAMDS) prototypes, with fielding scheduled to begin in fiscal year 2022 and initial operating capability anticipated in fiscal year 2024.
 - We have accepted delivery of two batteries of Iron Dome Defense System-Army from the Israeli Government and have learned from the deployment of that demonstration system.
 - The Army will receive 16 prototype launchers and associated missiles for the Enduring IFPC Inc 2 program in 4th quarter fiscal year 2023.
- *Soldier Lethality Programs:*
 - The Army is working with Microsoft Corporation to refine Integrated Visual Augmentation System (IVAS) sensors and display functionality before conducting Operational Testing in 3rd quarter fiscal year 2022, and we are on track for delivery to the first Unit by 4th quarter fiscal year 2022.
 - We have equipped five brigades with the Enhanced Night Vision Goggle—Binocular (ENVG-B). ENVG-Bs are currently in production, which will continue through fiscal year 2024.
 - Production of the Next Generation Squad Weapon (NGSW) Rifle, Automatic Rifle, General Purpose Ammo and improved sight system will begin in fiscal year 2022, with First Unit Equipped expected in 4th quarter fiscal year 2023.
- *Synthetic Training Environment (STE) Programs:*
 - The Army will validate its foundational simulation capability for the STE Information System (STE-IS) and Reconfigurable Virtual Collective Trainers (RVCT) at the company level at Fort Hood, Texas in fiscal year 2022.
 - We continue fielding of One World Terrain, a key component of STE-IS, which is already in the hands of soldiers and units.
 - We continue progress on developing the Squad immersive Virtual Trainer which, when paired with IVAS, will allow our soldiers to simulate any location on the planet right from their combat goggles.
 - The Army is working to accelerate the delivery of the next generation of live training systems prior to fiscal year 2026 to ensure they will converge onto the STE-IS foundational system.
- *Assured Positioning Timing and Navigation (PNT) and Space Programs:*
 - The Army will begin transition to M-Code Global Positioning System and alternative PNT beginning in fiscal year 2024, following the first fielding of Mounted Assured PNT System GEN II.
 - We are currently fielding the directed requirement for our Dismounted Assured PNT System.
 - 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's budget request also continues procurement and modernization of our enduring equipment for our operational Aviation platforms, Ground Combat Systems, Intelligence programs, Logistics 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.

Our Aviation portfolio continues to modernize and upgrade the Apache, Black Hawk and CH-47 helicopters, munitions, and aircraft survivability. Apache mod-

ernization and upgrade efforts include Improved Turbine Engine integration, crypto-modernization, and Modular Open Systems Architecture. The Army remains on track to complete full divestment of Black Hawk UH-60As by fiscal year 2022 for the Army National Guard and fiscal year 2024 for the active component. We are continuing to procure the MH-47G Block II Chinooks for our Special Operations units. The Army is ramping up Joint Air-to-Ground Missile production to replace the aging Hellfire missile and investing 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 (ABCT) Modernization and combat vehicle protection remain a priority. With this budget, the Army will procure 44 Abrams M1A2SEPV3s Tanks, equaling one half of an ABCT; 102 Strykers, or approximately one third of a Stryker Brigade Combat Team; 36 Bradley A4s; completing the procurement of the fourth ABCT set; 27 Self-Propelled Howitzer Paladin Integrated Management (PIM) vehicle sets; and 6 Joint Assault Bridges, or one and a half ABCTs. We are also continuing to pursue improved Vehicle Protection Systems for the Abrams and Bradley.

Our Intelligence portfolio is focused on closing capability gaps in deep sensing with programs like the Tactical Intelligence Targeting Access Node for deep sensing, analysis, and early warning; the Terrestrial Layer System at the Brigade and echelon above Brigade levels for signals intelligence and electronic warfare; the Multi-Domain Sensing System; and the Multi-Function Electronic Warfare-Air Large that will be mounted on multiple platforms to gather intelligence or conduct electronic warfare operations.

The Air and Missile Defense portfolio continues to invest in Counter small Unmanned Aircraft Systems (C-sUAS) in addition to those programs detailed in the Air and Missile Cross-Functional Team (CFT) portfolio above. During fiscal year 2022, we will procure C-sUAS for two Divisions and 29 fixed sites, and fiscal year 2023 would procure one Division and 17 fixed sites to cover globally prioritized critical sites.

Our Command and Control portfolio is procuring Manpack and Leader Radios and related equipment to support five BCT type formations; a Low Cost Tactical radio that will replace legacy Single Channel Ground and Airborne Radio System and meet National Security Agency cryptographic modernization requirements; a Unified Network Operations prototype to enable common planning, configuration, monitoring, provisioning, management, and defense of the Network; and continues to procure and develop improvements for the Joint Battle Command-Platform.

Finally, the Logistics portfolio continues the procurement of Joint Light Tactical Vehicles, High Mobility Multipurpose Wheeled Vehicles (HMMWVs) and HMMWV antilock braking system/electronic stability control kits to improve our tactical wheeled vehicle fleet and address vehicle rollover and safety concerns; invests in Army Watercraft, a significant combat multiplier in support of Army operational concepts and the Geographical Combatant Commander in Large Scale Combat Operations; 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.

HOW WE ORGANIZE

We are developing new organizations as we transition from modernization concepts to tangible sources of strategic readiness. The Multi-Domain Task Force (MDTF) is one example, providing long-range precision fires in conflict and long-range precision effects in competition. The MDTF participated in Project Convergence 21 to experiment on its ability to synchronize long-range fires and effects with the Joint Force and will continue to participate in 2022 with joint and coalition forces to provide lessons for future employment of this capability.

The Army uses Army 2030 and Army 2040 to describe what our force will look like in the near and distant future. We are refining those descriptions through experimentation and analysis of the impact emerging technology will have on the character of war. The investments are included in the fiscal year 2023 budget request and will inform the changes we need to provide a combat credible force of the future.

HOW WE DO BUSINESS

Soldier Centered Design drives the entire process. Taken from industry best practices, this concept allows the Army to get feedback from soldiers and commanders early in the development process. This is accomplished by getting prototype equipment into the hands of soldiers from the operational force early, through Soldier

Touchpoints, in order to refine requirements before significant investments are made. The Army, through the efforts of our CFTs and Program Executive Offices (PEO), conducted 113 Soldier Touch Points in fiscal year 2021, and we aim to continue that momentum in the coming years. We are also seeking additional opportunities to integrate lessons as our units and Army Service Component Commands conduct focused experimentation and wargames.

Instrumental to the Army's transformation is Project Convergence, the campaign of learning that brings everything together. Project Convergence is a Joint and increasingly combined series of experiments we conduct over the course of the year, culminating in a month-long 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 plan are managed by the Project Convergence Board of Directors, which includes representatives from all the Services, the Joint Staff, and coalition Partners. We also leverage the Army's Joint Systems Integration Lab and experimentation events "in the dirt" to connect with our Joint Partners. Project Convergence 21 (PC21) incorporated Joint Partners to help inform Army 2030, the DoD Joint All-Domain Command and Control, and the Joint Warfighting Concept. PC21 made it clear that we must adapt to a system-of-systems approach that moves from "interoperable systems" to "integration of systems." Building off the lessons of PC21, PC22 will integrate Allies and Partners and aim to scale technologies previously tested.

The Army continues to implement the reform initiatives granted by Congress, which were designed to streamline and gain efficiencies in the acquisition process. These initiatives, which have reduced bureaucracy and helped the Army accelerate the delivery of capabilities to the field, include the granting of Middle Tier Acquisition (MTA) Authority, which allows for both rapid prototyping and rapid fielding efforts, and the expanded use of Other Transaction Authority (OTA), which now can be extended to include production. OTAs are simplified contractual mechanisms that lend themselves to working with small companies and non-traditional contractors, two known sources of technological innovation. The Army is using these authorities to accelerate select Army modernization priorities including ERCA, LTAMDS, PrSM, NGSW, IVAS, and MPF. 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 effectively utilizes OTA to streamline the acquisition of basic and advanced research activities, prototype projects, and follow-on production efforts. In fiscal year 2021, the Army awarded more than 1,700 OTA agreements valued at \$10.9 billion. Two of the modernization priorities highlighted above, IVAS and NGSW, have moved into production awards based on the success of competitive prototyping efforts. In November 2021, the Army updated its OTA Policy to promote consistency in practice and increase transparency.

The Army also benefits from two additional authorities provided by Congress. The Software Acquisition Pathway (SWP) is a new acquisition pathway being 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. Congress also made the authority for Commercial Solutions Opening (CSO) authority permanent. 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 National Defense Authorization Act, 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 PEO level and below, when appropriate. This delegation allows the Army to appropriately align program oversight with risk, resulting in reduced bureaucracy and increased efficiency.

All these initiatives, when used alone or in combination, allow for better and faster modernization decisions and faster requirements development.

CONCLUSION

The Army is nearly 4 years into the biggest transformational change since the early 1980s, modernizing and building a multi-domain-capable force that delivers speed, range, and convergence of emerging technologies. To be clear, the Army will never be “done” modernizing. As we deliver Army 2030, Army 2040, and beyond, we are laying the foundation to persistently modernize in response to emerging technologies, evolving challenges, and our adversaries’ actions.

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

Senator DUCKWORTH. Thank you. I now recognize myself for five minutes of questions. Mr. Bush, what Army modernization efforts are most critical to the Army fulfilling its roles as outlined in the NDS [National Defense Strategy] and why?

Mr. BUSH. Thank you for the question, Senator. I think I will start, and then if you allow it, let General Richardson add in a bit from an Army operations concepts requirement. I can tell you that the Secretary, given China’s pacing threat, has focused particularly on three areas, long range fires, air and missile defense, and the network, all three of which we believe are foundational to anywhere the Army fights, but in particular, improving capabilities in those areas are vitally important for fulfilling the Army’s role in a potential contingency with China.

Lieutenant General RICHARDSON. Senator, I would echo that from Mr. Bush. Those three priorities are critical. We have been experimenting, and we have been also watching the news of what is going on in the Ukraine and the Soviet Union—and Russia have taught us a lesson. Number one, that our modernization priorities are correct. Long range precision fires is critical.

As I think all of you have been briefed on, we have three aspects of the long range critical—long-range precision fires that is on track to be delivered in fiscal year 2023. That is the extended long range cannon, PrSM, and our hypersonics missiles.

So as it relates to the Army priorities and how it relates to what is going on in the world today, I do believe that we have our modernization priorities, and they are on track.

Senator DUCKWORTH. Thank you. Mr. Bush, while the Army’s fiscal year 2023 budget request both maintains the readiness of the Army and maintains the modernization priorities of the Army of 2030, it does so with a largely flat budget, we have already mentioned this, and at the expense of enduring modernization, particularly those required for the Armored Brigade Combat Team modernization effort, as my—as our ranking member has mentioned. How is the Army balancing risk in the current force to enable this prioritization?

Mr. BUSH. Thank you, Senator. I think it is—from an equipping standpoint alone, I think, as I mentioned, the first thing we look at is industrial base to make sure we don’t go too low to where should a contingency arise or more funding become available, those decisions can be reversed, and we can pick things back up and move faster.

So that is one way to mitigate risk. The second way is to be careful about and thoughtful about where we do add funding. Every year, there is a tremendous amount of churn inside the Army just on new initiatives and new things being—wanting to be funded. We took the process we just went through, and the process went

through last year, exceedingly careful to look at anybody wanting to add something new in order to protect funding where resides. So a second way we mitigate risk.

The other one is the many other things that the U.S. Army brings to the fight, which is better leadership, better training, better logistics, which, while they can't overcome every equipment difference, can make a big difference in terms of the overall combat effectiveness of Army units, as General Richardson was mentioning.

Senator DUCKWORTH. Thank you. But let's get back to the equipment. Colonel Grice, how is the reduction of procurement quantities of modernization capability such as the Abrams, Bradleys, and Paladins impacting the cost per unit?

Colonel GRICE. Chair Duckworth, we are managing that as we go through and develop our program each year. and for ABCT modernization, while we did take cuts, we are still achieving 7—modernized 73 tanks in this budget, in 2023, and 9 BCTs by fiscal year 2027. As we looked at those reductions to focus on modernization, we analyzed those costs, analyzed programmatic impacts, and made the best decision we could to continue to focus funding toward our modernization capabilities that have been discussed.

Senator DUCKWORTH. Secretary Bush.

Mr. BUSH. Yes, ma'am. So one thing to keep in mind, it varies by contract type. So some things, we were in a fixed price contract environment where the cost of the item is the cost of the item. In other cases, there is range pricing depending on the quantity of the Army's orders, which as you pointed out, if we are at the low end of that pricing range, the unit quantities are higher.

We seek to mitigate that also by trying to spread out orders so it is a level set of orders not going up and down with the defense industry so they can do their long lead parts, ordering more efficiently. But there is no perfect solution to—buying less sometimes does increase costs.

Senator DUCKWORTH. Okay. The Secretary of the Army describes the Army's role in the Pacific in part to sustain the Joint Force over vast distances by providing secure communications, establish intra theater distribution networks, and maintaining munitions stockpiles, as well as for arming and refueling points. This all gets to the importance of contested logistics.

Mr. Bush, how does the fiscal year 2023 budget invest in Army logistics capabilities, and what operations have we learned from—what lessons have we learned from operations in Europe?

Mr. BUSH. So Senator, I will start. I can answer the budget question and then let General Richardson talk about Europe, if that is okay. So this budget does modestly increase funding for some areas of logistics, for example, tactical wheeled vehicles. If you look inside there, the JLTV program, for example, is up by about a third this year. That is progress. Some of our other truck lines are also up slightly.

But I—you are right that overall there is a lot of level effort there. One area of increase is watercraft modernization, pacific in particular. The Army's relatively small but important watercraft fleet will be important part of the joint logistics capability we pro-

vide. Modernization funding for that is up modestly in this budget request as well.

Lieutenant General RICHARDSON. Senator, as you mentioned, the Army has the specified role and Title X tasks to support not only the Army, but all of the other services as it relates to fuel, as it relates to ammunition, the distribution, and the protection of our lines of communication. Obviously, the number one priority within the Army is from a contested logistics perspective, is to set the theater.

Some of the things—and we are learning a lot, and you have been briefed on sensor to shooter. I label it now sensor to shooter to sustainer, and those are some of the lessons that we learned. The lessons I have learned personally is we need to take a better look at our—you have seen what is happening in Ukraine. The lesson that we took at AFC is, we really have to take a look at our requirements documents and look at reliability, because if you have a reliable weapons system, you don't need as many parts.

You need to look—from a requirements perspective as well, you need to look at fuel and the standards as well as maintainability. So that is one aspect that we have learned and applying it in our requirements documents today early on. The second aspect is predictive logistics. We have got to be able to predict when our systems are going to fail, put sensors on them, and have a common operating pitch in one of those systems. That will free up the supply lines.

Then lastly, we have to have an understanding, a common understanding—a common operational picture on the battalion all the way to the enterprise level, so when we are shooting ammunition or using gas or our need fuel, we have the same common operating picture, you know, at the battalion as you do back at the enterprise level, and they are able to push that logistics forward.

That was a big—a large aspect that we learned from the Ukraine fight and some of the things that we are applying today of where we are going to the future.

Senator DUCKWORTH. I just have concerns that this flat budget isn't going to allow us to meet some of these requirements. I am going to recognize the ranking member for his questions.

Senator COTTON. I very much share your concerns. Mr. Bush, as I mentioned in my opening statement, this budget cuts research and development by 6 percent, procurement by 7 percent from the enacted fiscal year 2022 amounts. Could you explain to me how the Army absorbed these actual reductions in such critical fields?

Mr. BUSH. Senator, I can offer some thoughts there. First, I would, of course, point out that we are not the only part of the Army's budget in play. So the people part of the Army's budget and the training part are, of course, also things that sometimes take away from our accounts is all part of the tradeoff.

Senator COTTON. I think we cut in strength by 12,000, didn't we?

Mr. BUSH. Yes, sir.

Senator COTTON. That is not good either. I know it is not your responsibility.

Mr. BUSH. Sir, that is for members to judge. I would say that those—the reductions to our accounts, I think a lot of good work goes into that. It doesn't make it easy. I think what you end up

seeing, and you have identified it, is places where we couldn't ramp up production or we even had to go down, and we worked through what those risks are. But those are never easy choices, sir.

Senator COTTON. Okay. Let's turn to our ammunition stockpile. I find it very worrisome for the United States, for Ukraine, for Taiwan. The reports have indicated that we have sent one-third—one-fourth to one-third of our javelin and stinger stockpile to Ukraine, but we aren't capable of replenishing those systems at a reasonable rate.

Mr. BUSH. Does our munitions industrial base provide the surge capacity that we would need for a protracted fight in Ukraine, in addition to satisfying our own needs and the need to defend Taiwan?

Mr. BUSH. So, Senator, I think given enough time, the innovative American private sector industrial base, combined with our organic industrial base, can meet the needs. However, that would require funding to ramp up those aspects of those things so we can sustain those rates. Specific to your question, we have sent those munitions.

The Army does have a plan to replenish those. We are, I can assure you, pushing on all doors and looking at every option to make that process go much faster than some of the timelines you have heard for preferred munitions.

Senator COTTON. Your phrase at the beginning was the very important caveat, which is given the time. I am afraid that Ukraine may not have the time, and for that matter, Taiwan may not have the time. Some of the assessments I have heard of the time it would take to replenish these stockpiles are shockingly long.

Even if they are off by a factor of two or three or four, it still seems pretty long to produce not an aircraft carrier or not even a tank, but a missile that a private can carry and learn how to effectively employ in the span of an afternoon.

Can you help us understand where the bottlenecks are in this system and what we can do as the committee to help accelerate the production?

Mr. BUSH. Yes, sir. So a couple of things I would offer for members to consider. The first one is production timelines for advanced weapons, including ones that we make like Stinger and Javelin, have often hovered in the 18 months to 30 months range for some time, only getting much faster than that when production rates are very high, and the entire supply chain can feed it.

However, we mitigate that risk by maintaining stockpiles, as you pointed out. We are now in a circumstance where we have provided some of that to a third party in Ukraine, and we are refilling our own stocks.

But our munitions levels, sir, and we can provide all the numbers on every single item, I think you will see a wide range. In many areas, we are still in good shape, even given what we have sent. In other areas, there are areas of concern, and happy to work with you on those. In terms of what the committee could do, one thing is advanced procurement.

The Army doesn't use that very much, other services do, which is it buys long lead parts 1 year ahead of when the end item is ordered. That is something that I believe we could possibly use in

this case to shorten those timelines. So we could buy long lead items this year to support deliveries that would be put on contract next year, and that could compress things, sir.

That would require working with the committee on adjusting our budget request.

Senator COTTON. I think we should do that. Even, you know, 18 to 30 months as you said, it is a conversation I have had with a lot of Arkansans, and I think most of them just find it astonishing that it takes our defense industrial base that long to produce such a relatively simple weapon. I mean, old timers talk about how many ships and aircraft were churning out at the height of World War II.

Whether it is some of those bench stalk items that you can use in advance if you procure them or more time running these lines, I am sure all the workers would be happy with overtime, we need to find solutions that produce these weapons at a much faster rate than I have seen assessed in classified settings. I think suspect most people on the committee would want to work with the Department on that.

Senator DUCKWORTH. I like that idea. Senator Peters.

Senator PETERS. Thank you. Thank you, Madam Chair and Ranking Member Cotton. You talked about World War II and turning out more material. It reminds me of the Arsenal of Democracy in Detroit in the Willow Run facility that turned out B-24 bombers—several B-24 bombers every single day, came off the assembly line, so it is something to be considered.

Mr. Bush, the Army has made great progress in developing an open system architecture approach to ground vehicle autonomy software development, which, as you know, allows for collaboration with a wide range of industry leading partners, both traditional and nontraditional.

Last week, Secretary Wormuth released the Army Directive 2022-07, which redefined the roles and responsibilities around Army modernization activities. The directive rescinds language from the previous Army Directives, establishing the Army Futures Command as, “the leading the modernization enterprise,” and states that the Army’s science and technology laboratories now fall under the control of the Assistant Secretary of the Army for Acquisition, Logistics and Technology instead of the Army’s Futures Command.

So my question for you, Mr. Bush, is how do you anticipate that this new directive is going to support the transition of technologies out of our S&T laboratories, but particularly in key Army modernization areas such as robotics and automation?

Mr. BUSH. Yes, sir. So one thing I would offer is that the directive really didn’t shift that much, it simply clarified lines of authority, most of which are set in statute in terms of which organizations do what in the Army. With regard to S&T labs in particular, one thing it did not change, this is important, that those labs still fall under the operational day to day control of Army Futures Command.

My role and my organization’s role at the Army headquarters is to oversee that, provide oversight guidance and set policy. So it is a teamwork effort, sir, and I think that teamwork will continue

unabated. To your specific question, one of my priorities as Assistant Secretary is to work with General Richardson and his team to formalize and improve our batting average, so to speak, on exactly what you said, which is transitions from S&T to programs of record.

I brought in a new Deputy Assistant Secretary to help me do that, who actually came from Army Futures Command. So building those bridges between the organizations to make sure things work better is one of the things I am committed to, sir.

Senator PETERS. All right. Thank you. General Richardson, as we approach the fielding of hypersonic missile batteries, I am curious how you expect this new capability will impact the Army's overall artillery portfolio in the coming years.

Do you expect these newly fielded capabilities will be an enduring complement to our current array of cannon and rocket artillery, or is some other—are some of our current arsenal in need of further modernization or divestiture?

Lieutenant General RICHARDSON. Senator, thank you for the question, and as everyone in here realizes, long range precision fires is our number one priority in the United States Army. It is really broken down by three aspects. One is that the tactical level, the operational level, and the strategic level.

As we look to hypersonics being fielded and a battery in 2023, it is going to provide a tremendous offensive capability that we have not had in the past. That combined—and we fight as a joint team. Those fires, combined with the other services, give us greater lethality and any country we may face. As it relates to affecting programs within the operational aspect or the tactical aspect, it hasn't, sir, at this time, because LRPF is number one.

We are on track with PrSM, fully funded. Delivered a capability, a PrSM capability that far exceeds our ATACMS rounds today, in fiscal year 2023. We are very optimistic about the future for PrSM as it relates to distance and range and maneuverability, and so truly, Senator, to answer your question, it does not have an impact. It complements what we are doing.

When we take what we are doing in all three aspects of long range precision fires combined with the joint—into the joint fight, it gives a capability that far exceeds any of our competitors.

Senator PETERS. Right. General Richardson, last week I asked Secretary Wormuth about the Army's plan regarding active protective systems to protect our cutting edge platforms from relatively inexpensive threats that we are seeing from drones and anti-tank guided missiles.

Given what we are witnessing right now in Ukraine, it seems like we would be wise to invest in technology in order to preserve the lives of our service members and also safeguard our multi-million dollar platforms.

So my question for you is, how do lessons learned from contemporary conflicts like what we are seeing in Ukraine get incorporated into both our current and future capability requirements?

Lieutenant General RICHARDSON. Thank you, Senator. We were looking at this for the last couple of years and developed an active protection strategy. What we are seeing is reinforcing our strategy as it relates to top down attacks or the systems that are required.

We have a number of ongoing S&T programs that are on track to be delivered in the short term to increase our survivability.

What we have done, as you know, GBSC has—plays a large part in that active protection program, as well as the aviation aircraft survivability programs. A lot of these programs are top secret or SAP related, but the key thing behind active protection is bring in what we have learned in aviation, what we have learned and ground, bringing it together as a system that in the future will be very successful. From a money perspective, from an ASO perspective timeline.

Mr. BUSH. Yes, Senator. So the—we first of all, partly because of Congress's urging, which was prescient, was the Army did procure sets of active protection systems, limited set, number of brigade sets for M-1 Abrams tanks. What we are looking at now and we are doing the R&D work now to understand is when we can do that for Bradleys and Strykers. I think that the question for us in coming years will just be the ability or pace of fielding to do that. I think the threat is clear.

We have got a requirement. It is just, how does this stack up against our many other needs? Then there is a question of how much do we put into active protection systems like Trophy versus passive protection technologies like better camouflage and electronic measures. That is an ongoing conversation, sir.

Senator PETERS. Right. Thank you. Thank you, Madam Chair.

Senator DUCKWORTH. Thank you, Mr. Peters. Mr. Blumenthal.

Senator BLUMENTHAL. Thank you, Madam Chair. I really appreciate your giving me the opportunity to ask some questions this afternoon, and thank you to the men who are here. Thank you for your service. I want to talk a little bit about the future of vertical lift. Very important to the Army and really to all of our services.

The Army's Future Vertical Lift Program is in effect a pivotal modernization of all Army aviation, and it will affect all our services because the H-60 Black Hawk has been ubiquitous across the services. It has been the workhorse. The most dependable helicopter asset that we have for the Army, Navy, and Air Force, over four decades, and its replacement, the future long range assault aircraft, FLRAA, hopefully will deliver improvements in survivability, range, and lethality.

I understand you can't talk about the FLRAA contract to be awarded. I understand probably sometime July or August, in that timeframe, maybe you can clarify that point as well. I hope that you will provide the committee with your intention about what the requirements of the contract will be.

In my view, a lot of the most recent contracts, too many have involved very large sustainment costs that are inadequately captured in the contract requirements. In other words, the costs of sustaining isn't adequately captured in the contract. But I am deeply concerned right now with some of the level of uncertainty between the Department and Congress about what platforms should be divested or stopped in order to invest in modernization.

Most particularly, the disruptions to our industrial base. You can't turn it on and turn it off like a light switch, as you well know. Let me give you an example. The Air Force's combat rescue helicopter. The budget calls for canceling the program after fiscal year

2023 at two-thirds of the planned 113 helicopters. I fought for this program, and I believe it is absolutely necessary to assure that our aviators and everybody who flies can be rescued if they are down somewhere.

That is the reason why I worked to recapitalize our aging Pave Hawk fleet. It has been the cornerstone of combat search and rescue. Losing that assurance is devastating to our armed services, but it also is potentially a threat to our industrial supply base, which we need to keep in the fight until FLRAA is awarded. Again, not a light switch you can turn on and off.

As I know from Sikorsky being in my home State of Connecticut with the most skilled industrial base of helicopter makers in the country, if I may say so. So I would be interested in your assessment, Secretary Bush and General Richardson, in evaluating FLRAA proposals.

What consideration should the Army give to the need to maintain and improve the Black Hawks, which are going to be essential for decades to come, and what can be done to assure the future capabilities of our defense industrial base?

Mr. BUSH. Thank you, Senator. I can address your—a couple of your specifics there. First of all, for the FLRAA contract award, I believe, September is probably a more likely timeline. But we can provide you with more details when we know the exact timing. Second thing with regard to H-60, this committee provided our multi-year authority.

For that multi-year, we still need Black Hawk aircraft and we going to keep producing them. That multiyear award, I just checked on it yesterday actually, is now on track, has to go through some hoops at the Office of Secretary of Defense, but we are on track and on time to make sure there is no disruption to the production work there.

I think that will give us certainty for that 5 year multi-year period to make sure that that manufacturing capacity remains. The point you—point at, sir, the risk area is the transition potentially from one platform to another. Always difficult, especially difficult with aircraft because of the advanced nature of that manufacturing, and of course, the very high standards we maintain.

I can assure you that the Army is going to, in its plans, assure that we don't have some kind of gap. So any future transition to a different platform, there has to be overlap essentially to make sure that the industrial base and the suppliers, some of which will be the same, are still healthy and able to produce on schedule.

If I could turn to General Richardson to talk briefly about how the Army is trying to reduce cost via better requirements for sustainment, if I could, sir.

Lieutenant General RICHARDSON. Senator, I agree with all your comments. FLRAA are critical programs within our cross-functional teams. I am an Army aviator, so I am very familiar with that program. You talk about the Pave Hawk helicopter. I mean, I am here today because of that—the United States Air Force coming to get me when we were down. So it is an important aspect.

The way we are doing this is different than the way we have done it in the past. We are flying before we buy. We are going out and prototyping. We are learning what is working. We have, you

know, aviators, crew chiefs, maintainers out with industry, looking at these platforms, learning, providing feedback. It is helping inform us as the requirements generator for the aircraft.

So we have learned a lot over the past couple of years. We are going to be flying a prototype here pretty shortly in 2023 as it relates to FLRAA. It is about 85 percent built. It is being built that—you know, and our soldiers are coming back to us and telling us, you know, what needs to be changed. So it is extremely important. This is an extremely important program. It is a program that is required.

We are still going to continue to need the UH-60 Black Hawk. We also have the victor model that we are building, a great upgrade to the Black Hawk. But it will—you will have both of these programs for years to come. So the Black Hawk just won't go away, you know, in 2023 or 2035.

We will have the Black Hawk for some time. Will need to sustain the Black Hawk as we move to the future vertical lift. But I think the path that we are on from an AFC perspective, learning to—flying before we buy is one that we need to continue not only for that program, but for all of our programs.

Senator BLUMENTHAL. Thank you. I appreciate those responses, and I—my time has expired, but I would really appreciate an opportunity to talk with you further, get together at your convenience. Thanks, Madam Chair.

Senator DUCKWORTH. Thank you, Senator Blumenthal. Senator Kelly.

Senator KELLY. Thank you, Madam Chairwoman. I want to follow up on Senator Blumenthal's questions about future vertical lift and the future attack reconnaissance aircraft. When the Air Force developed the F-35, the A version, they decided not to put the F-35A through an OPEVAL program.

As a former developmental test pilot, I still see the value in a thorough and comprehensive OPEVAL for any military aircraft, especially combat aircraft. General Richardson, can you tell us what your plans are for OPEVAL for the future attack reconnaissance airplane?

You talked about bringing all this information back from the warfighters and have people go to the factory. But I would like to find out what the current plans, because I heard that you may decide not to put the airframe through a full OPEVAL.

Lieutenant General RICHARDSON. Senator, thank you for the question, and I totally agree with you. We are on track with the future attack reconnaissance aircraft, and Mr. Bush can answer these questions, but I can assure you that from a test perspective and an operational evaluation, we are not cutting corners with our aircraft.

We are going to have our testers there as it goes through the, you know, EMD, engine manufacturing, and as well as an operational assessment by Army aviators before it gets in the hands of our soldiers. Mr. Bush.

Mr. BUSH. Yes, Senator. I mentioned it up front that the Army is trying to go faster with programs. However, one area that is non-negotiable is testing, and especially any testing that relates to safety.

So that is a charge we have from the Chief, and I take it very seriously. I was here in Congress, working with members on oversight of F-35. I remember that exact issue, and we are going to do a full OP test program to make sure this is the helicopter the Army needs.

Senator KELLY. Okay. Not only safety, but operational effectiveness, the ability for it to do its job in a combat environment. Just got a couple more minutes here. I want to follow up on a question about the Apache. So I was out in Phoenix, might have been about ten months ago now, and I got the opportunity to fly the latest version of the Apache.

Some things I really loved about it. There were some, a couple of issues, but it is a great and very effective airframe, and it has been. You know, I think it is the greatest combat helicopter that has ever been built. The Army has identified the Apache as the number one enduring aircraft for upgrades.

But I am only seeing about \$10 million for Apache mods over the next couple of years, and it doesn't seem like there's anything beyond that. How can the Army realistically maintain global attack helicopter dominance for the next few decades without continuing to invest in the Apache program?

Mr. BUSH. Senator, I will have to check on that exact number you just cited, because that sounds very low, given the importance of that program to the Army. However, I can assure you that, like Black Hawk, we got authority for a new multi-year for Apache from this committee in Congress last year. Greatly appreciate it.

We are on track toward that multi-year contract which will provide 5 more years of production. Along with that should be constant upgrade programs both in the production program, but also just the normal mods we do to address ongoing issues as the aircraft matures and just goes through its paces.

So I think if you look at the Army's budget broadly, there is still a very strong commitment to Apache, since it is still, as you cited, the world's greatest attack helicopter. If I could add—General Richardson, add anything you want to.

Lieutenant General RICHARDSON. Senator, I would just echo it is the greatest attack helicopter in the world, and I have flown that for 30 years. When we look at, from an Army Futures Command perspective, when we look at the Army of 2030 and the Army of 2040 that we are looking at today, the H-64 aircraft is a major aspect of our operational concept and how we are going to fight in the future.

So I see the Apache sticking around for a while because the future attack reconnaissance aircraft is really our scout aircraft and working together as a team will dominate the forces—our competitors in the future.

Senator KELLY. All right. I have got one observation for my one hour flight time in the targeting system with the monocular—I think we could upgrade that and make it a little bit more capable. I will yield back.

Lieutenant General RICHARDSON. I agree, sir.

Senator DUCKWORTH. I got to represent for the assault pilots, man. Let me just say that there might be a critical mass of people in this room who have sat on the ground waiting to be picked up

by an assault—by a utility helicopter. Would that be true, Senator Cotton? Yes, how many people here sat on the ground—you waited to be picked up by—yes, okay. Just—

[Laughter.]

Senator DUCKWORTH. We are going to do a second round of questions. The vote has been called. I will ask my questions. I hand it over to the ranking member who will then close us out after he is done with his questions if no one else comes. I want to go back to the organic industrial base. This year, the Army published a 15 year, three phase, \$16 billion modernization strategy. This effort refines the Army's priorities and focuses on modernization efforts most critical to supporting current readiness.

If implemented and resources planned, it will ensure the Army has the manufacturing and production capabilities to meet current and future requirements, including its significant modernization efforts.

My question, Mr. Bush is, what are your thoughts on how to maintain capacity and expertise, that is the critical part, the expertise part, during this significant reduction between periods of contingency operations or robust manufacturing investments? Because that expertise is really easy to lose and really hard to get back.

Mr. BUSH. Yes, Senator, thank you. I think the best way to keep expertise is to keep them busy doing what they are best at. So that means providing meaningful, critical work for the organic industrial base to do, both the depots but also the arsenals, to ensure that that workforce is—we can maintain it.

So when we make decisions on where we are going to do work, it is something I am always conscious of in terms of make or buy decisions. One thing I think we could consider, and Senator Cotton's question regarding how do you balance risk during a—with the industrial base, is the entire organic industrial base is essentially an insurance policy.

We maintain that in case of a short notice contingency, in case there is something the private sector doesn't do. That is why we have the organic industrial base. It is an insurance policy. We could increase the capacity of that as one way to mitigate long term risk, both in terms of the size and amount of activity it does.

The modernization plan, as you pointed out, merely modernizes what we have. I think there is a big policy question about the size of it and the size of that workforce, which won't be inexpensive to maintain, but in certain contingencies proves absolutely vital to have in short term, you know, with the short term notice for a large Army fight.

Senator DUCKWORTH. Well, so let's get into that. I mean, the Army submitted \$5.1 billion in unfunded requirements. Within that, the Army made a decision to privatize future capabilities at the expense of ongoing modernization efforts of enduring capabilities, leaving just under \$2.5 billion, right, \$2.4 billion for modernization and equipping in unfunded requirements.

What are the top modernization projects included in this list? Then, how are you ensuring enduring capabilities receive sufficient priority to support deterrence, or if necessary, emergent requirements? If you can address how these decisions impact the National Guard and Army Reserves as well.

Mr. BUSH. So, Senator, I will start and then turn to the team here for some help with the expertise here. So the first part of that question is, if you just look at the Army Chief of Staff's unfunded priority list, it is numbered. It is in order. My personal opinion in terms of modernization things, if you look on there, there are ads for additional SHORAD capability.

So we are rebuilding our entire air defense, SHORAD capability almost from scratch. Those additional ads would be very much in my mind for members to consider, but also the Abrams production numbers that are in there also would be a helpful risk mitigator. But also there is one critical research and development line, and that has to do with the missile that comes after Stinger.

That R&D would help us accelerate that program to ensure we don't have a gap between current Stinger production and future missiles. So those would be my top three, ma'am.

Senator DUCKWORTH. Enduring capabilities for emerging threats?

Mr. BUSH. Yes, ma'am. So I think—so I think the budget does strike a balance, and I think we do maintain enough enduring capability, production capacity in the industrial base. That doesn't make it easy for our companies who are doing those projects, but we did really carefully try to strike that balance.

If members gathering information identify places we got it wrong, I am happy to work with you and your staff on that to make sure we get it right by the time we are done with this process, ma'am.

Senator DUCKWORTH. Then Guard and Reserves.

Mr. BUSH. Guard and Reserve. Overall, I can just tell you that attention to Guard and Reserve needs, now that I have seen this process from the inside, is—they are fully integrated in our budget, my part of the budget design efforts, and they are in the room for everything.

We pay constant attention to make sure that that is covered, and their needs are fulfilled. Aviation in particular, I think the Chief has enacted—informed all of us to make sure we keep the Guard completely integrated and part of our plans, and that they are seeing everything, and they are comfortable with what we are doing. General Richardson.

Lieutenant General RICHARDSON. Senator—I will speak to the Guard. The guard is tied into everything that Army Future Command is doing. I have over 20 National Guard representatives that work full time in Army Futures Command as we look toward the future.

Whether it is aviation, air and missile defense, we work together as a team in describing the future, the requirements, and we work with Mr. Bush and our senior leaders of where these items should be fielded—we make our recommendations. As it relates to the Chief's unfunded requirements, Mr. Bush is correct. M-SHORAD is an unfunded requirement, and he has three entries within that.

M-SHORAD from the start, from an idea until we fielded it, ma'am, was 3 years, and we fielded a platoon in Europe. We have a directive requirement for four battalions of M-SHORAD in the United States Army. That UFR helps us by those four battalions. The second part of the UFR is the increment.

One—the missile on the M-SHORAD is the Stinger, and so we have different increments, number one, to buy more Stinger. Number two, to fulfill the obsolescence issues that we are having for the Stinger.

I just signed a new requirements document for an upgraded Stinger, which is also a part of it. So, ma'am, to answer your question, M-SHORAD at the top, a CFT program under air missile defense, and I think—the Chief got it right.

Senator DUCKWORTH. Senator Cotton.

Senator COTTON. General Richardson, the Secretary, issued a directive last week about Army Futures Command. It appeared to remove a lot of the commands acquisition authorities. Could you explain to me more about that directive?

Lieutenant General RICHARDSON. Yes, Senator. I received the memo and I worked personally with the Undersecretary of the Army on the memo. I will tell you that modernization is a team sport, and a lot of people focus on the materiel aspect. But when you look across the team, our job is to deliver concepts.

Our job is to deliver organization, the design of those organizations. So there is more to it than just materiel. I spend a majority of my time on the future organizations and experimentation. The day to day work at AFC is not changing. If you really read the memo, AFC is the engine for Army modernization, and we are the Command that executes Army modernization for the United States Army.

We spoke earlier about science and technology. Actually it gave me greater capability. Now I have all the laboratories in the Army under Army Futures Command, where I only had one command. So now I have to integrate and synchronize across five different S&T commands. But we do this as a team. Every day, we are with Mr. Bush's people, they provide oversight. We develop a PLM together.

We develop the strategy, the S&T strategy together. So is it—you know, from an Army Futures Command perspective, we didn't lose any authority in that memorandum? I think we—it just clarified some of the roles that are already provided in law.

Senator COTTON. Mr. Bush, do you have anything to add?

Mr. BUSH. [Technical problems]—sorry, Senator. I would emphasize the teamwork part. The Army is a big place. No one command, even as charged, could possibly do all of our modernization. So I think the Secretary wanted to lay out the many different components beyond even what you see here at the table and mentioned General Daly, Army Materiel Command, a vital part of Army modernization.

Acquisition authority is in Title X assigned to the Civilian Secretary and then to me from the Secretary. So I didn't really move. It was just—the Secretary was just trying to clarify to make sure everyone had her guidance on how she wants things to work.

Her biggest charge to me is to emphasize the teamwork aspect, and everybody has to work together, and I think that is what is taking place.

Senator COTTON. So, I appreciate all those points. What was the problem she was trying to solve? Seems to me that Futures Command has been pretty successful since it stood up on rapidly field-

ing a lot of different systems. So what was the problem that she was trying to solve?

Mr. BUSH. Yes, sir. So I believe the key issue was she was making sure was absolutely clear that ultimate acquisition authority resides in the civilian chain of command by law. That was it, sir. My observations since I arrived a year ago is that there hasn't been a problem there per say, day to day. I think she just wanted to codify how things have been working, certainly since I arrived, which I believe has been in line with the law.

Senator COTTON. Okay. I am going to have to go vote. Thank you all. One more thing. Are you all going to name these things? I mean when you get close to the extended range—artillery—

Mr. BUSH. Sir, I—am not.

Senator COTTON. You are not going to make a private shoot something called the ERCA, are you?

[Laughter.]

Mr. BUSH. No, sir, and I have ideas on all of those. Actually my goal is for, at AUSA, after I coordinate across the entire Army, to roll out a bunch of new names for things so we have things, as you pointed out, that soldiers can be proud of, from ground vehicles to air defense vehicles to canon systems.

The Army traditionally waits a long time to assign names, but that is an Army choice. We could name things earlier to make sure that members become familiar with them. The other services do it. We can do it as well.

Senator COTTON. All right. Thank you, gentlemen, for your testimony. Appreciate it.

[Whereupon, at 3:43 p.m., the Committee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JACKY ROSEN

RISK MANAGEMENT FRAMEWORK

1. Senator ROSEN. Mr. Bush and Lieutenant General Richardson, the Department of the Army's Cybersecurity Program adopted a new evaluation and approval process for information technology in 2019, known as the Risk Management Framework (RMF). I know of at least one situation where a product has been in this review process for 2 years. Do you have any insight into why the RMF process has such long timelines? Is there something Congress can do to help improve the length of time it's taking the National Guard with the RMF process?

Mr. BUSH and Lieutenant General RICHARDSON. The Department of Defense (DoD) transitioned from the DoD Information Assurance Certification and Accreditation Process (DIACAP) to the Risk Management Framework (RMF) in 2016. Since then, all of the Services have struggled with a very time consuming compliance-based process associated with RMF. Challenges also are found in recruiting, hiring, and sustaining a highly-skilled cybersecurity workforce. The Army has recently reformed this implementation with the Army's RMF 2.0. This reform effort includes streamlining the current process by prioritizing threat, technology, and adding automation. Army RMF 2.0 has provided up to a 70% improvement in the assessments required for approval and provided automated tools to replace manual processes. The Army will assist the Army National Guard (ARNG) with transition to the RMF 2.0 implementation.

QUESTIONS SUBMITTED BY SENATOR DAN SULLIVAN

ARMY ARCTIC STRATEGY

2. Senator SULLIVAN. Mr. Bush and Lieutenant General Richardson, this past March, the United States Northern Command conducted exercise Arctic Edge 2022,

a bi-national, multi-service exercise held every 2 years aimed at increasing interoperability in the Arctic. In after-action discussions following the exercise, it was revealed that several of our systems and equipment items did not function adequately due to the severe conditions. Where does the Arctic fit into the Army's top six modernization priorities?

Mr. BUSH and Lieutenant General RICHARDSON. The Army is committed to defending our Arctic interests and we must have weapon systems and equipment to operate effectively in extreme cold-weather, mountainous, and high-altitude environments. For example, the Army is currently procuring advanced Cold Weather, All-Terrain Vehicles (CATVs) capable of navigating the Arctic environment. As we move forward, the Army is carefully analyzing training exercises and conducting war games to better understand the strategic and operational environment to develop more detailed plans for force development and modernization.

3. Senator SULLIVAN. Mr. Bush and Lieutenant General Richardson, Secretary Wormuth announced last week in her testimony before this committee that the Army would be re-branding U.S. Army Alaska as the 11th Airborne Division and making it an operational headquarters. Given these significant changes, can we expect to see an increased focus on Army modernization in the Arctic?

Mr. BUSH and Lieutenant General RICHARDSON. The activation of the 11th Airborne Division reaffirms the Army's commitment to its recently announced Arctic Strategy, which outlines the service's plan to equip, organize and train with partner units to establish military dominance in the region. The Styker Brigade Combat Team based at Fort Wainwright will transition to become a more mobile, infantry-based brigade combat team bolstered with a stronger air assault capability and the skills to maneuver effectively in extreme cold weather environments. As we move armored Stykers out of Alaska, we will continue to acquisition of Cold Weather, All-Terrain Vehicles (CATVs).

ARMY FUTURE VERTICAL LIFT

4. Senator SULLIVAN. Mr. Bush and Lieutenant General Richardson, as one of the service's top six modernization priorities, the Army's Future Vertical Lift program aims to provide the next generation of vertical lift aircraft for the United States Armed Forces. I understand the current area of focus is finding a medium transport platform capable of succeeding the Army's UH-60 Black Hawk and Marine H-1 Huey utility helicopters. In detail, how will the capabilities of these modernized platforms enhance our warfighting capabilities in a Europe and INDOPACOM scenario?

Mr. BUSH and Lieutenant General RICHARDSON. The Future Vertical Lift (FVL) ecosystem—consisting of the Future Attack Reconnaissance Aircraft; Future Long Range Assault Aircraft; Air Launched Effects (ALE); an adaptive Command and Control network; Artificial Intelligence decision agents; and lethal and non-lethal effects—is a purpose built capability. These capabilities are set to become the tip of the spear for the Army's Multi-Domain Corps and Multi-Domain Division in the era of great power competition involving both a EUCOM and INDOPACOM scenario.

With transformational speed, range and the ability to converge Army and Joint sensors and shooters to enable decision dominance, FVL is poised to provide the Joint Force threat penetration at the outset of large-scale conflict. In addition, FVL will provide overmatch capability and capacity to out-tempo the enemy at all Army echelons to win the close fight.

Relevant for both EUCOM and INDOPACOM, but in particular China's investment in creating a dense network of anti-access/area-denial (A2/AD) capabilities throughout the Pacific island chains presents a complex problem. It prevents the United States from projecting military power, erodes Joint freedom of maneuver, and ultimately diminishes credible deterrence.

Dominating in the lower tier of the air domain, the FVL ecosystem provides a unique advantage against A2/AD systems such as integrated air defense systems (IADS), enemy long-range fires, and threat command and control systems. Hidden by surface clutter while operating at lower altitudes, FVL will also outmatch radar and observation with the standoff and swarming capability of its ALE with Electronic Warfare and lethal strike capability. Joint Force aircraft and follow on maneuver units can then exploit this penetration to destroy other critical targets once FVL destroys or neutralizes the IADS barrier.

FISCAL YEAR 2023 BUDGET/END-STRENGTH

5. Senator SULLIVAN. Mr. Bush and Lieutenant General Richardson, the recently released 2022 National Defense Strategy highlights the threat from the PLA's unprecedented military modernization. With an overall real budget cut for the Army, including significant reductions in Research and Development, do you believe the President's fiscal year 2023 budget adequately enables the Army to meet strategic competition requirements, especially in the Indo-Pacific?

Mr. BUSH and Lieutenant General RICHARDSON. This budget request will enable continued transformation to the Army of 2030 as we pivot from two decades of focus on counterterrorism to an Army that's adapted to meet our top pacing challenge of China and the acute threat of Russian aggression. The investments requested will help the Army meet the National Defense Strategy requirements for integrated deterrence, support our active campaigning measures, and help us build and maintain an enduring advantage over peers and potential adversaries. This budget request will fund the Army modernization priorities while simultaneously investing in our sustainment facilities, equipment, people, and the Army's Organic Industrial Base.

This budget request will allow the Army to deliver our hypersonic long-range weapon prototypes and leverage existing missile technology to deliver a Mid-Range Capability prototype. We are transforming the force by fielding our third Multi-Domain Task Force, which integrates fires, cyber, electronic warfare, and information warfare capabilities in an unprecedented way. It will continue to invest in Project Convergence 22 which combines our experimentation and exercises with partners and allies to help promote interoperability of our weapon systems. It will support the continued rotations of our Security Force Assistance Brigades to build partner capacity, funds Pacific Pathway exercises in the Indo-Pacific, and Defender Europe exercises to assure our allies and partners across the regions.

QUESTIONS SUBMITTED BY SENATOR JOSH HAWLEY

6. Senator HAWLEY. Lieutenant General Richardson, then-commander of Army Futures Command (AFC) General Murray told me last year that AFC was rightly focused on DOD's pacing scenario—a Chinese fait accompli against Taiwan. Can you confirm AFC remains is continuing to prioritize this scenario?

Lieutenant General RICHARDSON. I agree with General Murray's testimony last year that "our forces have to be able to defeat a Chinese fait accompli scenario."

7. Senator HAWLEY. General Richardson, what are the most important Army capabilities when it comes to deterring or denying a Chinese fait accompli against Taiwan?

Lieutenant General RICHARDSON. The Army provides many capabilities to the theater commander in the Indo-Pacific that are critical to mission success. It starts with our continuous engagement with militaries throughout the region to nurture a shared commitment and common understanding and to facilitate access. As we have learned time and time again, the only challenge more difficult than conducting military operations with our friends and allies is trying to win on our own. Regional friends and allies are critical to our theater objectives and strategy. Army forces positioned forward, as part of the U.S. joint force, coupled with our ability to rapidly deploy additional forces contribute to deterrence across the region.

Army capabilities are vital to "setting the theater" for the entire joint and combined force, including intelligence, communications, command and control, and logistics. Army long-range precision fires provide the theater commander with responsive operational reach to hold at risk enemy forces and capabilities, and Army air and missile defense protect critical assets. Nearly every Army capability is required in the IndoPacific, although in different proportions than in other regions, like Europe. Every theater is unique.

8. Senator HAWLEY. Mr. Bush, you and others have spoken about the importance of Army Long-Range Precision Fires, particularly when it comes to deterring a Chinese fait accompli against Taiwan. Of our current long-range fires programs, the Precision Strike Missile seems to be the most relevant for that scenario. This in mind, what are the options available for accelerating development and fielding of Precision Strike Missile Increments 2, so we can take advantage of its anti-ship capability as soon as possible?

Mr. BUSH. The Army has already invested in a Science and Technology effort to accelerate the technology maturity and concept demonstration of the seeker to satisfy Precision Strike Missile (PrSM) Increment 2 requirements. This technology maturity effort will transition to the PrSM program in fiscal year 2024. We are work-

ing closely with industry on the interface requirements to ensure the seeker technology being demonstrated is compatible with and more easily integrated into the base PrSM missile for final system development.

9. Senator HAWLEY. Mr. Bush, when is Precision Strike Missile Increment 4 expected to reach the Initial Operational Capability, and what can we do to accelerate that timeline, so we can take advantage of that system's extended range as quickly as possible?

Mr. BUSH. Increment 4 technology is being matured by Army Combat Capabilities Development Command (DEVCOM) as quickly as prudently possible. DEVCOM is targeting fiscal year 2026 for maturing the component capability to Technology Readiness Level 6, and he Army anticipates fielding an early operational capability in fiscal year 2027.

10. Senator HAWLEY. Mr. Bush, has the Army done an analysis to see what kinds of forces or capabilities the Army is currently providing in Europe that Germany or other NATO allies could provide over the next 5 to 10 years, thereby relieving demand on our forces?

Mr. BUSH. We are always looking for and encouraging our Allies to do more to provide for their common defense. It is reassuring that many of our European Allies have increased their defense budgets and I hope that this trend continues. However, it is clear that the United States Army is the foundation of European defense, and will be for decades to come. Our German and NATO Allies are fantastic but they simply do not have the same capacity to generate the trained and ready combat forces that the United States provides. That said, I support the continued presence and recent increase of rotational forces into Europe in support of NATO. Maintaining access and overflight enhances the dynamic employment options of United States forces to mitigate future NATO mission critical shortfalls over time.

11. Senator HAWLEY. Mr. Bush, in your opinion, what are some of the things United States Army forces are currently providing in Europe that our NATO allies may able to provide on their own, either using forces they currently have or by using forces that they can realistically develop and field?

Mr. BUSH. In my opinion, the United States Army has a historic lead role in addressing the Russian threat and conducting training with NATO Allies and partners. In particular, the training of Ukrainian forces by both United States conventional and special operations forces has demonstrated a return on investment far exceeding initial expectations. Notably, the U.S. Army is doing this in conjunction with our allies and partners who are also providing training and equipment. Further, providing weapons, ammunition, and vehicles to the Ukrainian armed forces has demonstrated the United States Army's ability to rapidly support logistics requirements.

12. Senator HAWLEY. General McCurry, how will the Future Vertical Lift capability improve the Army's ability to deter or respond to a Chinese assault on Taiwan, given that that's DOD's pacing scenario?

Brigadier General MCCURRY. Future Vertical Lift (FVL) possesses the speed, range, and endurance at the range required for large-scale combat operations against near-peer adversaries at distances our current Army aircraft cannot achieve. Additionally, FVL aircraft and their subsystems provide the lethality and survivability required for threat overmatch against advanced anti-access/area denial technologies such as integrated air defense systems that our current platforms and systems lack.

Numerous internal and external studies, high fidelity physics based modeling, and live demonstrations at our nation's western test ranges validate FVL capabilities and advanced concept development set against our pacing theaters as part of credible deterrence in competition and decisive lethal action in conflict as required.

13. Senator HAWLEY. General McCurry, what kind of payloads will Future Vertical Lift platforms be able to carry, and what kind of ranges would you expect them to operate at?

Brigadier General MCCURRY. The Future Attack and Reconnaissance Aircraft (FARA) ecosystem consists of the FARA aircraft, Air Launched Effects (ALE), and Long Range Precision Munition (LRPM). Payloads for ALE focus on the ability to detect, identify, locate, and report threats, represent a credible decoy, disrupt threat communication, targeting and acquisition systems, and deliver lethal and non-lethal effects. ALE will have two primary form factors: ALE Small and ALE Large that

would provide ranges of over 50km and 250km respectively. LRPM is a lethal munition with range objectives well over 30km.

Both ALE and LRPM provide greatly increased survivability and lethality due to standoff from threat systems. Additionally, a modular open system approach to the FARA ecosystem (both hardware and software) enables rapid integration and employment (analogous to “plug-and-play”) of additional capability at speeds required to maintain overmatch against evolving adversaries’ threat systems.

14. Senator HAWLEY. General McCurry, will a Future Vertical Lift platform be able to act as a shooter, for instance, by firing weapons based on cues from other Army or Joint sensors?

Brigadier General MCCURRY. Yes, the Future Attack Reconnaissance Aircraft’s clean sheet design, modular open systems approach, and next generation technological advancements set the conditions for transformational interoperability and convergence within Joint, Combined integrated fires and intelligence warfighting environments as part of an overall Joint and Combined kill chain.

15. Senator HAWLEY. General McCurry, how will Future Vertical Lift platforms enable the Army’s deployment and operation of Long-Range Precision Fires, specifically, in the Indo-Pacific theater?

Brigadier General MCCURRY. Current Army aviation capabilities lack the range necessary to enable systems like Long-Range Precision Fires in the Indo-Pacific. The Future Attack Reconnaissance Aircraft ecosystem is uniquely suited to provide threat detection and other effects in support of Army and Joint fires due to its extended reach (speed and range) with enhanced tailorable payloads.

16. Senator HAWLEY. Mr. Bush, the Army states that the Future Long Range Assault Aircraft will provide increase maneuverability, agility, and reach. Currently only Army Special Operations helicopters are capable of conducting aerial refueling. Will the Future Long Range Assault Aircraft have this capability?

Mr. BUSH. Future Long Range Assault Aircraft base capability will enable aerial refuel operations via an optionally installed aerial refuel probe.

17. Senator HAWLEY. General Richardson, on the topic of the Indo-Pacific theater, allies and partners will be key for any fight in the Pacific. That in mind, how is the Army thinking about enabling or promoting interoperability as it works through Project Convergence?

Lieutenant General RICHARDSON. Allies and partners are a critical element of our defense strategy. We cannot win without them. That’s why our Project Convergence experiments this year, PC 22, include some of our closest allies. As we learned in PC 21, interoperability is not adequate. We must pursue “integration” of capabilities within the joint force, as well as with our closest allies.

18. Senator HAWLEY. General Richardson, one of the Army’s functional modernization priorities is Assured Position Navigation and Timing. How will Assured Position Navigation and Timing allow our combat forces to operate in contested environments, especially in the case of a potential conflict in the Indo-Pacific?

Lieutenant General RICHARDSON. Our Assured Positioning, Navigation, and Timing and Space cross-functional team (CFT) works very closely with the Army G-2, Army G-6, our Network CFT, and others to identify challenges to operating seamlessly in contested environments and then experimenting with potential solutions to those challenges. And of course we are incorporating the challenges associated with contested environments into our Project Convergence series of experiments. The Army’s PNT modernization efforts include the incorporation of the U.S. Space Force’s new GPS Military Code signal, other radio frequency (RF) and non-RF sources of PNT as well as a modular architecture. We would be happy to provide you and/or your staff with a classified detailed briefing of the progress we are making in this arena.

19. Senator HAWLEY. General Richardson, the Indo-Pacific theater poses unique logistical challenges, particularly given the vast distances our forces will need to travel to get there. How does the Army’s budget request for this year reflect the need for the Army to support the logistical requirements necessary to posture “blunt” forces located to the west of the International Date Line, in order to deter or defeat Chinese aggression?

Lieutenant General RICHARDSON. The Army fiscal year 2023 request continues to modernize logistics capabilities necessary to support INDOPACOM. For instance, it significantly increases requested funding for the Joint Light Tactical Vehicle, main-

tains our investments in Army Watercraft Systems ensuring we can conduct contested logistics in INDOPACOM, and invests nearly \$300 million in fiscal year 2023 alone to procure logistics enablers to include fuel and water storage and distribution systems, materiel handling equipment, and field medical equipment and over \$360 million is being invested in bulk and tactical fuel delivery systems over the next 5 years.

As for positioning forces, the Army must be able to deliver forces and supplies across extended distances to meet INDOPACOM requirements. Army Watercraft play a significant role in meeting that challenge. The Army is requesting funding for the Landing Craft Utility Service Life Extension Program, as well as funding to upgrade navigation and communications equipment through the Modular Integrated Bridge Program. The Army also requested \$2.5 million in RDTE funding to support affordability & feasibility studies that will inform the requirements for the Ship to Shore Logistics Vessel that is intended to provide increased capability and longer service life than the aging Logistics Support Vessel.

**DEPARTMENT OF DEFENSE AUTHORIZATION
REQUEST FOR APPROPRIATIONS FOR FISCAL
YEAR 2023 AND THE FUTURE YEARS
DEFENSE PROGRAM**

TUESDAY, MAY 17, 2022

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

**MODERNIZATION EFFORTS OF THE DEPARTMENT OF
THE AIR FORCE**

The Subcommittee met, pursuant to notice, at 2:30 p.m., in room 222, Russell Senate Office Building, Senator Tammy Duckworth (Chairman of the Subcommittee) presiding.

Subcommittee Members present: Senators Duckworth, Peters, Rosen, Kelly, Cotton, Tillis, Sullivan, Scott, and Hawley.

OPENING STATEMENT OF SENATOR TAMMY DUCKWORTH

Senator DUCKWORTH. [Technical problems]—here today to discuss Air Force modernization are Lieutenant General David Nahom, Deputy Chief of Staff for Plans and Programs, Lieutenant General Joseph Guastella, Deputy Chief of Staff for Operations, and Lieutenant General Duke Richardson, Military Deputy Office of the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics. Welcome, gentlemen.

I want to extend a warm welcome to and thank each of our witnesses for appearing before this Subcommittee today. I look forward to hearing your testimony. Last week, the Subcommittee heard from the Army witnesses about challenges in the Army modernization program.

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 Department of Defense Authorization Request for Fiscal Year 2023.

Our witnesses this afternoon face huge challenges as they strive to balance the need to support ongoing operations and sustained readiness with the need to modernize and keep the technological edge that is so critical to successful military operations.

I am especially interested in examining how the Air Force plans to manage multiple major modernization programs. After all, it is not just the F-35s, the B-21, and the KC-46. The Air Force is seeking to modernize these platforms while also launching new

programs, including procuring so-called Wedgetail aircraft to replace some of the E-3 airborne warning and control system aircraft, and replacing JSTARS' [joint surveillance target attack radar system] capability with advanced battery management system.

It is vital that we strike the optimal balance between swiftly delivering capabilities to our warfighters, protecting taxpayer dollars, and avoiding irresponsible program risks that may jeopardize the Air Force's ability to support combatant commander requirements.

One area in particular I would like to draw attention to is the Air Force's plan to truncate the HH-60 Whiskey program after fiscal year 2023. That would leave the Air Force roughly 40 percent short of its original plan to modernize the combat search and rescue or CSAR fleet of aircraft. We need to hear how this change will affect the Air Force's ability to conduct CSAR [combat search and rescue] operations in future conflicts.

Shifting focus to procurement policy, the Air Force has been aggressively implementing accelerated acquisition authorities, including for major defense acquisition programs. However, it remains to be seen whether expedited procedures will be the silver bullet to unlocking dramatic improvement and meeting milestones, reducing cost overruns, and most importantly, delivering promised capabilities.

Notably, the Air Force began its program to replace the B-52's engines under accelerated authorities but has agreed to shift that program back to the normal acquisition process at the next acquisition milestone review. I will close by stating the obvious. The Air Force will be critical in determining whether we successfully implement a new National Defense Strategy.

I was not surprised that the President proposed providing the Air Force with the largest increase of all the services in the fiscal year 2023 budget, and I look forward to examining how meeting the request for an additional \$13.5 billion above fiscal year 2022 enacted appropriation would enhance the Air Force's modernization efforts.

Again, I want to thank our witnesses for their service and for appearing before the Subcommittee this afternoon. I am going to reserve some time for the Ranking Member, Senator Cotton, but in the meantime, in light—to just expedite matters, I am going to go ahead and move on to the witnesses and ask you to go ahead and provide us with your opening statements.

Lieutenant General RICHARDSON. Thank you, Senator. I was going to give a single opening statement for all three of us.

Senator DUCKWORTH. Okay.

**STATEMENT LIEUTENANT GENERAL DUKE Z. RICHARDSON,
USAF, MILITARY DEPUTY, OFFICE OF THE ASSISTANT SEC-
RETARY OF THE AIR FORCE FOR ACQUISITION, TECH-
NOLOGY, AND LOGISTICS**

Lieutenant General RICHARDSON. Chair Duckworth, Ranking Member Cotton, and Members of the Subcommittee, thank you for having Lieutenant General Nahom, Lieutenant General Guastella, and I here to provide testimony on the Air Force's fiscal year 2023 budget request. In recent years, the Air Force's combat advantage over potential peer adversaries has been under pressure.

With completion of the 2022 National Defense Strategy, the strategic direction for the United States Air Force is clear, we must modernize our air and ground forces and capabilities to overcome the pacing challenges posed by the People's Republic of China and deter the threats of other strategic competitors.

Through the lens of Secretary Kendall's Seven Operational Imperatives, we continue to look critically at our investments to ensure our resources are properly aligned to a force design that will give our adversaries pause. The Air Force has had to make a number of tough decisions to strike a balance between short term and future risks.

This budget request is a result of a thoughtful and deliberative process that responds to the rapidly evolving threat. We sincerely appreciate Congress's approval to divest 80 percent of requested aircraft in fiscal year 2022, allowing over \$1 billion to be invested in other top Air Force priorities.

In 2023, fiscal year 2023, we welcome the opportunity to once again work with Congress to accelerate the development of a more modern and operationally relevant fighting force and deliver capabilities to the warfighter at the pace with which the current strategic environment demands. I would like to take a moment to highlight a few key points in our 2023 budget submission. Readiness and relevance require training improvements in both the live and synthetic domains.

We are fully committed to advancing and modernizing our live and synthetic programs to provide relevant and realistic training for tomorrow's force. The Air Force is continuing investment efforts in its trainer platforms, including critical modernization programs for the T-6 and T-38 fleets. Earlier this year, we conducted the rollout of the first T-7A training aircraft.

The Fiscal Year 2023 President's Budget Requests continues the T-7A program's EMD [engineering and manufacturing development] and early aircraft flight test efforts, and procures long lead support equipment, ensuring we meet the 2026 initial operational capability milestone.

Nuclear modernization is our top priority. GBSD [ground-based strategic deterrent], LRSO [long-range stand-off], and B-21 are key to the Air Force plan. The Air Force remains focused on achieving a fighter force mix that provides a capable, sustainable, survivable, and affordable force that can operate across the entire range of mission sets. Our proposed four platform fighter fleet achieves just that.

Together, the F-35, the NGAD [next generation air-dominance] family of systems, the F-15 and the F-16, provide complementary capability and capacity to meet worldwide demands. The Fiscal Year 2023 President's Budget Request decreases the F-35 procurement quantity as we prioritize investments in the F-35 fleet, seeking modernization, infrastructure, and advanced weapons.

The Air Force will continue to work with the F-35 Joint Program Office, the Navy, and industry to identify and evaluate opportunities to increase depo repair capacity and further reduce the cost of material and manpower.

Hypersonic weapons provide an important capability for combatant commanders. The Air Force is committed to ensuring our long

range strike platforms can employ these systems. We are pleased to report on the 14th of May 2022, the Department of the Air Force successfully completed booster test flight 2b of the ARRW [air-launched rapid response weapon] from a B-52 Stratofortress.

The next booster test flight is scheduled for later this summer. Winning in future high end conflict requires accelerating investments, and that includes transitioning our ISR force structure into a connected, persistent, and survivable force. In fiscal year 2023, we request funds for two production representative prototype E-7, 8 aircraft to support testing evaluation efforts as we work to replace the aging E-3 AWACS [airborne warning and control system].

It is critical that we deliberately modernize our tanker fleet through continuous recapitalization of KC-135s and procurement of the KC-46. Keeping KC-10 divestment actions on track will not only free up ramp space to allow for delivery of the KC-46, but it will also free up the airmen we need to continue maturing the KC-46. The KC-46 is currently cleared for 85 percent of the missions tasked by U.S. TRANSCOM [United States Transportation Command], including bombers, tankers, airlift, ISR, and fighters.

Our airlift fleet is the envy of air forces around the world, and this year's budget continues to invest in the C-5, C-17, and C-130 fleets. We look forward to working with this Subcommittee to ensure the Department of the Air Force maintains sufficient military advantage to secure our vital national interests and to support our allies and partners in fiscal year 2023 and beyond.

We stand ready to address your questions.

[The joint prepared statements of Lieutenant General Duke Z. Richardson, Lieutenant General David S. Nahom, and Lieutenant General Joseph T. Guastella follow:]

JOINT PREPARED STATEMENT BY LIEUTENANT GENERAL DUKE Z. RICHARDSON, LIEUTENANT GENERAL DAVID S. NAHOM, AND LIEUTENANT GENERAL JOSEPH T. GUASTELLA

INTRODUCTION

Chair Duckworth, Ranking Member Cotton, and distinguished members of the Subcommittee, thank you for having us here today to provide testimony on the United States Air Force modernization efforts. The leadership and support of this Subcommittee is critical to our achievement of national security priorities to defend the homeland, deter nuclear and non-nuclear strategic attacks, deter aggression and be prepared to prevail in conflict, and build a resilient joint force.

The Department of the Air Force consists of approximately 700,000 airmen and guardians that enable our country to meet the challenges associated with the full range of national security threats. Providing our airmen and guardians with the capabilities they need to deter, and if necessary, win is our most sacred obligation. The advancements of China's military modernization efforts and Russian aggression in Eastern Europe highlight the pacing challenges we face and the urgency with which we must act.

The Department of the Air Force's Fiscal Year 2023 President's Budget request aims to accelerate the development and fielding of a more modern and operationally relevant force that the current strategic environment demands. Our budget request balances the risks of maintaining the current operational requirements of combatant commands with the need to develop and deliver the Air Force needed. The aircraft we seek to retire have served us well and exceeded the requirements they were developed to meet. However, they are not well-suited for today's contested environments or future high-end conflicts. The average age of the Air Force fleet is 29 years with many aircraft flying beyond their intended lifespan and becoming significantly more expensive to sustain.

With congressional support in fiscal year 2022, the Air Force was allowed to begin the transition to better face our pacing challenge. While grateful for this support, we continue to face restrictions on the retirement of outdated fighter, tanker, cargo, and command and control aircraft. These restrictions impede investment in the necessary capabilities to deter competitors and win future conflicts. 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.

AIR FORCE IN DEMAND

Global Force Management

The Air Force attempts to optimize force capabilities for operations against peer competitors, fulfill combatant commander requirements, and provide stability to the Total Force through Joint Staff-led Global Force Management (GFM) processes. We are actively working GFM issues through the Joint Staff as the Department of Defense's (DOD) global command-and-control mechanism to adjust the distribution of forces and conduct global force strategic planning.

As in previous years, during fiscal year 2022 the Air Force was employed in unique and disparate locations across the globe at all levels of conflict. Our limited supply of capability will never satisfy the global joint force demand for air power. Through GFM, the Air Force worked hard to balance near-term and long-term risks. We have maintained our unique global flexibility to rapidly deploy with scalable, tailorable forces to all combatant commanders while ensuring our readiness to face peer competitors in the future.

The Air Force is the nation's "9-1-1" force. The preponderance of our Total Force is required within the opening days of any conflict. We have repeatedly demonstrated our ability to employ air power within hours, at any point on the globe. Looking forward, the Air Force will continue to refine our equities and contributions within GFM processes. We will mature concepts such as Dynamic Force Employment (DFE) and Agile Combat Employment (ACE), and utilize our new force presentation model, Air Force Force Generation (AFFORGEN). Through these initiatives, the Air Force is postured to meet strategic guidance, enhance Total Force readiness, enable modernization, and balance current operations with future requirements.

Dynamic Force Employment

The 2018 National Defense Strategy (NDS) introduced the concept of DFE as a Secretary of Defense resource to provide options for proactive and scalable employment of the Joint Force to compete, deter, and win in great power competition. Since fiscal year 2019, the Air Force has leveraged DFE as a more effective means of using air power for strategic effect, while recovering and building peer adversary readiness in accordance with the NDS. The 2022 NDS advocates achieving department goals through integrated deterrence, campaigning, and building enduring advantages. Our DFE actions directly support deterrence as well as the synchronized and inter-related military campaign efforts needed to undermine the coercive actions of competitors or potential adversaries.

Through the application of DFE within GFM processes, the DOD can proactively shape the strategic environment, while modernizing, testing, and gaining readiness to respond to contingencies, and ensure the long-term viability of the Joint Force. Compared to the traditional, readiness-decreasing, heel-to-toe rotational presence, DFE is a better utilization of air power that rapidly meets Combatant Command requirements and assures Allies and Partners. Air power's inherently dynamic, agile, and strategic attributes enhance DFE effects to expand competitive space beyond regularized patterns while providing maximum responsiveness to emergent priority missions. DFE is also a valuable resource for the Air Force to explore, experiment, and refine rapid employment concepts such as ACE and the Bomber Task Force (BTF). These concepts advance air power's global "enhanced maneuver" effectiveness and resiliency. For all these reasons, we continue to receive more requests for DFE than we can satisfy. This demand will continue, and highlights the importance of adhering to national strategy, GFM processes, and the successful fielding of AFFORGEN to maintain a sustainable ready Air Force that can compete and overmatch peer adversaries.

Agile Combat Employment

Changes to the modern operational environment and rapid technological improvements require the Air Force to adjust its scheme of maneuver. Our response to these challenges is to continue to refine the ACE concept. ACE is the ability to quickly disperse and cluster tailorable force packages to a cooperative security location and conduct operations across all domains, while maintaining operational flexibility and

increasing resiliency. The operational unpredictability of ACE will present our adversaries with multiple dilemmas and targeting challenges during both day-to-day competition and potential future conflict. ACE requires a revolutionary change in how the Air Force thinks about and conducts operations within the modern environment. To initiate the shift, we recently released our first doctrinal publication on ACE and are studying the many challenges inherent in its implementation. Ultimately, our multi-capable airmen (MCA), infrastructure and pre-positioning efforts, and Allies and Partners should ensure ACE viability as the concept matures.

Multiple exercises are continuing to validate ACE's ability to project air power and shift combat operations using advanced, agile, and adaptive logistics. For example, in 2021, airmen from Lakenheath Air Base, United Kingdom, exercised this concept as part of Exercise BALTIC TRIDENT. This event showcased ACE-enabling concepts such as MCA, interoperability with Allies and Partners, smaller manpower footprints, and reduced reliance on prepared airfields. Earlier in 2022, airmen from Air Combat Command participated in an ACE exercise out of Seymour Johnson Air Force Base, North Carolina. This exercise tested the 4th Fighter Wing's ability to operate from different locations with varying levels of capacity and support, which ensured airmen and aircrews were postured to respond across the spectrum of military operations. Continued infrastructure development will help ensure ACE viability. Planned fiscal year 2022 military construction investments in European and Pacific theaters support this concept's development. Air Force policy guidance in the form of an enterprise-wide tasking order will prioritize activities and investments to support ACE, and is scheduled for release this summer.

Air Force the Nation Needs (Readiness)

Our readiness posture has been flat for almost 3 years, and indicators suggest it will trend lower in the future as we continue to invest in overdue modernization. This condition represents the confluence of 30 years of compounding issues. Continuous contingency deployments, generally flat budgets with declining real buying power, war bills paid with Operations and Maintenance (O&M) dollars, delayed modernization, and personnel cuts have left the Air Force at a readiness deficit. This deficit cannot be recovered overnight and must continue to be balanced against the priority to modernize the force for the pacing challenge.

Building back readiness will take time and requires continued congressional support to make tough choices, including divestment of less relevant systems in order to maximize our resources for the nation's defense. Modernization efforts will yield greater capability, but will also require investment in manpower, the sustainment enterprise, training infrastructure, and a healthy flying hour program. These investments will enable a force that is ready and capable of employing and winning with the advanced capabilities we are acquiring. However, this cannot be realized without stability in GFM levels, which is necessary to properly train and sustain the Air Force.

As we transition to the force the nation needs, continued operational demand for Air Force capabilities combined with NDS modernization priorities are driving difficult resource tradeoffs. In order to be ready and relevant for the great power competition ahead, we must transform the force and its training infrastructure to provide the capabilities the NDS demands. We must balance the risk and demands of the current environment with the need to arrive in the future with the capacity and capability we require. As we transition to the future force, it is essential to modernize and eliminate costly and less-capable legacy systems. These actions will lower operating costs, improve availability, and provide essential capabilities to present a combat-credible and ready force to meet the demands of great power competition.

Operational Training & Test Infrastructure

Experience and experimentation have taught us that combat crews are more lethal and less prone to attrition when they train against the actual or representative threats they will encounter in combat. Therefore, we are fully committed to advancing and modernizing our live and synthetic programs to provide relevant and realistic training for tomorrow's force.

Readiness and relevance require training improvements in both the live and synthetic domains. The live domain includes airspace and ranges, and modernizing the replication of current and future adversarial threats. Additionally, it encompasses real-time data processing and control and evaluation of combat training engagements. The synthetic domain requires the creation of a capability that provides all users a complete, relevant, and realistic peer/near-peer synthetic training environment containing an accurate representation of threats, terrain, weather, and friendly forces.

In the live domain, our range priority remains our two largest ranges: the Nevada Test and Training Range (NTTR) and the Joint Pacific-Alaska Range Complex (JPARC). We will upgrade both ranges to replicate a Level 4, peer/near-peer adversary threat environment. With current and programmed funding, NTTR and JPARC are projected to achieve Level 4 by fiscal year 2030. Additionally, we intend to upgrade six Primary Training Ranges, in both CONUS and OCONUS, to a Level 3 capability by fiscal year 2033.

Our range modernization approach also addresses the encryption and movement of data to improve the realism of our training events. We will procure the Navy's Tactical Combat Training System II (TCTS-II) to modernize our Combat Training System (CTS) requirement. In addition to addressing the pending obsolescence of our P5 CTS pod, this will provide an ability to share encrypted data for training. Data sharing will allow our 4th and 5th generation, and future platforms to train together in a manner not achievable with current technology. Concurrently, we are pursuing a Live Mission Operational Capability (LMOC) to standardize and modernize our training ranges. This capability allows us to tie legacy threat systems together to create a more realistic adversary Integrated Air Defense System and eliminates manpower-intensive processes.

Our range modernization approach will ensure our live ranges provide both realistic and relevant training environments to our future force. Live training will always be the cornerstone of Air Force readiness. However, the live training environment is constrained by the geographic limitations and technological improvements of both current and future adversary capabilities. These limitations mandate a shift in portions of our combat training to the synthetic training environment. The synthetic environments will allow aircrew members to fully use their capabilities and effectively practice the tactics, techniques, and procedures they will employ against future adversaries. Shifting advanced training to the synthetic arena requires us to replace disparate, legacy synthetic environments with a training environment that is common across multiple generations of aircraft and associated training systems.

The development of this environment will provide a Level 4 (peer/near-peer) training capability for all operational units while allowing our advanced platforms to exercise capabilities they cannot use in a live environment. The synthetic environment will be the only arena where Air Force, Joint, and Coalition units can train together using their full capabilities in realistic scenarios.

We are confident these tailored improvements to our live and synthetic training capabilities will provide our crews with the ability to maximize the lethality advantage of current and future weapon systems.

Pilot Production

The Air Force remains focused on improving overall pilot inventory. Today, the Air Force is short approximately 1,650 pilots; half of that shortfall is in the Air Reserve Components. In the Regular Air Force, it resides in Company Grade Officer (CGO) ranks due to previous UPT under-production over the past decade. To align pilot requirements with production, we must reliably and sustainably produce 1,500 pilots per year, 1,100 of which must be for the Regular Air Force.

Substantial short-term increases in production to improve the overall inventory sooner are not manageable and can quickly create force management problems with oversized year groups. The production-to-experiencing of pilots is a closed-loop and interdependent system. The Air Force must deliberately plan and pace production increases to approximately 1,500 pilots, and then maintain it for the foreseeable future. It has taken many years of under-production to create the pilot shortage we currently have, and it will take 10 years of producing to the CGO requirement to right-size the force while retaining Field Grade Officers (FGO) to right-shape the force of the future.

The Aircrew Task Force (ACTF) has developed a four-part strategy for recovery. The strategy includes: 1) increasing the production plant capacity to align with requirements; 2) reducing risk within the production plant; 3) maximizing retention to meet FGO requirements and mitigate previous underproduction; and 4) ensuring production and retention efforts deliver a right-sized and shaped pilot force. Additionally, Air Education and Training Command has instituted production initiatives that aim to maximize resources and leverage technology platforms. These include UPT 2.5, Helicopter Training Next, and Alternate Path to Wings. These initiatives modernize pilot training to improve the quality of new pilots for the challenges of 5th generation aviation; streamline the helicopter pilot production path; adjust the training program for those candidates with extensive civil aviation experience or completion of accredited aviation programs; improve simulator instructor recruitment and retention, and evaluate a remote simulator instruction concept. In all of these efforts, we leverage technology to improve the training experience, conduct

training earlier, and augment our proven production methods. The quality of our graduates remains critical to our long-term success and readiness. As we deliberately expand production at a methodical pace, the Air Force will not sacrifice quality within our pilot production enterprise.

Air Force Force Generation

The Air Force is transitioning to a new force presentation and force generation model (AFFORGEN) that provides the Service the ability to present a sustainable force offering. AFFORGEN rebuilds high-end readiness for peer competition and major combat operations in accordance with the NDS. Due to air power's inherent flexibility, our previous force presentation and force generation models could not easily define the Service's sustainable capacity and capability limits. Nor could it easily articulate modernization requirements needed for rapid force employment concepts to develop future force readiness. As a result, over the past 20+ years, Air Force force elements were over-consumed responding to the "tyranny of now" at the expense of readiness and modernization for the future. The Air Force lacked the ability to present an easily understood model that reflected all facets of airpower and that could communicate how the Air Force was being consumed faster than it could rebuild readiness.

To address these issues, and to get after the heart of General Brown's Accelerate Change or Lose initiatives, AFFORGEN has become the Service catalyst for a paradigm and cultural shift in how we prepare and present credible and capable air power. Aligning to a narrative that we can no longer sacrifice future readiness for the sake of responding to constant global demand, AFFORGEN provides the Service with a standardized, easy to understand, and defensible model that builds readiness over time. It clearly predicts the impact of GFM actions to future force offerings, readiness, and modernization.

Institutionalizing AFFORGEN will take leadership at all levels. In close consultation with the Joint Planning and Execution Community, we have begun the hard work today, setting conditions to establish Initial Operational Capability (IOC) in fiscal year 2023, maturing through fiscal year 2024 and fiscal year 2025.

CURRENT CAPACITY AND CAPABILITY

Following National Defense Strategy (NDS) guidance, the Air Force seeks to invest in technologies and field systems that are both lethal and survivable against tomorrow's threats. This ultimately means transitioning away from many legacy platforms in order to free up manpower and resources to modernize and field more capable 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 the future. Retaining systems that have either limited contributions, or are simply not relevant in the future fight, delays modernization and exacerbates future capability gaps. If deterrence fails, our airmen must have the training, tools, platforms, and operating systems required to win. We must strike a balance between risk in the near-term and risk in the future.

Bomber / Intercontinental Ballistic Missile (ICBM) Force Structure

Our budget request supports the NDS's call for a full-scope modernization of nuclear delivery systems, to ensure a safe, secure, and effective nuclear deterrent to backstop our integrated deterrence approach. Our nuclear deterrent underpins U.S. strategy and diplomacy, as well as every operational plan. It safeguards the homeland, assures allies, and deters adversaries. Sentinel provides an evolutionary capability that enables the U.S. to address growing current and evolving future threats, while simultaneously increasing the safety, security, and reliability of the U.S. Intercontinental Ballistic Missiles (ICBM) force. 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 it will gradually transition the current three-bomber fleet to a two-bomber fleet of 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 Raider will form the backbone of our future bomber force and is the centerpiece of the Secretary of the Air Force's sixth operational imperative. As China and Russia develop new weapons and defenses, it is imperative we maintain the capability to hold at risk any target on the planet. The B-21 underscores our national security as the most flexible leg of the Nuclear Triad and supports combatant commanders across the range of military objectives as both a nuclear and conventional bomber. The Fiscal Year 2023 President's Budget includes \$3.25 billion in

Research, Development, Test & Evaluation (RDT&E) funding that continues to fund Engineering and Manufacturing development activities. Additionally, the budget includes \$1.79 billion in aircraft procurement to procure the first lot of low rate initial production B-21s, spares, support equipment, and long lead items for the second lot of low rate initial production. There are six B-21 test aircraft in flow on the manufacturing line, which are being built using the same tooling processes and technicians who will build the production aircraft.

In parallel, beddown preparations at Ellsworth Air Force Base (AFB), South Dakota remain on-track. The Fiscal Year 2023 President's Budget requests \$168 million to support one new military construction project and funds the third increment of the Low Observable Maintenance Facility at Ellsworth AFB. The first B-21s are projected to arrive at Ellsworth AFB in the mid-2020s with base infrastructure ready to support. A second Environmental Impact Statement began in calendar year 2022 to assess the final two basing locations, Dyess AFB, Texas and Whiteman AFB, Missouri.

The Air Force is committed and on track to meet its key performance parameter of building B-21s with an average procurement unit cost of \$550 million (Base Year 2010) / \$639 million (Base Year 2019), assuming a minimum fleet of 100 aircraft.

B-52

While the last B-52 Stratofortress entered service in the U.S. Air Force in 1962, we expect to continue operating the B-52 through 2050. We will continue to invest in modernization programs to keep the platform operationally relevant. Major modernization efforts include the Commercial Engine Replacement Program (CERP), the Radar Modernization Program (RMP), integration of the long-range standoff (LRSO) nuclear air-launched cruise missile, and installation of Advanced Extremely High Frequency (AEHF) secured satellite communication capabilities.

The Air Force's number one priority for the B-52 is to ensure platform viability through 2050 and the CERP enables us to achieve this goal. CERP will replace legacy engines (TF33-PW-103) with new military-derivative commercial Rolls Royce F-130 engines. It is important to note that CERP is more complex than just a standard commercial engine refit. CERP includes new engines, flight systems, and cockpit throttles and displays. The RMP is also necessary to ensure viability through 2050 and will modernize the current Strategic Radar (AN/APQ-166), which is based on 1960s technology modified in the 1980s.

Finally, integration of the LRSO and AEHF will bolster the continuation of the B-52's role in the airborne leg of the Nuclear Triad. The Air Force remains committed to B-52 modernization to ensure the nation's oldest and most versatile front-line long range bomber remains relevant through 2050 and beyond.

B-1

The B-1 is a long-range, supersonic multirole bomber capable of flying intercontinental missions with the largest payload of guided and unguided weapons in the Air Force inventory. This budget focuses resources on sustaining and modernizing the remaining combat-coded B-1s greatly facilitated by the retirement of 17 B-1s as authorized in the Fiscal Year 2021 National Defense Authorization Act. We will ensure the B-1s remain lethal and viable until B-21s are operational in sufficient numbers. The completed Integrated Battle Station upgrade enhances crew situational awareness and precision engagement capabilities and is the B-1's largest modernization effort ever. The first aircraft with this upgrade was delivered in January 2014 and the last aircraft was completed in September 2020. Additional efforts to update the B-1's communication systems are ongoing and ensure the B-1 remains the backbone of the Air Force's long-range bomber force until the B-21 arrives.

Lastly, the B-1 is the Air Force's threshold platform for the Long Range Anti-Ship Missile (LRASM). Integration of this weapon, coupled with the B-1's long range, high speed, and large payload capacity, postures the B-1 for an important role in any conflict in the Indo-Pacific region.

B-2

The B-2 is the only long-range strike aircraft capable of penetrating and surviving advanced Integrated Air Defense Systems to deliver weapons against heavily defended targets. Its unique attributes of intercontinental range, precision strike, large conventional or nuclear payloads, ability to penetrate defenses, and low observable profile allow it to execute Nuclear Deterrence Operations, Nuclear Response, Global Strike, and Global Precision Attack missions. The Air Force will ensure the B-2 remains effective until the B-21 is operational. Because delays in the Defensive Management System modernization effort would have limited the operational utility of the system by the time it would have fielded, the Air Force de-

scoped the Defensive Management System modernization program. Instead, we are replacing the B-2's unsustainable cathode ray tube displays with modern sustainable displays as part of the B-2 Displays Modernization program.

The Air Force reached Full Operational Capability to re-host the Stores Management Operational Flight Program software in the Flexible Strike program. This enables the B-2 to take advantage of advanced digital weapon interfaces, including those used by the B61-12 nuclear weapon. Other on-going B-2 modernization programs include Adaptive Communication Suite upgrades, enhancement of the Identification Friend or Foe (IFF) system, replacement of the Crash Survivable Memory Unit, integration of hardware upgrades for employment of the B61-12 nuclear weapon, and software upgrades to allow the B-2 to carry the extended range variant of the Joint Air-to-Surface Standoff Missile (JASSM-ER). Finally, the B-2 will continue sustainment efforts for the on-going Low Observable Signature and Supportability Modification effort to improve aircraft maintainability and availability.

Hypersonic Weapon Integration

Hypersonic weapons provide an important capability for combatant commanders, and the Air Force is committed to ensuring our long-range strike platforms can employ these systems. In-line with the Air Force's two bomber fleet strategy, we will ensure these weapons are capable of being delivered via our modernized B-52 fleet. In the near-term, the Air Force will utilize the fiscal year 2022 \$10 million congressional add to continue maturing the capability to externally carry hypersonic weapons utilizing the B-1. The speed, responsiveness, and range of air-launched hypersonic weapons combined with bomber payload capacity provide a necessary and compelling response to meet and surpass the pacing threat of China and Russia.

Intercontinental Ballistic Missile (ICBM) Modernization

ICBMs are integral to U.S. nuclear deterrence. The Air Force is in the initial stages of replacing the 1970s-era Minuteman III capability with the LGM-35A Sentinel Weapon System through the Ground-Based Strategic Deterrent (GBSD) acquisition program. The GBSD is the most cost effective option for modernizing the ICBM leg of the Nuclear Triad and supports the NDS to modernize the capability of nuclear forces. This weapon system will extend and improve the capabilities of the ground-based leg of the Nuclear Triad, providing a credible and responsive deterrent capability against current and emerging adversaries through 2075. The new weapon system will provide improved nuclear surety, safety, and effectiveness with enhanced security features. The new weapon system will provide more efficient operations, maintenance, and security by modernizing critical infrastructure and decreasing lifecycle costs.

The GBSD acquisition program remains on track in pursuing a low risk, technically mature design and is using innovative digital engineering and acquisition strategies to increase development speed and ensure on-time delivery. Deployment is scheduled to begin in the late-2020s in order to resolve capability, attrition, and age-out concerns with the Minuteman-III weapon system, as well as meet warfighter requirements. The nation is focusing investment on these new missiles and the associated infrastructure and accompanying re-entry systems.

Fighter Force Structure

The Air Force must continue to evolve its fighter force to meet the pacing challenge posed by China 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 (China) and the most difficult scenario (Taiwan) at the most difficult time (2035), shows that the Air Force must adjust the future fighter force structure mix by changing 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 4th generation fighters into 5th generation fighters, or our current 5th 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-15EX, F-15E, F-15C, A-10) to four (i.e., NGAD, F-35, F-15EX, F-16).

On the path to achieving the desired future fighter fleet, the Fiscal Year 2023 President's Budget proposes a net change of minus 84 fighter aircraft in fiscal year 2023, and a total FYDP net change of minus 346 fighter aircraft. These divestitures are critical to building a relevant future force capable of meeting our NDS peer competitor. 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 USAF fleet is 29 years which is significantly higher than all other Services. Weapons System Sustainment (WSS) costs have increased approximately 40 percent above inflation over fiscal years 2016 to 2027. We need new platforms and weapons to replace an aging force, but also must invest in cutting edge technology needed to confront and pace threats.

Both internally and alongside Office of the Secretary of Defense, the Air Force has performed a 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 fighter force. While this study was not published, it was used internally by the Air Force to inform both fiscal year 2023 and future year programming efforts.

Next Generation Air Dominance (NGAD)

The Air Force is investing in technologies as part of a family of capabilities to assure air dominance in the future. NGAD capabilities enable counter-air missions in highly contested operational environments in order to protect and support the Joint Force and replaces the F-22.

The requirement to establish and maintain air superiority within the battlespace cannot be understated as it underpins the joint force operations in any theater. NGAD is our program that supports studies, analyses, technical maturation, and prototyping activities leading to enhancements in lethality, survivability, interoperability, and persistence to ensure air superiority. The Air Force is ensuring affordability and cost control on NGAD through sustained competition for the vehicle and mission systems, adoption of a government-owned open architecture, and digital engineering that stretches into operations and sustainment. The Fiscal Year 2023 President's Budget requests \$1.66 billion in fiscal year 2023 to fund the continued development of a next generation open mission system architecture, advanced sensors, cutting-edge communications using open standards, and integration of the most promising technologies into the family of capabilities. Furthermore, this program incorporates novel agile acquisition practices through its competitive industry consortium approach that is yielding favorable results and providing greater value for the taxpayer. Our efforts are being shaped by multiple analyses, including recommendations from the Chief of Staff of the Air Force-approved Air Superiority 2030 Flight Plan, recently completed NGAD Analysis of Alternatives, and several others from renowned analytic organizations. Continued investment in NGAD technologies is critical to ensuring continued air dominance within emerging threat environments for all future joint operations.

Collaborative Combat Aircraft (CCA)

CCA are a part of the NGAD family of systems. These un-crewed weapon systems will be designed to work in conjunction with current and next-generation manned aircraft. CCA development draws from and matures autonomous technologies developed in the Air Force Research Laboratory's (AFRL's) Skyborg Vanguard program. The next phase of CCA development will pursue a streamlined concept refinement activity to identify employment concepts, operational requirements, and cost. These concepts are expected to span the design space across expendable, attritable, and exquisite capabilities. The concept refinement phase is ongoing now, leveraging and expanding the diverse range of industry partners developed for the NGAD program, to discover the state of the art.

F-35

The F-35 is the cornerstone of our future fighter fleet. The F-35 today is dominant, purpose built, and equipped with advanced weapons for the contested environment. In the near-term, we must concentrate on achieving the F-35 capability needed for advanced threats. While the F-35 is a formidable platform today, the Air

Force must confront key development, interoperability, sustainability, and affordability challenges to acquire, upgrade, and retrofit the F-35A fleet to obtain the minimum required capability and capacity as quickly as possible within projected resource constraints. To keep pace with the threat in future contested scenarios, follow-on modernization efforts centered on “Block 4” enabled by Technical Refresh 3 (TR-3) hardware must be affordably realized on competition-relevant timelines.

The Fiscal Year 2023 President’s Budget request decreases the F-35 procurement quantity in fiscal year 2023 to 2033 from the fiscal year 2022 enacted position of 48 aircraft. The Air Force is prioritizing investments in the F-35 fleet, seeking modernization, infrastructure, and advanced weapons in this budget request. Commitments include \$4.5 billion to procurement, \$1.1 billion, to development and \$12.3 billion to fund necessary sustainment. This increased investment ensures maximum future viability of the fleet, albeit with lower procurement numbers.

The Air Force has fielded 340 F-35A aircraft with 29 awaiting engines, power modules, or fan modules. The two largest cost drivers the Air Force controls are the number of aircraft possessed and programmed flying hours, and the major cost categories are parts, people, energy, and consumables. Our F-35A Sustainment Affordability Target for cost-per-tail-per-year (CPTPY) is \$4.1 million (BY12\$) based on 1,763 F-35As. The current 2020 Joint Service Cost Position is \$7.8 million (BY12\$) at steady state (2036–2041). The Air Force will continue work with the F-35 Joint Program Office, Navy, and industry to identify and evaluate opportunities to increase depot repair capacity and further reduce the cost of materiel and manpower.

Adaptive Engine Transition Program

The Air Force remains focused on completing planned testing of the prototype adaptive cycle engines and is engaged in the on-going F-35 Joint Program Office Business Case Analysis to inform acquisition planning for upgrading its F-35A aircraft propulsion, power, and thermal management systems. Both Adaptive Engine Transition Program contractors, General Electric Aviation and Pratt and Whitney (a Raytheon Technologies Company), have commenced testing of their respective flight-weight, prototype engines. Test results continue to substantiate significant performance gains in fuel efficiency (up to 25 percent), thrust (up to 10 percent), and thermal management capacity, as well as a significant reduction in greenhouse gas emissions (up to 25 percent) are achievable. The on-going F-35 Joint Program Office Business Case Analysis, along with a companion Air Force operational analysis, will address questions regarding life cycle costs and affordability of equipping F-35A with an adaptive engine. On-going acquisition planning is using the results from these activities to finalize an acquisition strategy.

F-22

The F-22 is the only operational multi-mission air superiority fighter aircraft that combines stealth, supercruise, maneuverability, and integrated avionics to make it the world’s most capable air superiority aircraft. The F-22 Block-20s are now in their third decade and they have the highest operating costs of any Air Force fighter, and they do not possess the combat capabilities resident in the F-22 Block-30/35. Remaining committed to ensuring air superiority for the Joint Force in the highly contested environment against a peer adversary, it is imperative to modernize the F-22 to preserve its advantages while concurrently developing Next Generation Air Dominance. In order to resource both, the Air Force seeks to divest the oldest and least capable F-22s (33 F-22 Block-20s) in fiscal year 2023. In the near term, three heavily modified F-22 Block-20s will be kept for testing. Additionally, the Fiscal Year 2023 President’s Budget request includes \$1.37 billion in fiscal year 2023 for modernization efforts essential to gain and maintain air superiority against evolving threats. The Rapid Prototyping and Rapid Fielding efforts follow an agile acquisition construct, and combine former TacLink16, Tactical Mandates (TACMAN), Low Drag Tanks & Pylons, Electronic Protection, and GPS M-code programs to deliver slices of each capability on an annual release cadence for capabilities as they mature. Future modernizations will continue to leverage the agile construct as a vehicle to rapidly prototype and iteratively field critical enhancements with capabilities delivered to the fleet in order to ensure “first look, first shot, first kill” capability in highly contested environments. Funds garnered from the divestment of F-22 Block-20s have been reinvested in NGAD development across the FYDP. The transition timeline from F-22 to NGAD is dependent on the progress of NGAD development efforts.

F-15

The F-15C/D supports both Homeland Defense and the air superiority mission. Our F-15C fleet is aging, with two-thirds of the fleet past its designed service life. The 186 F-15C/Ds in the Air Force inventory will reach the end of their design serv-

ice life in the next six to 8 years, and our analysis shows additional service life extension programs are not cost effective. The Fiscal Year 2023 President's Budget request divests 67 F-15C/Ds from the Active fleet. We have already started to replace this fleet with a modernized successor by purchasing the F-15EX. The F-15EX "Eagle II" will provide superior sensor, range, and payload for Critical Infrastructure Protection.

The Eagle II additionally brings outsized long range weapons (i.e., air-to-surface and air-to-air) into a peer fight. The Fiscal Year 2023 President's Budget request procures 24 F-15EX aircraft at a cost of \$2.7 billion. Notably, the Air Force remains fully committed to advanced 5th and next generation capabilities and the F-35. The decision to refresh the 4th generation fighter force with the F-15EX is a complementary step to both F-35 procurement and NGAD development, and helps mitigate capacity risk while balancing near-term readiness concerns.

The existing F-15E Strike Eagle fleet provides all-weather, long range global precision attack in all but the highest threat environments. The Fiscal Year 2023 President's Budget requests \$772 million in fiscal year 2023 to continue modernization efforts to ensure the aircraft remains viable to the 2030s. Modernizing the F-15E with Early Passive Active Warning Survivability System (EPAWSS), also used on the F-15EX, demonstrates our commitment to building a more lethal Air Force. EPAWSS will allow the F-15E/EX to survive to attack targets in high threat environments.

F-16

The F-16 is the Air Force's primary multi-role fighter and Suppression of Enemy Air Defense (SEAD) aircraft. Our more than 600 late block F-16s will provide affordable capacity for the next 15 or more years, in both competition and more permissive combat environments. We are beginning to transition away from our oldest, early block F-16s, with a reduction of 76 planned through fiscal year 2024. We will continue to modernize the late block F-16s we keep as our "affordable capacity" fighter into the 2040s. The F-16 investment strategy funds modifications for the most capable, late block aircraft to ensure they can operate and survive in today's threat environment. The Fiscal Year 2023 President's Budget requests \$970.7 million in fiscal year 2023 to continue these modernization efforts. This includes continuing the Service Life Extension Program comprising 12 structural modifications, affecting 450 aircraft, as well as several avionics capability upgrades including the Active Electronically Scanned Array (AESA) Radar upgrade. The new radar replaces the current mechanically scanned radar, with greater ability to detect, track, and identify low-observable, low-flying, and slow-flying targets. This joint emerging operational need of 72 radar systems is complete and fielded. The underway Phase 3 will install an additional 444 radar systems across the Combat Air Force (CAF), Air Force Reserve Command (AFRC), and Air National Guard (ANG), bringing critical capabilities to the F-16 platform to meet aerospace control alert mission requirements to properly defend the Homeland against modern threats. These radars continue fielding in fiscal year 2023.

A-10

The A-10 remains an effective close air support platform for the current Counter Violent Extremist Organization fight. With very limited utility in a contested fight, we are right-sizing our A-10 fleet for the current and anticipated future demand and then structurally extending and modernizing the aircraft we keep. We have installed 172 new wings on our A-10 fleet and an additional order of 50 wings has been placed and is set to be received from May 2022 through 3rd quarter fiscal year 2025. Once all wing replacements have been installed, the Air Force will have a complete A-10 fleet of 218 aircraft. As we will continue to modernize 218 A-10s, we will reduce the fleet by 21 in fiscal year 2023. The Fiscal Year 2023 President's Budget requests \$156.4 million (Procurement; and Research, Development, Test, and Evaluation funds) in fiscal year 2023 for modernization.

Trainers

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

The Air Force is continuing investment efforts in its trainer platforms, including critical modernization programs for the T-6 and T-38 fleets. The T-1A fleet is scheduled for divestment between fiscal year 2023 and fiscal year 2025. Training of future Mobility pilots, currently being conducted in the T-1A Aircraft, will be accomplished in the T-1A simulators using procedures developed from the Pilot Training Next Innovation Cell at Air Education and Training Command (AETC). The T-6 continues mitigation efforts for the aircraft with the On-Board Oxygen Generation System (OBOGS) to improve the safety of pilot training and address Unexplained

Physiological Events (UPEs). To date, mitigation efforts have resulted in an 82 percent reduction in UPEs. Expected completion of Enhanced OBOGS mitigation efforts is mid-fiscal year 2024. In fiscal year 2023, the T-6 will start a major Avionics Replacement Program (ARP) to address Diminishing Manufacturing Sources and Materiel Shortages (DMSMS) for critical avionics issues. For the T-38, modifications are also required to sustain and upgrade the fleet until the T-7A delivers, including avionics, Pacer Classic III, Talon repair, inspections, maintenance, and front canopy replacement programs. The Fiscal Year 2023 President's Budget requests \$6.3 million, \$13.8 million, and \$121.3 million for the T-1, T-6, and T-38 fleets, respectively.

T-7A

The T-7A Advanced Pilot Trainer replaces AETC's existing fleet of 427 T-38C aircraft with 351 aircraft and associated simulators, ground equipment, spares, and support equipment. The T-7A will provide student pilots with the skills and competencies required to be better prepared to transition into 4th and 5th generation fighter and bomber aircraft. The T-7A program uses a digital engineering approach, which offers significant benefits particularly during the design and build phases. Digital engineering reduces development times, lowers production costs, and allows greater collaboration between the Air Force and Boeing. Modern digital engineering practices are more efficient and yield tangible results by reducing design costs, reducing production support manpower, improving first time quality by 75 percent, and reducing assembly hours by 80 percent through task reduction. Additionally, the use of these digital engineering practices and early prototyping enabled the Air Force and Boeing team to identify aerodynamic instability issues at least 22 months earlier in the testing phase than possible using traditional development processes.

The Fiscal Year 2023 President's Budget request continues the program's Engineering and Manufacturing Development (EMD) and early aircraft flight test efforts, and procures long lead support equipment, ensuring we meet the 2026 Initial Operational Capability and 2034 Full Operational Capability milestones. Rollout of the first EMD T-7A is scheduled to occur April 28, 2022. The Air Force remains committed to working with Boeing to enable the T-7A program to achieve Milestone C in 1st quarter fiscal year 2024.

Munitions

To meet the priorities outlined in the NDS, the Air Force must maintain a suite of affordable air-to-air and air-to-ground kinetic and non-kinetic weapons delivering capability and capacity to defeat rapidly evolving competitors. As such, we continue to procure preferred munitions, but are tapering production as programs approach warfighter inventory objectives, while simultaneously investing in new technology to counter future peer threats in highly contested environments. The fiscal year 2023 President's budget request continues to modernize the munitions inventory to enable the future USAF construct. A fiscally constrained environment requires difficult risk-based decisions to offset development and procurement of new weapons. We must accept some near-term risk to build the munitions inventory needed for the future.

The Air Force has shaped its investment based on the correct mix of munitions, aligned with current OSD and Joint Staff planning guidance. This includes balancing stand-off and stand-in munitions. Advanced stand-in weapons bring great capability to penetrating platforms, while stand-off weapons provide adequate range to keep 4th generation aircraft relevant in high-end conflicts. Combined, they provide the volume of fires required to prevail in conflict when necessary.

Weapons that advance USAF capability include advanced air-to-air weapons, the Stand-in Attack Weapon (SiAW), Joint Air-to-Surface Standoff Missile-Extended Range (JASSM-ER), Air-launched Rapid Response Weapon (ARRW), and Hypersonic Attack Cruise Missile (HACM). The USAF will continue to collaborate with the U.S. Navy to share cost and technology. This partnership is critical in countering naval air defense threats.

Joint Direct Attack Munition and Small Diameter Bomb

The Joint Direct Attack Munition (JDAM) inventory levels are approaching objective quantities after several years at high levels of production funding. Current procurement is being held to minimal levels, pending fielding of guidance kit with GPS Military Code (M-Code) receivers and antennas. After increasing tailkit production to 45,000 tailkits per year in fiscal year 2018 to meet the needs of the Services and Foreign Military Sales (FMS) partners, the Air Force has adjusted to demand and now plans to procure 4,200 tailkits in fiscal year 2023 with a request of \$251.9 million, with U.S. Navy and FMS partners procuring the remaining production capacity.

Small Diameter Bomb I (SDB I) and II (SDB II) provide reduced collateral damage effects and increased load-out per sortie. Due to its high operational utility, the Air Force ramped the line for SDB I from 3,000 weapons per year in fiscal year 2015 to 8,000 weapons in fiscal year 2017. With demand dropping and advanced standoff weapons in higher demand, the Fiscal Year 2023 President's Budget requests \$46.5 million and plans to order 356 weapons, leaving residual production capacity available to FMS partners. For SDB II, the Fiscal Year 2023 President's Budget requests \$279.0 million to procure 761 weapons.

Joint Air-to-Surface Standoff Missile and Advanced Medium Range Air-to-Air Missile

As the Air Force responds to current operational demands, we are also looking to the future to ensure we are prepared to defend against more advanced threats as directed in the NDS. Doing so requires advanced weapons capabilities and the Fiscal Year 2023 President's Budget request reflects the Air Force's plan to continue investing in those areas, specifically with the Joint Air-to-Surface Standoff Missile (JASSM), the Long-Range Anti-Ship Munition (LRASM), and the Advanced Medium Range Air-to-Air Missile (AMRAAM). These weapons provide unique and necessary capabilities for the highly contested environment.

JASSM is the premier air-to-ground, low observable missile for defeating threats in highly contested environments and is the weapon of choice for a future fight against peer adversaries. The program is focused on increasing inventory by implementing a strategy to ramp up production rates and monitor subsystems for obsolescence. To achieve this, we have partnered with industry to expand production capacity to satisfy a 47 percent increase in our inventory objective. The Fiscal Year 2023 President's Budget requests \$785 million, which uses the full capacity of the second Lockheed Martin production line with 550 missiles.

LRASM, produced in the same facility as JASSM, is a purpose-built anti-ship missile particularly critical for the future fight in a maritime environment. The Fiscal Year 2023 President's Budget requests \$114 million to procure 28 missiles.

The Air Force continues to invest in the next generation medium and long-range air-to-air missiles. AMRAAM is still in production and meets today's requirements, but we will also need to invest to maintain our long history as the world's best Air Superiority Air Force. The Air Force is requesting \$320 million for 271 missiles, as industry partners begin to cut-in a solution to obsolescence issues through the Form Fit Function Refresh (F3R) effort.

Stand-In Attack Weapon (SiAW)

To defend the nation in an increasingly competitive global environment, we must look beyond currently fielded weapons systems and invest in future advanced munitions capabilities. To that end, the Air Force continues to invest in development of the Stand-in Attack Weapon (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 2023 President's Budget requests \$283 million for SiAW development and prototyping, along with \$78 million in procurement funding to field Advanced Anti-Radiation Guided Missile Extended Range (AARGM-ER) on the F-35 as an interim capability.

Hypersonics

The USAF is developing and fielding long-range, hypersonic strike weapons. The Hypersonic Air Launched Cruise Missile (HACM) and the Air-Launched Rapid Response Weapon (ARRW) will enhance our Global Strike capability in future contested environments. The AGM-183A ARRW requests \$114.9 million in fiscal year 2023 to complete its flight test program. The Air Force has prioritized completion of the ARRW flight test program and will revisit a production decision in the fiscal year 2024 planning process. The HACM is a planned system for fighter integration and increased load-out for bombers. HACM addresses urgent national defense needs and provides a credible deterrent to adversaries. The Fiscal Year 2023 President's Budget request of \$462 million for HACM development is designed to result in production article procurement by fiscal year 2027.

Tanker Fleet

Tanker Fleet

The Air Force tanker fleet is a critical capability to all Joint operations. It is crucial that we prioritize modernization over legacy capacity. We are modernizing the tanker fleet through four separate efforts. First, the Air Force is investing \$574 million across the fiscal year 2023 Future Years Defense Program (FYDP) to modernize

a smaller legacy tanker fleet. Second, we are continuing to deliver new KC-46s with \$13.1 billion invested in new aircraft procurement across the FYDP. Third, the Air Force is initiating the KC-Y program in fiscal year 2023 with \$423 million for RDT&E across the FYDP and \$1.3 billion for procurement in fiscal year 2027 for an initial aircraft delivery in approximately fiscal year 2029. Finally, the Air Force is continuing divestment of legacy KC-10s and recapitalization of KC-135s that will result in a tanker fleet comprised of 362 KC-135s, 26 KC-10s, and 95 KC-46s by the end of fiscal year 2023. As of April 2022, we have accepted 57 KC-46 Pegasus aircraft out of a planned total of 179 KC-46s. As we transition away from the aging KC-10 and right-size the KC-135 fleet, we continue to look towards the next generation for tanker recapitalization options.

KC-46

While we continue to sustain the current tanker capability, building the future tanker fleet remains one of the Air Force's top acquisition priorities. The KC-46 will deliver greater operational readiness, flexibility, and survivability to the Global Reach mission. Ninety-four production aircraft are on contract, and the Air Force is in negotiations with Boeing for 15 aircraft in fiscal year 2022.

The first KC-46 aircraft delivered to Main Operating Base 1, McConnell AFB, Kansas, on 25 January 2019. The Formal Training Unit at Altus AFB, Oklahoma, received its first KC-46 on 8 February 2019. The Air Force established Main Operating Base 2 at Pease Air National Guard Base, New Hampshire, on 8 August 2019, and Main Operating Base 3 at Seymour Johnson AFB, North Carolina, on 12 June 2020. Main Operating Base 4a at Joint Base McGuire-Dix-Lakehurst, New Jersey received its first two KC-46 aircraft on 9 November 2021. The Air Force will continue taking delivery of KC-46s at a rate of approximately 1.25 per month.

The Air Force remains committed to ensuring Boeing corrects deficiencies identified in both developmental and operational test and evaluation. Partnered with Air Mobility Command, we have worked hard to accept the KC-46 while ensuring its major deficiencies—the Remote Vision System (RVS) and stiff air refueling boom—are properly addressed without undue burden on taxpayers or warfighters.

On 2 April 2020, we reached agreement with Boeing to fix the RVS deficiencies through significant upgrades, known as RVS 2.0, at no additional cost to the government. On 11 April 2022, the Air Force and Boeing officially closed the Remote Vision System (RVS) 2.0 Preliminary Design Review (PDR). The RVS 2.0 design provides marked improvements over the current system. The overall RVS 2.0 program is still on schedule, with design solution and start of fleet retrofit expected in fiscal year 2024. The air refueling boom engineering change proposal, initially awarded in August 2019, was definitized on 30 September 2020, and the design solution is expected to complete in fiscal year 2024, with retrofit starting in fiscal year 2025.

The Director, Operational Test and Evaluation (DOT&E) has stated Initial Operational Test and Evaluation (IOT&E) will conclude after the RVS and boom deficiencies are resolved; IOT&E is expected to complete in fiscal year 2024. The full-rate production decision is planned after IOT&E is complete and we are in receipt of the statutorily-required Beyond Low Rate Initial Production report from DOT&E.

Despite its current deficiencies, the KC-46 is safe to operate (adhering to flight manual cautions provided to our operators) and will be the Air Force's best tanker for contested environments due to enhanced situational awareness, battle management, and threat countermeasures. By accepting the KC-46 with known deficiencies, the Air Force has enabled familiarization and operational test activities while working with Boeing on long-term efforts to correct deficiencies. Accepting the KC-46, and fixing deficiencies in parallel with operational test and evaluation, is the fastest way to achieve full operational capability to meet warfighter requirements.

At this time last year, only the Navy's F/A-18 was fully certified for unrestricted refueling with the KC-46. Additionally, at this time last year, no KC-46s were or had been presented to USTRANSCOM for tasking.

Beginning last July, the Interim Capability Release Program (ICR) allowed USTRANSCOM to "task" KC-46s to support approved receivers under the plan. Since then, continued approval of additional receivers has led to the KC-46 being cleared for 85 percent of missions tasked by USTRANSCOM. These additional approvals include bombers, tankers, airlift, ISR and fighters (F-15, F-16, F-18, F-22 and F-35). The KC-46 is now also capable of being tasked to conduct passenger and aeromedical evacuation missions.

KC-46 aircraft have conducted nearly 9000 missions since January 2019 with U.S. and coalition receivers delivering nearly 80 million pounds of fuel through over 37,000 safe and effective aerial refueling contacts. Within the next few months, additional receivers will likely be approved via the ICR process, allowing nearly all

boom-compatible receivers to be refueled by the KC-46 except the A-10 and some Air Force Special Operations Command C-130 aircraft. This alleviates pressure on legacy tanker fleets and allows some continued legacy divestiture.

The Fiscal Year 2023 President's Budget requests \$186.2 million in RDT&E funding for the ongoing KC-46 Engineering and Manufacturing Development and post production modification efforts, to include the boom telescope actuator redesign that resolves the stiff boom deficiency, on-going test and receiver aircraft certifications, and increased effort on the KC-46 Block 1 program. Additionally, the budget requests \$2.83 billion not only to procure 15 aircraft in Production Lot 9 along with associated engines, spares, and support equipment, but also to support increased depot standup and organic sustainment.

KC-10 and KC-135

The average age of our KC-135 and KC-10 tankers is 59 and 35 years old, respectively. Both fleets are challenged by aircraft parts obsolescence and diminishing manufacturing source issues. With the help of organic Air Force depots and industry, we are able to maintain these platforms as effective and safe weapon systems for the warfighter. We are executing several key modernization, safety, and compliance initiatives to ensure our KC-135 fleet remains viable beyond 2040.

The Fiscal Year 2023 President's Budget request will continue KC-135 modernization efforts, including the Block 45 program, the Aero-I Satellite Communications (SATCOM) program, Mobile User Objective System, Real Time in Cockpit, and the Rudder Position Indicator program. The Air Force is also funding three new modernization efforts in fiscal year 2023, including two radio upgrades and Center Console Refresh.

Additionally, the budget requests funding to keep our KC-10 fleet operational through its planned retirement at the end of fiscal year 2024, and includes funding for service bulletins and low cost modifications to ensure Federal Aviation Administration certification.

The Air Force fiscal year 2023 budget request proposes decreasing its tanker fleet from 479 Total Active Inventory to 455 by the end of fiscal year 2027. In fiscal year 2023, the Air Force is retiring 14 KC-10s and 18 KC-135s from the Active Duty fleets. These retirements are critical in providing the flexibility to free up resources and manpower to modernize and fund the Air Force's future tanker fleet.

Executive Airlift

VC-25B

The VC-25B program will replace the U.S. Air Force Presidential VC-25A fleet, which faces capability gaps, rising maintenance costs, and parts obsolescence as it ages beyond 30 years. The VC-25B program will deliver two new aircraft to meet the requirements for the President to execute the roles of Head of State, Chief Executive, and Commander-in-Chief. Two Boeing 747-8 aircraft are being uniquely modified to provide the President, staff, and guests with safe and reliable air transportation and a level of communications capability and security equivalent to that which is available in the White House. Modifications to the 747-8 aircraft began in February 2020 in San Antonio, Texas, and include an electrical power upgrade, dual auxiliary power units that are usable in flight, a mission communication systems, an executive interior, military avionics, a self-defense system, autonomous enplaning and deplaning, and autonomous baggage loading.

The Fiscal Year 2023 President's Budget requests \$493 million to continue Engineering and Manufacturing Development, aircraft modifications, and other product support activities.

C-40

The C-40 is a modified 737-700 Boeing Business Jet used to provide safe and reliable global air transportation for U.S. officials, including members of the Executive and Legislative branches of government, as well as other Defense officials. The fleet has been undergoing communications upgrades to ensure secure and robust communications that meet Executive-level requirements. The Fiscal Year 2023 President's Budget reflects \$2.2 million in procurement funding to address low cost modifications and service bulletins in order to provide secure and reliable government air transportation to these passengers.

Strategic and Tactical Airlift

C-5

The C-5 Super Galaxy provides all-weather worldwide strategic airlift for combat forces, equipment, and supplies, exemplifying Rapid Global Mobility as outlined in

the NDS. Current investment programs focus on fleet obsolescence, maintainability, and safety of flight.

The Fiscal Year 2023 President's Budget requests \$46.0 million in procurement funding, predominantly for communications, navigation, surveillance/air traffic management (CNS/ATM) and core mission computer/weather radar (CMC/WxR) system equipment. CNS/ATM upgrades include Automatic Dependent Surveillance-Broadcast (ADS-B) Out modifications required for global airspace compliance. The CMC/WxR effort replaces an antiquated radar system and upgrades the core mission computer processor to meet the demands of future software modifications. Production funding also includes procurement of training systems.

Additionally, the Fiscal Year 2023 President's Budget requests RDT&E funding to support replacement of the Multifunctional Controls and Displays (RMCD). This comprehensive sustainment modification mitigates the obsolescence of the current control and display units and increases capacity for future technology integration into the cockpit.

C-17

The C-17 is the only aircraft in the Air Force inventory that combines tactical capability with strategic range to operate from austere airfields. The fleet of 222 aircraft provides our Nation with unmatched flexibility to conduct theater and inter-theater direct delivery, airdrop, aeromedical, and special operations airlift missions. Agile and efficient software and hardware updates ensure timely readiness, safety, and capability improvements as this premier airlift platform contributes to our national security objectives.

The Fiscal Year 2023 President's Budget requests \$152.0 million in procurement funding to continue critical modifications to the C-17 fleet. This includes a filter fire mitigation for the On-Board Inert Gas Generating System, Large Aircraft Infrared Countermeasures defensive systems, and training system upgrades. The modification effort of a replacement heads-up display will address obsolescence of the current C-17 heads-up display and improve the system's availability, reliability, and maintainability. Production funding also includes procurement of training systems.

Additionally, fiscal year 2023 RDT&E funding will address obsolescence and flight safety issues. The Beyond-Line-of-Sight communication system effort modernizes multi-channel voice and data communication subsystems to ensure the C-17 keeps pace with changes in Department of Defense communication infrastructure, and begins production in fiscal year 2023.

C-130H/J Fleet

The C-130 fleet consists of C-130H and newer C-130J aircraft, as well as special mission aircraft (AC/LC/EC/MC/HC/WC-130s). C-130Hs and C-130Js are medium-size transport aircraft capable of completing a variety of tactical airlift operations across a broad range of missions. The fleet delivers air logistics support for all theater forces, including those involved in combat operations.

C-130H

The Air Force continues to modernize the C-130H fleet through a four-pronged approach emphasizing aircraft safety, airspace compliance, modernization, and partial recapitalization. Our C-130H Center Wing Box replacement program breathes new life into some of our hardest flown aircraft, enabling them to continue to safely operate well into the future. The C-130H Avionics Modernization Program (AMP) Increment 1 ensures the C-130H fleet is outfitted with modern communication equipment and complies with U.S. and international airspace transponder mandates. We completed the AMP Increment 1 installations for the C-130H fleet in May 2021. The AMP Increment 2 program improves the C-130H fleet maintainability and reliability by providing a new digital avionics suite and mitigating obsolescence and diminishing manufacturing source challenges. The Fiscal Year 2023 President's Budget requests \$0.4 million in RDT&E and \$115.4 million in procurement funding to support the C-130H fleet.

As with other weapon systems, the Air Force is taking measured risk in the C-130 portfolio as it focuses resources toward the future force. Specifically, in fiscal year 2023 we plan to reduce the total C-130 fleet from 279 aircraft to 271 aircraft (110 C-130Hs and 161 C-130J aircraft).

C-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 airborne psychological operations and offensive electronic warfare (EC-130J), 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, Block 8.1, and communications upgrades. 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 Mobile User Objective System 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.

The Fiscal Year 2023 President's Budget requests \$11.1 million for C-130J RDT&E and \$187.6 million for C-130J procurement and modification efforts. The Fiscal Year 2023 President's Budget also requests funding for HC/MC-130J RDT&E and HC/MC-130J procurement and modification efforts.

Rotorcraft

The Fiscal Year 2023 President's Budget continues investment in the Air Force's critical rotorcraft modernization programs, including the CV-22 Osprey, HH-60G, HH-60W, and MH-139A programs.

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 CV-22 conducts infiltration, exfiltration, and resupply of Special Operations Forces (SOF) in politically sensitive and hostile or denied areas. The Fiscal Year 2023 President's Budget requests \$165.4 million to continue 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.

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. Due to the advancing age and current attrition rates of the HH-60G, the Air Force must continue to sustain existing HH-60G helicopters and use aircraft procured under Operational Loss Replacement program to meet Combatant Command requirements until we can fully recapitalize with the HH-60W (Combat Rescue Helicopter (CRH)) program. The HH-60W will be specifically equipped to conduct CSAR across the entire spectrum of military operations. The Fiscal Year 2023 President's Budget request reduces the total fleet to 75 air vehicles from the program of record of 113. The Air Force has fully funded the CRH program to meet National Military Strategy objectives through Personnel Recovery missions. The Fiscal Year 2023 President's Budget requests \$10.8 million and \$928.8 million for the HH-60G and HH-60W programs, respectively.

MH-139A

The MH-139A program is an element of the Air Force nuclear enterprise reform initiative and also supports operational airlift within the National Capital Region. This program will deliver up to 80 replacement helicopters, training devices, and associated support equipment to replace the legacy UH-1Ns. The Fiscal Year 2023 President's Budget requests \$185.4 million for the MH-139 program, which will fund Low Rate Initial Production, training devices, and support equipment. It also funds the MH-139A Performance Enhancements and Product Improvements Program, which is the development of solutions to solve capability gaps found during the development and test of the MH-139A. This includes solving communication and weapon systems deficiencies, improving mission planning compatibility, resolving usability concerns, and other critical capabilities. The first six aircraft continue to be used to finalize test and development.

Intelligence, Surveillance, and Reconnaissance

The Air Force is focusing Intelligence, Surveillance, and Reconnaissance (ISR) resources on efforts that provide high quality tracking and target coordinates, establish meaningful data nodes to give tactical direction, and optimize weapon systems with information that matters in the most useful formats, at speed and scale. To meet the challenges of a highly contested environment, the future ISR portfolio will consist of a multi-domain, multi-intelligence, collaborative sensing grid that uses ad-

vanced technology. The end goal is a ready Next Generation ISR Enterprise possessing a decisive advantage for the warfighter while remaining competent across the entire spectrum of conflict.

The ability to win future high-end conflicts requires accelerating investment to transition our ISR force structure into a connected, persistent, and survivable force. To achieve this, we must move away from expensive legacy systems that offer limited capability against future competitors. The Fiscal Year 2023 President's Budget request takes further steps towards repurposing, retooling, automating, and stabilizing the force to ensure the ISR Enterprise can achieve this vision within the next decade.

MQ-9

The Fiscal Year 2023 President's Budget request of \$208.2 million will continue MQ-9 fleet modernization efforts aimed at providing needed capabilities to the Combatant Commands. To date the MQ-9 fleet has flown over 2.75 million hours, with approximately 91 percent of those hours supporting combat operations. This level of warfighter support is facilitated by a unique program architecture in which MQ-9 sustainment and modernization efforts are managed as separate, yet fully integrated and complementary, programs of record. This allows the Air Force to focus on operating and sustaining fielded MQ-9s while development and testing of planned modernizations are conducted in parallel. By structuring this way, mature and proven upgrades for the program at large are delivered when and where they are needed.

MQ-9 modernization efforts include the continued development of MQ-9 Multi-Domain Operations (M2DO) capability upgrades that will keep the fleet relevant. The upgrades in the M2DO configuration include Anti-jam GPS, Command and Control Resiliency, Enhanced Power, Link-16, and an effective and reliable open systems architecture.

The Fiscal Year 2023 President's Budget request removes 250 aircraft from the inventory over the FYDP. The Air Force will first remove all Block 1 aircraft between fiscal year 2023 and fiscal year 2024, and then will remove high time Block 5 aircraft between fiscal year 2026 and fiscal year 2027. The remaining fleet of 140 Block 5 aircraft will continue to meet Combatant Command requirements.

RC-135

The Air Force is committed to sustaining and upgrading the RC-135 fleet as it continues to be our most capable, relevant, and viable signals intelligence platform. Continued modernization using rapid acquisition and fielding processes is critical as we address emerging peer threats and great power competition. The RC-135 is critical to our decision advantage as it provides vital intelligence data at unrivaled speeds to both the national-level intelligence community and the tactical-level warfighter today and in any future highly contested conflict.

The Fiscal Year 2023 President's Budget request facilitates mission system improvements for the RC-135 variant fleet. Efforts include the automation of additional search and detection capabilities, improved near-real-time data distribution and collaborative processing, and exploitation and dissemination supported by enhanced artificial intelligence algorithms. Also, the second and third KC-135 to WC-135 conversions will be accomplished and delivered in fiscal year 2023. Finally, the recent extension of the standard-setting RC-135 cooperative agreement with the United Kingdom's Royal Air Force (RAF) to 2035, as well as the integration of RC-135 derived sensor technologies on the Australian Royal Australian Air Force (RAAF) MC-55 Peregrine, continue to strengthen alliances globally while increasing partner interoperability.

RQ-4

The RQ-4 Global Hawk remotely piloted aircraft system provides high altitude, long endurance, all weather, wide area reconnaissance and surveillance. The Fiscal Year 2023 President's Budget request of \$116 million will maximize Block 40 utility through the remainder of the Global Hawk service life, to include fielding the modernized ground segment and addressing diminishing manufacturing sources issues.

The Ground Segment Modernization Program is on track to complete installation of upgraded cockpits at Grand Forks Air Force Base and Beale Air Force Base in fiscal year 2023. Finally, the Air Force plans to divest Block 40 by fiscal year 2027, at which time space-based Ground Moving Target Indicator is expected to meet combatant commander's needs in accordance with the NDS. The reduced investment in the RQ-4 also enables the Department to better align resources with the NDS.

EC-37B COMPASS CALL

COMPASS CALL is the Air Force'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 EC-37B in order to maintain U.S. Electromagnetic Spectrum (EMS) Superiority in future conflicts. To date, six EC-37B aircraft have been procured and are undergoing modification, with limited fielding for training only in fiscal year 2024, and initial operational fielding in fiscal year 2026.

The Air Force has included procurement of the last four planned EC-37Bs as part of the fiscal year 2023 Unfunded Priority List (UPL). Additionally, the Fiscal Year 2023 President's Budget accelerates development of the mission system upgrade for the fielding of 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 included on aircraft number six initially and then to the first five aircraft as an upgrade modification.

E-8C JSTARS

The E-8C JSTARS provides wide-area Ground Moving Target Indicator (GMTI) capability and dynamic Battle Management Command and Control (BMC2). JSTARS aircraft will have survivability challenges in future scenarios, as airborne GMTI platforms have to operate closely (from within contested areas) to adequately sense ground moving targets. The future of the GMTI is a pivot to space. Additionally, this pivot is imperative due to the increasingly prohibitive cost to sustain the platform and maintain a relevant capability across the spectrum of operations. As such, the Department is transitioning from legacy airborne GMTI platforms to space-based capabilities, where sensing will be possible in anti-access/area denial (A2/AD) scenarios. As part of this transition, the Air Force began divestiture of the JSTARS fleet in fiscal year 2022 and will divest eight aircraft in the Fiscal Year 2023 President's Budget request, leaving three aircraft in the Active fleet.

E-3 AWACS

The E-3 AWACS provides wide-area Airborne Moving Target Indicator (AMTI) capability and dynamic Battle Management Command and Control (BMC2) to build an accurate battlespace picture. Despite modernization efforts, the aging E-3 AWACS offers limited operational utility in contested conflicts, creating an operational imperative to replace it. The AMTI capability of the E-3 AWACS presents a significant capability gap with no present long term Air Force capability to compete in the high end fight. The E-3 Replacement program will close the capability gap by enabling the long range kill chain, enhancing reliability and availability, and reducing operating costs by integrating a modern Electronically Scanned Array sensor on a crewed platform. An electronically scanned array will be capable of radar beam steering, sector staring, and much faster target revisit rates that translate into better target detection and tracking of modern threats, as well as more robust Electronic Protection not possible with the mechanically scanned radar on the E-3 AWACS. The Fiscal Year 2023 President's Budget request begins the transition to the more capable E-7A platform by divesting the first 15 E-3 aircraft in fiscal year 2023. This fleet reduction will allow the Air Force to concentrate resources and improve E-3 aircraft availability rates, while efforts to procure the E-7A are underway. Full fleet divestment is currently scheduled to occur by fiscal year 2029; therefore, most E-3 modernization programs are being terminated except mandated requirements for crypto and communication systems as well as safety of flight efforts. The Fiscal Year 2023 President's Budget request of \$67 million funds these efforts to maintain existing AWACS BMC2 capabilities. For the E-3 Replacement program, which will be the E-7A, the Fiscal Year 2023 President's Budget request funds the development and delivery of two production representative prototype aircraft to support test and evaluation, and associated ground support and training systems.

Connecting the Joint Force

One effort that will stress how fast and smart our requirements, acquisition, and operations process can move is Joint All-Domain Command and Control (JADC2) powered by the Advanced Battle Management System (ABMS). Charged by the Secretary of Defense with leading the concept development for JADC2, the Department of the Air Force is building ABMS to create decision superiority by delivering relevant information and capabilities to warfighters and operators at all echelons. ABMS will integrate today's and tomorrow's sensors; develop applications embedded with artificial intelligence, sophisticated algorithms, and multi-layered protections to make sense of massive amounts of trusted data; link space capabilities with

weapons systems and personnel across all domains; and design pods, platforms, pathways, procedures, and policies that connect and integrate the warfighter better and faster than in any time in our history.

Operationally optimized ABMS/JADC2 is one of the Secretary of the Air Force's Operational Imperatives (OIs) and is a foundational capability in many other OIs. The ABMS acquisition effort will pursue two interconnected investment paths: enduring digital infrastructure investments and Capability Release packages, which leverage those enduring investments but focus on closing kill-chains and delivering immediate operational capability. The Department of the Air Force (DAF) Rapid Capabilities Office (RCO) is working in conjunction with the wider acquisition community to ensure Air Force and Space Force systems have seamless interoperability and compatibility to meet the JADC2 operational requirements. The six ABMS capabilities required to connect the warfighter are secure processing, connectivity, data management, applications, sensor integration, and effects integration.

Driven by requirements approved by the Chief of Staff of the United States Air Force and the Chief of Space Operations, Capability Release #1 (CR #1) (Airborne Edge Node) connects select tactical assets and C2 functions to the transport layer and the ABMS digital infrastructure at the tactical edge, enhancing situational awareness and decision making at the tactical, operational, and strategic levels.

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 sufficient military advantage to secure our vital national interests and support our allies and partners in fiscal year 2023 and beyond.

Senator DUCKWORTH. Thank you. At this time, I would like to recognize the Ranking Member for his opening statement.

STATEMENT OF SENATOR TOM COTTON

Senator COTTON. Thank you. Pardon my tardiness. Gentlemen, welcome back. Thank you for being here this afternoon and for your many years of distinguished service. First, I want to commend you for taking bold steps to modernize the Air Force as best as you can with what I think is an inadequate budget.

I want to add my voice to the many voices saying that the Administration is still underfunding our military in a dangerous global environment. I also appreciate that you are focusing on China as the most serious threat we face in the long term. There are a lot of big moving pieces in this budget.

As I have said before, I want to give you the opportunity, as a force to divest the old and outdated aircraft and invest and procure what we need in terms of new and modern aircraft and weapon systems. But I also want to make sure your plan ensures that we have the necessary ability to maintain air superiority in the short term, the next 5 to 7 years. We can't trade security now, in the future either.

Also, I would like to hear you address your concerns from critics that these big divestments and procurement moves the Air Force wants to make, that there is not enough interoperability between new capabilities and old technology that the joint force still needs. I hope these critics are wrong, and I think you have good answers to them, and I look forward to hearing what you have to say on this topic and other topics. Thank you.

Senator DUCKWORTH. Thank you, Senator Cotton. I now recognize myself for opening round of questions for five minutes. The fiscal year 2023 budget request would retire roughly half of the E-3 airborne warning control systems, AWACS aircraft, or 15 of 31 aircraft in the fleet.

The Air Force just announced its intent to award a sole source contract to Boeing to buy an aircraft called the E-7 Wedgetail to

replace some of the E-3 fleet. Air Force officials, including Secretary Kendall, indicate that we could get the first aircraft for testing by 2027.

If that is the case, it would be several years before there would be any substantial number of Wedgetail aircraft available to support the combatant commanders.

My first question is for each of you. Why do you believe we can afford to cut the AWACS force structure and wait on a replacement for the E-3 aircraft for more than 5 years?

Lieutenant General NAHOM. Senator Duckworth, thank you for the question. I will start out and then I certainly want to let General Richardson talk about the E-7 development as well. When you look at the E-3 fleet right now, and you talk about taking 15 to 31 airplanes away, and we are concerned with the gap.

Unfortunately, right now with the condition of the E-3 fleet, we have a gap right now. The E-3 has got maintainability issues as well as capability issues, and the capability, we can talk a little more in a classified session, certainly, but there are things that the E-3 cannot do that we need it to do right now when you look at peer threats, peer competition.

On the maintainability side, we struggle to keep roughly half that fleet airborne. The airplane was delivered in the 1970s. It is a 707 with aging engines on it. Significant maintainability challenges with that airframe.

By divesting the 15 airplanes, we took the entirety of the savings and reinvested it into the E-7 program so we can get the E-7 as quickly as possible. We recognize that this is a gap, but unfortunately the gap exists right now with the current condition of that fleet.

Lieutenant General RICHARDSON. Madam Chair, what I would add on to that without repeating it is, on the acquisition side, what we are trying to do is move out very swiftly to address this effectively emergency situation that we have got.

We moved very quickly to do the market research to see which is part of our standard process. We are now working towards the strategy build process with Honorable Hunter, the acquisition executive.

We are really pushing hard to make sure that we get on contract just the first part of the year. We want to make sure that we do that smartly. We don't want to just quickly rush too fast there, so we will go through a series of two or three solicitations with Boeing to make sure we get the requirement correct.

We are going to try to make sure that we minimize, only to things that are mandated, any changes to the actual E-7 that has already been developed. We are hoping that we can go as fast as we can to try to close that gap.

Right now, the only things that we are doing would be mandating things like M-Code GPS, adding that on for example—as one example, and a couple other things like cybersecurity cleanup.

For the most part, this is a, just a nondevelopmental effort on top of an obviously a commercial derivative aircraft over.

Senator DUCKWORTH. Thank you. So are you saying that the cost savings that General Nahom mentioned—by decreasing the number of E-3s, you are going to take that cost savings and put it to-

wards expediting the acquisition of the replacement aircraft, in this case probably the E-7? Is that going to accelerate that timeline so that we get it before 2027? Or are you saying that doing this will only get us to 2027—we are going to have that gap regardless.

Lieutenant General RICHARDSON. Doing this gets us to 2027, Senator. There is a couple of year lead time on the green aircraft side and there is a couple year lead time on the mission equipment, specifically the radar that is part of the system.

Then we will go into a test period. The 2023 budget request asks for two prototype aircraft, and the first one of those would be the one that would be delivered in 2027. They will start flowing after that.

Senator DUCKWORTH. That is a separate line from—you are saying that if you cut the E-3, so the cost savings from that, you are going to put towards expediting the E-7s?

Lieutenant General NAHOM. Well, ma'am, I would say when we worked this program for our budget request. The divestment of the E3s went into getting this program started. We are going as quickly as we can. That money was in confined resources, we needed that money to get this E-7 program started, and that was part of the resources required for the E-7 itself.

Senator DUCKWORTH. Is there any other potential for shortening the timeline mentioned by Secretary Kendall, the 2027 timeline, in a responsible fashion?

Lieutenant General RICHARDSON. I think there is really two ways to do that, Senator. We have looked at options of maybe instead of starting out with two prototype aircraft for test, if we had a third, it would speed things along.

We don't think it is smart to rush to get on contracts, so we are not going to swiftly move to get on contract. We want to make sure that with our Boeing partner that we get that contract, the terms of that contract correct so that we don't get off on the wrong foot.

Once we get started, there is an option there, there is an opportunity to maybe have a third aircraft at the beginning of the effort. But the real way that I think we can quickly replace the E-3 capability is by procuring more—once we are done with that certification work, is procuring at a faster rate in the backside of it, over.

Lieutenant General NAHOM. Ma'am, if I could add too. Once we get the aircraft, going operational as quickly as possible. That we can actually work some ahead of time because our Australian partners fly this aircraft and they have already offered to help us.

We can get crews trained ahead of time, both maintainers and pilots and air battle managers, so when the airplanes are delivered, we can go operationally very quickly, and we have not been able to do that before.

Senator DUCKWORTH. So that gap is going to stay there, though, is what you are seeing, from the E-3 to the E-7s? I am just deeply concerned that we have got a gap there that we have not figure out how to mitigate yet.

Lieutenant General NAHOM. Yes, ma'am.

Lieutenant General GUASTELLA. Yes, ma'am. Just to reiterate, General Nahom's point, the aircraft is exhausted. It has been deployed continuously which much of the Air Force's fleet is in that condition. It is not maintainable out there in the field, and it has

a significant capability gaps, so those two together have put us in the situation.

The one thing that reducing the fleet size will allow us to do will be to invest in the remaining fleet, get that fleet as healthy as we can, and then employ things such as dynamic force deployments, which essentially deploy the AWACS in healthy packages to locations that need it just long enough to get missions done and the return them back and restore their health, so that episodic shorter duration employment, dynamic force employment is our new construct. That is one of the ways to global force management that we will try to mitigate through this gap.

Senator DUCKWORTH. Okay. Thank you. Senator Cotton.

Senator COTTON. Thank you. I didn't mind you going a few minutes over because I share those concerns as well. I will cross that question off my question list, but just know that I share the Chairwoman's concerns as well. General Nahom, I go to another question on my list here.

The Navy has requested to divest 25 of its Growlers, which I think highlights a capability gap in the Air Force that has existed since the retirement of the EF-111s in the mid 1990s. What is the Air Force plan for stand in electronic attack?

Lieutenant General NAHOM. [Unaudible.]

Senator COTTON. Sure.

Lieutenant General GUASTELLA. Sir, if I could and obviously respectful of the room that we are in here, all the services absolutely support each other. This is a case where the Growler is a critical element of the joint force, and it supports all the other services.

Electronic attack, electronic warfare, electronic ESM [Enterprise Security Management] mission is something that is critical to the joint force, and it is a global force managed asset, as are many of the aircraft in the Air Force's inventory. From our perspective, it is a critical aspect of the force.

Senator COTTON. Has the Air Force considered developing its own organic platforms for stand in electronic attacks?

Lieutenant General NAHOM. Sir, we have not.

Senator COTTON. Okay.

Lieutenant General NAHOM. We rely on our joint partners for that capability, sir.

Senator COTTON. I mean, so it is a key enabler for our low observable aircraft, right?

Lieutenant General GUASTELLA. Sir, it is a key enabler for the success of the joint air campaign because it is a full team effort, whether it is fourth generation or fifth generation team together with electronic attack, to create a strike capability or air superiority. All of it weaves together and it is a critical piece of that—

Senator COTTON. Do you do you have concerns about the Navy divesting these aircraft and what it means for the Air Force?

Lieutenant General GUASTELLA. Sir, I would say it is a critical capability for the joint force that the joint force has to have.

Senator COTTON. Let me go to another question that I may not get answers in this setting for.

[Laughter.]

Senator COTTON. The B-21. I just want—at a very high level, I know that we can have a classified briefing at another time. Gen-

eral Nahom, can you give us an update on the status of the B-21? Is it on schedule and on budget?

Lieutenant General NAHOM. It is on schedule, on budget, sir. This is the second time I am passing, but I got my acquisition professional right here to my left. Probably give you much better, better details on that.

Senator COTTON. Okay. General Richardson.

Lieutenant General RICHARDSON. Senator, it is on schedule and on budget and has been. So we are—not a lot we can say about it here other than there are six articles on build, as you have probably seen, but yes, sir, it is on schedule and budget.

Senator COTTON. Okay. What, if anything, do you need from Congress to make sure you maintain that on schedule, on budget status with this aircraft?

Lieutenant General NAHOM. From the programmer side, just the steady investment. I think we have had that. I think that is one of the Pentagon successes, this program, because we have had steady investor in this program. We have been well resourced, which has kept it on track.

Lieutenant General RICHARDSON. What I would add to that is just keep doing what you are doing. I think we are a great team on this and so there is a lot of interest in it in Congress.

The only warning that I would give is we got to just know that it is a development program and we have got a lot of work ahead of us. The program is going really, really well. There is a lot of work to go.

I don't know what bumps might come, but there will be bumps along the road, as we finish out the program and we just have to work through them.

Just the patience there to continue working with us as we work through whatever bumps are there. To be clear, I don't know of any, through all my years of experience, most programs worth doing have bumps along the road.

Senator COTTON. Okay. I guess I have been here long enough now that I can say I have followed this program since its infancy. While the department, both yours and the big department, take sometimes justified criticism about programs that are overbudget and overdue, I think this program has been fairly exquisitely managed for a very key capability for many decades to come.

Gentlemen, I hope I can ask you another question. If you kick it to another one of these Generals this time, I am going to say you should be a Senator at a press conference in the middle of the controversy who looks to his other Senators to answer hard questions. I have heard some rumors that a leading contributor to the F-35's lagging mission capable rate is a shortage of spare engines. Is that correct?

Lieutenant General NAHOM. Sir, we are working through some engine challenges. We have made some strides in the past few months, but it is a challenge based on the nature of that motor and the way we operate it, and we have seen some challenges.

Senator COTTON. So let me ask—an implication of that answer is that if Congress were to increase the number of F-35s procured in fiscal year 2023 beyond the number on your unfunded party list,

would it cause a similar problem or exacerbate the problem we already have?

Lieutenant General NAHOM. I don't necessarily think it would exacerbate the problem, sir, but you will notice that last year we did in 2022, we did put in for extra motors and extra parts for motors because of this phenomenon. We are starting to see some improvements based on that.

I think we will continue to work it. But more F-35s are not necessarily going to exasperate that right now, especially as the newer F-35s come off the line with the motor.

Senator COTTON. Whether it is off of your unfunded priority list or even above the number on your unfunded priority list?

Lieutenant General NAHOM. Sir, it wouldn't exacerbate the problem. Yes, sir.

Senator COTTON. Okay. Thank you.

Senator DUCKWORTH. Thank you. Senator Tillis.

Senator TILLIS. Thank you, Madam Chair. Gentlemen, thank you for being here and for your service. Maybe I will start on the F-35. Can you talk a little bit about the importance of the adaptive engine transition program and why do you think it is important for the increasing demands put on this platform?

Lieutenant General NAHOM. Sir, and I will be careful here about talking about F-35 modernization, it is unclassified environment, but it is very critical that we modernize the F-35 in the Block 4, because when we first got in this game with the F-35, 20 something years ago, the threat was different.

The current airplane with the motor and the power demand on that motor was just different. Now, as we improve the capabilities, there is going to be increased power needed from the motor. So, looking at the future of advanced power on the F-35 is critical.

Senator TILLIS. How is the Air Force with respect to compliance on the F-35 for the requirement modernization, requirements on the F-35? Are you tracking towards compliance on the requirements?

Lieutenant General NAHOM. We are tracking towards compliance—and do you have anything specific on that, but—

Lieutenant General RICHARDSON. Senator, can you be more specific? When you say compliance, what are you referring to, sir?

Senator TILLIS. Just the specific requirements that have been set forth by Congress? Are all your programs tracking to achieving those requirements?

Lieutenant General RICHARDSON. As far as I know, Senator, I think the F-35 reports that are mandated, we are working towards those, whether that is, well, the two reports that are outstanding right now. The warfighter requirements, we are certainly working towards—very hard towards those. We are behind where we should be. As far as I know, Senator, we are.

Senator TILLIS. Okay. I want to get to the KC-10 and the KC-46. I am looking forward to the KC-46 being able to achieve all of its mission requirements. Seymour Johnson is going to be a main base for KC-46s, so I want its health and hygiene to be great as quickly as possible.

When you are talking about our refueling requirements now and the retirement strategy for the KC-10, do we have any current re-

quirements, refueling capacity that is in the yellow or red? Are we able to achieve our mission requirements?

Lieutenant General GUASTELLA. Sir, our tanker fleet is in constant global demand, and we manage that demand much as we do with the AWACS, with dynamically allocating resources where they need to be. I think the Air Force has a good plan to manage the demand as we recapitalize to the much needed KC-46.

Senator TILLIS. Okay. But in your opinion, the current retirement schedule for the KC-10 is not in any way impeding your ability to meet minimum requirements?

Lieutenant General NAHOM. No, sir. I think the KC-10 retirement has to continue on. One of the most important things we do in the coming years is we have to have a continuous recap of our tanker fleet, and keeping the KC-46 on track is important. The KC-10, as incredible as that platform is, is expensive to maintain.

Getting to that, the modern KC-46 capability as quickly as possible and keeping it on track and then continuing—after the first contract, when we get into KC-Y, continuing tanker recapitalization because unfortunately our KC-135, as amazing as they are, the newest one is a 1962 model, and we have to continue to recap that fleet.

Senator TILLIS. The reduction in the F-35s in favor of the Block 4, the decision to do that, was it at all influenced by the fact that you ran out of money, or would you have done it even if you had money on account?

Lieutenant General NAHOM. Well, sir, I would say in our fighter fleet—if you look at our investment in fiscal year 2023, in our fighter fleet, we increased our investment, overall in the fighter portfolio by over \$1 billion. There certainly was a balance, and no company, no organization has unlimited resources. The Air Force is no different in that.

When you look at where we put our money in the fighter portfolio, whether it was a next generation or dominant systems, the F-22 upgrades F-35 Block 4, the F-15EX, the fourth generation modifications to the F-16s, and the F-15Es that are in North Carolina, these are very critical things to make sure that we fund it as well.

In a perfect world, would we get to 72 fighters a year? Absolutely. But we have to, in given resources, we have to strike a balance because we need that capability for that high end threat, as well as we need that capacity for what the combat commanders are demanding today.

Senator TILLIS. Last question I had in response to the update on the bomber program was that, keep doing what you are doing, General Richardson, I think that is what you said. Would that include a CR [continuing resolution], is there any disruption in terms of future funding or anticipated future funding if we fail to get through regular order appropriations and just put forth the CR?

Lieutenant General RICHARDSON. Senator, I think the answer depends on how long the CR proceeds. For the development program itself, we could go a pretty good distance without a CR concern so as long as it is not—it turns into a full year, I think we would be able to work through most of it.

If it drags out, we would obviously work with you to let you know the hard dates for production kinds of awards that would potentially be more impacted than the development effort.

Senator TILLIS. Well, just in closing, Madam Chair, one thing that, I mentioned this in a hearing last week, one thing that I would urge you to do, if it is a short term CR, I get it. If it is a series of CRs, it is going to have some impact.

So that if that did occur, take note, so the next time we come in here and flog you for having a program behind, you can respectfully submit that some of that was a disruption in future funding streams and make no apology for that.

We need to understand the consequences when we fail to actually provide the resources that, in your opinion, are required to keep it on budget and on track. Thank you, Madam Chair.

Senator DUCKWORTH. Senator Hawley.

Senator HAWLEY. Thank you, Madam Chair. Thanks to all of you for being here. General Nahom, General Guastella, would you agree with me that PACAF [Pacific Air Forces] is critical to project air power in our facing theater in INDOPACOM?

Lieutenant General NAHOM. Yes, sir.

Senator HAWLEY. I would think so as well. When I asked Secretary Kendall recently whether the fiscal year 2023 budget meets all of PACAF's posture requirements, he said he didn't know. So maybe you can tell me. Can you confirm that all of the posture requirements identified either by PACAF or for PACAF in the 2023 budget cycle are funded in this year's request?

Lieutenant General NAHOM. Sir, I guess there is a—there is certainly, there is always posture concerns and certainly with some of the aircraft we are replacing, if you look at what we are doing at again with the F-15Cs. Certainly with the E-3, we just mentioned, there is certainly concern as we recapitalize airplanes.

I am not aware of any budgeting concerns with the posture requirements other than replacing aging airplanes, is my number one concern because we do have a lot of aging airplanes in the Pacific, not just F-15Cs, the Kadena, but the A-10s sitting in Korea, as well as some F-16s in the Western Pacific as well. They will be a significant concern in the coming years as we recapitalize our fleets.

Senator HAWLEY. So, are you telling me that you think that meeting those challenges, that that is not sufficiently funded in this budget of the fiscal year 2023?

Lieutenant General NAHOM. What I would say is, we have talked for many years about getting 72 fighters a year. That number, as we looked at our fleets and we looked at airplanes that are retiring, and over the next about 10 years, all the legacy airplanes will be out of the Air Force, and that is your F-15Cs, your older F-15Es, your pre-Block, your older F-16s, your older F-22s, certainly your A-10s.

That is a significant number of airplanes, and if we don't purchase airplanes to replace those, then we either get smaller as a fighter force or we will have some locations that will have not as many airplanes as we would need.

That is a concern because that is why our Chief has said continuously and we have been very consistent over the last several cycles

that the 72 fighters a year allows us to recapitalize the fighter fleet and keep the capacity where we have it now.

Senator HAWLEY. So what do we need to do in the fiscal year 2023 budget to address these concerns?

Lieutenant General NAHOM. Sir, I could say with the fighters, we have paid a lot of attention to the fighter fleets. We have increased the funding, but we did, in given resources, have to maintain a balance between the capacity that we would like and ascertain the capabilities that we need for a China threat.

Senator HAWLEY. Do you have anything to do add to that, General Guastella?

Lieutenant General GUAATELLA. Sir, I and General Nahom, correct me if I'm wrong, in our plan, there is a net increase to PACAF's posture over time. One thing we are doing real time—because the National Defense Strategy has us clearly focused on the threats in that region and our services is definitely moving in that direction.

We are using some outstanding techniques and some different applications of air power, such as dynamic force deployment, to episodically appear and operate air power out of significantly different locations across the region. That has a deterrent value, and we are also asking for support and agile combat employment.

That is a logistical element to that for prepositioning and robusting locations across the theater to make air power usable, even though if it is retained in the United States, it can rapidly deploy anywhere in the world. We think those factors together actually respond very well to PACAF's posture needs.

Senator HAWLEY. Okay. Okay. Fair enough. While I have you, General Guastella, let me ask you about the Guam cluster. That is going to play an important role, obviously, in future air operations in the Pacific. Can you talk about how the request supports development of operational locations or other activities in the Guam cluster?

Lieutenant General GUAATELLA. Sir, I don't know if I can answer that specifically. Given the room, I will say that obviously Guam and the cluster there is a critical capability for us. It is also a main operating area that we will always want to robust and ensure it is viable in various threat levels.

In addition to that, we need other operating locations, and that is something I have talked about with Agile combat employment. It is a combination of robusting the Guam cluster as well as investments in locations across some of the Pacific area.

Senator HAWLEY. Would you feel more comfortable responding in a different environment? I mean, would that be preferable?

Lieutenant General NAHOM. Yes, sir. We will probably get some specifics—

Senator HAWLEY. We will follow up with you on it.

Lieutenant General NAHOM. Yes, sir.

Senator HAWLEY. I will follow up with you on that. Let me ask you here just in the few seconds I have remaining, General Nahom back to you. QUICKSINK, can you talk about how that will contribute to the Air Force's ability to deny a Chinese invasion of Taiwan, or is it intended for other scenarios?

Lieutenant General NAHOM. Sir, was that term—

Senator HAWLEY. QUICKSINK. Sir, this is the new joint direct attack munition that the Air Force recently demonstrated.

Lieutenant General NAHOM. Sir, I would have to take it off the record and get back to you.

Senator COTTON. Okay, that is fine. I see my time has expired. Thank you, Madam Chair.

Senator DUCKWORTH. Thank you. Senator Rosen.

Senator ROSEN. Well, thank you, Chair Duckworth, Ranking Member Cotton. Today's hearing is so important because Nevada is the proud home to Creech, Nellis, and Nevada Air National Guard, so we got a lot of questions for you today about Air Force modernization. I just really want to thank you for your service.

I do want to talk about C-130J recapitalization, as I highlighted to Secretary Kendall and General Brown when they testified before this Committee earlier this month, the Nevada Air National Guard's 152nd Airlift Wing in Reno, it flies its legacy C-130s in some of the hottest temperatures, highest elevations, and most challenging mountainous environments of any C-130 unit in the Nation.

Integral to their mission is flying the maps, a modular airborne firefighting system. Of course, we know what is happening in the West with wildfires. So upgrading the Nevada Air National Guard C-130H fleet with C-130Js would have a substantial impact on their readiness and on their firefighting capabilities in Nevada and the Western United States, where every year the wildfires keep getting worse and worse, more devastating.

With this in mind and at my urging, Air Force leadership at the past 2 years posture hearing has committed to considering making the maps mission part of the Air Force basing criteria for the C-130J.

General Nahom, can you update the committee as to where you are in that process? Can I get a commitment that the 152nd Airlift Wing in Reno will be seriously considered for an upgrade given its need, mission, and readiness to host the C-130J?

Lieutenant General NAHOM. Well, thank you, Senator, for the question. We do have 20 C-130s that were part of the 2022 appropriation, 16 to the Guard, 4 to the Reserves, and over the next year we will be working through our basing process to place this aircraft. The spray and maps will be part of that process, those specific requirements, and that will certainly be addressed as part of the process, ma'am.

Senator ROSEN. Thank you. I also want to follow up with you, General, that about adversary air training. Of course, I was just at Nellis Air Force Base last week and the contractor providing adversary air training at Nellis was recently notified by Air Combatant Command that ACC does not intend to continue the contract, which expires next month.

ACC intends to operate adversary air support completely organically. In written responses to my staff, the Air Force states that it will use Nellis' F-16s, and I am going to quote you here, "while ACC built an F-35 aggressor capability, but timing of this capability and growth is yet to be determined."

I am really concerned by these responses and the capability gap that is going to exist until the Air Force can completely compensate

for the adversary air training currently being performed today at some future unspecified date.

General Nahom, given the Air Force does not currently have the capability to carry out sole adversary air missions without reducing training capacity, why has ACC taken this past path without the aircraft or even the pilots, particularly when the Air Force has warned for years of a growing pilot shortage?

Lieutenant General NAHOM. Senator, thanks again for the question. On the adversary air piece, with the contract at air, and these companies do wonderful work for the Air Force, especially at our formal training units or FTUs, where we train basic fighter pilots how to fly, the contracts are very, very effective. What we are finding now, though, is these contracts aren't very effective at Nellis in that high end training environment at the Nellis—

Senator ROSEN. How are you going to bridge the gap, General?

Lieutenant General NAHOM. Well, what they provide is not giving us what we need. What we are using is not only the—our adversary, our RADR professionals there in the 64th Aggressor Squadron there at Nellis. We also augment that regularly with F-35s, other aircraft that regularly play RADR.

We have ways to augment the RADR. Adversary air is something we have to be attuned to, especially as we get to fifth generation. The interesting thing is 5, 6 years ago, we wouldn't be talking about F-35s being adversary air because our adversaries didn't fly fifth generation airplanes.

Well, the Chinese do now. So that way, as the China threat has stepped up, we have to step up our replication. What the contractor is providing there at Nellis for that high end piece that we get at the NTTR [Nellis Test and Training Range], and only—the only place, the NTTR and the JPARC [Joint Pacific and Alaska Range Complex] in Alaska, the only two places you get that high end training anywhere in the world, that contract, what they are providing is not meeting what we need.

Senator ROSEN. Well, I am still going to be concerned. Sixty-three percent of aggressor flying hours, their contractors are responsible for, that is a very large gap. I know I only have 9 seconds left so if somebody wants to add or we will just take it from the record.

Lieutenant General GUASTELLA. I could just add one thing, Senator, and that is, while the Nellis training range is a national treasure, it is very important that we maintain that high end capability, there is also a transition that our service is making to more and more virtual training.

It is critical because a lot of the things that cannot be replicated in real—flying hours are critical, real flying is critical, adversary air is critical, but investment, which our program has done, to invest in the virtual and the simulation environment is also something that we do to ensure our aircrews maintain that edge.

Senator ROSEN. I appreciate it. All these are years away, however, and the threats are now. Thank you, gentlemen. Thank you, Madam Chair.

Senator DUCKWORTH. Senator Peters.

Senator PETERS. Thank you, Madam Chair. General Nahom, when speaking with Air Force magazine on April 13th of this year,

you stated that the Air Force needs to buy 72 new fighters a year in order to recapitalize a fighter force that can win and fight against peer threats such as China.

Yet the fiscal year 2023 Air Force budget only calls for 33, F-35s and 24, F-15EXs to be purchased. The question for you is, do you stand by your comment and your assertion that we need 62 fighter squadrons and a procurement rate of 72 advanced fighters per year to meet that goal? If so, why is that not in the request?

Lieutenant General NAHOM. Sir, I certainly stand by 72 fighters here, and as I said previously, we have increased our investment in the fighter portfolio this year, over \$1 billion from last year. But we certainly have to strike a balance because we do need the capacity because of what the combatant commanders are asking our airmen to do worldwide every day.

But at the same time, we have to make sure we are investing in the capabilities that are needed for an ever increasing peer threat, so that that balance was important as we prepared our budget request.

Certainly, I do stand by the 72 fighters a year because we have an aging fighter force. Right now, the Air Force fighter force is in excess of 29 years fleet average. There is no other relevant Air Force in the world that has that old of a fleet. We have got to refresh these aircraft.

Senator PETERS. We are sort of falling short in that goal that you set this year. That means next year we are in the hole and that could continue to get deeper and deeper. Are you concerned about that? How should we be thinking about this?

Lieutenant General NAHOM. Sir, absolutely. We are absolutely concerned by—we do have some aging platforms. You are watching us divest the F-15Cs now. The airplanes, many of them, majority of them are flying past their intended service life.

That is why you are seeing us try to get to the F-15EXs and so we can get these aircraft to these locations as quickly as possible, so we can offer what the combatant commanders need today.

But at the same time, sir, we have to maintain these investments for the future, whether it is the JADM missile, next generation air dominance system, F-22 upgrades, F-35 Block 4. We have to balance these investments.

Senator PETERS. General Richardson, certainly we always want to be focused on ensuring that our aircraft maintain both the tactical and technical edge. But clearly we can't just be investing in the most expensive platforms.

Perhaps related to the reason we have a smaller number of some of these fighter aircraft is because of their expense and it makes it difficult to balance all of the various objectives that you have to achieve, and so we just can't be investing in them.

Secretary Kendall has mentioned the potential of complementary uncrewed aircraft as a solution to increase both the quantity and the capability at a lower cost than the crewed aircraft.

So my question to you, General Richardson, do you envision this concept exclusively with fighters or are uncrewed platforms also envisioned for a variety of other functions that the Air Force needs?

Lieutenant General RICHARDSON. Thank you, Senator, for the question. When Secretary Kendall describes this as part of his

operational imperatives, he is really looking at sort of two different concepts. One would be as part of a fighter team and then also with the actual B-21, and so it kind of plays both ways.

We are looking at both of those constructs now, and I should also add, when he is talking about fighters, he is not just talking about the NGAD family systems, he is also talking about F-35.

Senator PETERS. Okay. General Nahom, every combat commander I have spoken with praises the State partnership program because of the relationships and the interoperability that it builds with partners around the globe.

A few weeks ago, NATO [North Atlantic Treaty Organization] highlighted the nearly 30 year partnership between the Michigan Air National Guard and the Latvian military, specifically the vital joint terminal attack control training that Latvian troops received at Camp Grayling in my home State of Michigan. Clearly, this type of training builds competence, capacity, and at a moment that is really needed given Latvia's close proximity to Russia.

My question for you is, how can the Air Force ensure that the National Guard bases are outfitted with relevant platforms and capabilities to support our warfighting functions that actually maximize the partner force integration that we are trying to achieve?

Lieutenant General NAHOM. Thank you, Senator, for the question. I absolutely agree. The place that I have been in the Pacific, in the Middle East, I watched these State partnerships, unbelievable force multiplier. I couldn't agree more.

As we look at the future of our fleet and the future of the Air Force and as we bring our new capabilities, we are certainly going to continue to balance the Guard, Reserve and Active, because we get benefits from both sides. The Reserve component, and the Active component.

It is important that we strike the right balance moving forward. Our Air Force may be a different size, maybe a different form in the coming years, but we must maintain the right balance between Active Reserve component and continue to take advantage of these State partnerships.

Senator PETERS. Right. Thank you, General. Thank you, Madam Chair.

Senator DUCKWORTH. Senator Kelly. After that, if no other Senators arrive, we will do a second round of questions. Senator Kelly.

Senator KELLY. Thank you, Madam Chair. General Nahom, as the military continues to invest in new and more sophisticated tactical airplanes, I am thinking continued investment in the F-35 and NGAD beyond that, investments in infrastructure necessary to support proper training will have to grow as well.

In Arizona, the military and community leaders that I have spoken to are actively trying to come up with workable solutions to the issue of limited training airspace. What I am getting at is as we have increased speeds of airplanes and range of air to air missile systems, we need bigger ranges.

Would you agree that the range space is critical to the Air Force's modernization goals and efforts?

Lieutenant General NAHOM. Yes, Senator. Absolutely. What Arizona offers, the Barry Goldwater Range complex, the weather we

have down there, the bases is absolutely critical to our training as an Air Force.

Senator KELLY. Thinking ahead with the—as the stick gets bigger here and it will, so because of that, last year I authored report language in the Fiscal Year 2022 NDAA that urged the Secretary of Defense to consult with the Secretary of State and Mexico on the possibility of negotiating with Mexico to establish some shared use agreements for airspace near the United States-Mexico border.

This is intended to help meet the increasing demand for airspace, as I mentioned, and as you mentioned, at the Barry Goldwater Range. The analysis required by the NDAA was due to Congress in March.

Have you been involved in providing input to Secretary Austin, and do you have an update on when this report will be delivered to the Committee?

Lieutenant General NAHOM. Senator, I don't have an update and we have not been involved in that. We did hear about the process moving forward, but we have not any updates or been involved along the way, sir.

Senator KELLY. Could you get me an update?

Lieutenant General NAHOM. Yes, sir.

Senator KELLY. All right. Thank you. General Richardson, so a couple of weeks ago, I asked Secretary Kendall about the value of our electronic warfare capability, specifically jamming capability, and our ability to suppress enemy air defenses with electronic warfare capabilities of our systems. As you know, this is one way that helps us achieve and maintain air superiority.

Specifically what I was referring to is the Compass Call program, which was on pace to replace 14 EC-130s with 10 Compass Call EC-37B aircraft. It was on pace until fiscal year, the 2023 budget request was submitted to Congress, and I am concerned with the Air Force's decision to delay the EC-37B purchases and place the remaining four airplanes on the unfunded priorities list rather than requesting funding for them.

General, what would be the operational impact, and maybe this question is for anybody, but particularly given the sophisticated integrated air defense systems that is being fielded by China, if we don't have the additional funding for these EC-37Bs.

Lieutenant General RICHARDSON. Senator, I will just give you a very short update and then I will pivot to General Nahom and General Guastella. The good news, we have got six of them on contract. The first two have actually completed their supplemental type cert work and are now at L3 under mod.

We are looking pretty good to start—to deliver the first one in the first quarter of fiscal year 2023 to start the testing. That is really going well. The other thing I would mention about the capability, before I ask General Nahom to answer the second, the question you asked about the four, the other four aircraft is, that is also a, I would say a marquee program for us for this new digital acquisition method.

We are making sure that we build them so that they are very rapidly reprogrammable. Once we do get those aircraft, that we can quickly software change them out, so to speak, without years of

time, and so I will ask General Nahom to answer your direct question.

Lieutenant General NAHOM. Yes, sir. We do want to get to a fleet of ten, and six is too small. If you take a couple away for training, maybe one or two away for maintenance, you are not left with a lot for operational use. There is a lot of use for those airplanes right now, the EC-130 certainly.

We know the EC-37 will be in high demand as well. So we, when you look at the balances we made on this year's POM [Program Objective Memorandum] in this year's budget submission, we had limited resources, and this is one of those places we just could not get to the whole 10 aircraft.

That is why the Chief did put it on his unfunded priorities list. But we do see the need for a fleet of 10 so we can train, we can fix, and we can employ all at the same time. I would be concerned with a fleet of only six airplanes, sir.

Senator KELLY. Okay. Well, thank you. Thank you, General.

Lieutenant General RICHARDSON. I would just add on and just say, for the balance of the four, we are keeping a sharp eye on the used Gulfstream 550. There are some available, and we are also looking at when the Rolls Royce engine line shuts down for new orders in December. So all that stuff is part of this mix. We are watching it closely.

Senator KELLY. The EC-37B uses these Rolls Royce engines?

Lieutenant General RICHARDSON. Yes, sir. So we are keeping an eye on that. That particular engine stops taking new orders, new engine orders in December. Gulfstream already stopped taking new Gulfstream 550 orders. Thankfully, there is a pretty healthy use market, so we can get some very lower aircraft to finish those last four. We will do the same thing with the engines if we need to.

Senator KELLY. Do you plan on getting some spares?

Lieutenant General RICHARDSON. Yes, sir.

Senator KELLY. For the 10 aircraft?

Lieutenant General RICHARDSON. Yes, sir. Absolutely.

Senator KELLY. All right. Well, I am willing to work with you to make sure we get the additional four airplanes. Thank you.

Senator DUCKWORTH. Thank you. We will now begin a second round of questions. I recognize myself for five minutes. I mentioned in my opening statement concerns about the Air Force plan to truncate the HH-60 Whiskey program after fiscal year 2023.

That would leave the Air Force roughly 40 percent short of its original plan to modernize the combat search and rescue fleet of aircraft. General Nahom or General Guastella, why do you believe that truncating the HH-60 Whiskey helicopter program will be an acceptable risk, and how will a much smaller combat search and rescue force structure affect the Air Force's ability to conduct these operations in future conflicts?

Lieutenant General NAHOM. Ma'am, I will start out and I will pass the second half off to General Guastella. When you look at the fleet, these were decisions we made in given resources. First of all, with the 75 helicopters, we intend to ensure that we get those to the Guard and Reserve in full complement.

They do a lot of things in the Reserve. Our Reserves, for example, do the—on the Space Coast, do the recoveries for manned

spaceflight as well as many of our guardsmen do a lot of the de-commissions around the country. As we look at rescue in the future, that we have to take a look at what rescue is going to look like in a contested environment, it is likely not to be in a Black Hawk type helicopter.

As we outfit this fleet, we also have to make sure that we don't spend too much resource on this capability, and then not have the resources to invest in what rescue is going to look like in a contested environment, and we are still doing the wargaming and the analysis to determine what that is.

Lieutenant General GUASTELLA. Ma'am, not too much else to ask—I mean, the personal recovery and combat search and rescue absolutely is an American mission that we have to do, and we are maintaining investment in our Guardian Angels, part of the team, as well as our HC-130s. But like General Nahom said, the survivability of the asset has to be, and the threat that it is going to enter into, has to be there.

I think it is important that we maintain the right size fleet as we look for other technologies and other ways to ensure we can still provide PR [purchase request] in face of the NDS level threats.

Senator DUCKWORTH. Okay. I just feel like we are, again, with this decision creating a gap, but we don't have anything to fill in the gap. Have you looked at the V-22 Osprey? I mean, it is already in the inventory.

Is that something that could have longer range but also perform this mission? You are not sort of addressing the mitigating of the risk of losing—taking some of these aircraft—this asset offline.

Lieutenant General NAHOM. Ma'am, we obviously do fly the Osprey with our Air Force Special Ops and actually with—when we set up a personal recovery task force, the PR task force, they take on a whole shape of a number of aircraft.

Very often we put our Guardian Angels in Army Chinooks or AFSOC, CV-22s, or Army Guard Black Hawks. A number of platforms that our rescue professionals fly out of, so we do have personnel recovery forces moving forward, not just the HH-60 Whiskey, but our, certainly are CV-22s, and then our supporting, our HC-130 refuelers, and then the Guardian Angels.

We do have to take a look at what this is going to look like in contested environments, while we maintain some resemblance of a fleet moving forward, and that work is ongoing right now, ma'am.

Senator DUCKWORTH. Okay. Thank you. I would like to return to discussion of the F-35, but in particular, I would like to talk about the lifecycle costs of the F-35. As you know, 60 to 80 percent of lifecycle costs for the average aircraft is sustainment.

At various times, there have been press reports that the Air Force leadership is wondering whether you can afford to buy all 1,763 F-35 aircraft you plan to buy while you pay for the lifecycle costs of these aircraft.

General Richardson, could you tell us what avenues the Air Force is investigating for reducing the lifecycle costs of the F-35 so that you can afford to operate the aircraft in the numbers that you want? I mean, where we are sitting right now at \$39,000 per hour, that is still unaffordable.

Can you sort of address how you are going to address this issue to bringing down the cost, especially under sustainment?

Lieutenant General RICHARDSON. Yes, Senator, that is a great question. That is something that concerns us as well. We have actually made a lot of good measure over the last couple of years. The latest contract that we just signed with Lockheed for the fiscal year 2021 to 2023 sustainment contract actually brought it down about 6 percent, at least as it affects the Air Force, for the F-35A.

So, by the year 2023, we expect the cost per flying hour for the F-35 to go down to about \$30,000 a flight hour. So that is good news. We did that through a pretty creative contract structure to where they are actually incentivized to meet cost goals, but also not just cost goals, but mission capability rates.

That is the first thing that I would tell you. I think we are looking past that contract, though, already, and so we are looking at other performance based contracts to see if we can bring down the cost even lower.

Even past that effort, we are also looking at some pilot programs to maybe do some of the supply support work ourselves to go, to contract directly with some of the suppliers of the parts that fail. We talked about the engine work earlier. We are very much looking very heavily at the engine right now. We have got a number of holes because of that.

That actually drives a lot of extra maintenance and cost. The engine work, we are not exactly sure where that is going to end up right now. We are studying it pretty heavily through the summer, but that is another huge area. The Congress has been really great on helping us out.

So we have had a number of Congressional adds over, in fiscal year 2022, specifically to address that, and we are applying most of those adds towards cost reduction initiatives for lifecycle cost. But thank you for the question, Senator.

Senator DUCKWORTH. Thank you. It is something that we will certainly be monitoring. Senator Sullivan.

Senator SULLIVAN. Thank you, Madam Chair. Gentlemen, thank you for your testimony. General Nahom, you might remember last year in this hearing room, about a little less than a year ago, I had questions and kind of the surprise that we had heard about the delay in the timeline to get JPARC to the threat level force standard and that General Brown had indicated that there would be a 6 year delay due to difficulty developing the feeling of the ARTS version 3, Advanced Radar Threat System, which I think everybody agreed was something that we didn't want to be doing.

Can you explain whether the budget request for the Air Force is to get the JPARC threat level force standard back on track by fiscal year 2026 and not have that 6 year delay that I think everybody, including you, when you testified here last year, thought that that was not good for the Air Force 5th generation training and the overall readiness of the Air Force.

Lieutenant General NAHOM. Yes, sir, and absolute commitment to get the JPARC and the NTTR to level four as quickly as possible. I am going to take it for the record. Fiscal year 2026, I don't have the exact date when we get to what we would declare a level

four, but the two ranges that we are getting to a level four plus is going to be the JPARC and the NTTR.

I tell you, sir, as the threat changes, the technology changes, and the emitters change because the Chinese are accelerating, so what we need to emulate those threats is changing constantly. You know, 4, 5 or 6 years ago, I mentioned it earlier, we never would imagine we would need an F-22 or an F-35 to emulate a Chinese threat, but we do now, and so how we actually portray the threat for red flag Alaska, the Northern edge, and the other—the highest end exercises we do up in the JPARC is going to continually change. We are working some things. I would like to get with you in a classified session and talk about some of the things that are working.

Because it is not just ARTS, there are other things that are working and we think we can get to quicker, and we are working those and those—and we do have our investment there.

Senator SULLIVAN. Okay. In the classified—in unclassified setting, the Secretary of the Air Force was very bullish on the need for JPARC. Can you explain again to this Committee why it is so important? I think a lot of people, even to be honest in the Air Force, unless they have trained up there, don't have a recognition of the size and scope and the fact that it is over land airspace as big as Florida.

The standoff ranges that we are going to need with fifth generation training and fighting needs to be much bigger than it is. To be honest, and Nellis and other places where—they are constrained. As you know, at JPARC, we can expand quite a lot. We have a lot more room to grow, and you can't say that of other high end ranges.

Lieutenant General NAHOM. Yes, sir. In sheer size, and I would say I would almost add restrictions, but it is more lack of restrictions and what we can do at the JPARC is unparalleled to anywhere in the world. The NTTR, the Nellis range offers a lot of advantages because of some of the integration we can do down there with a lot of the systems.

But you don't get that sheer magnitude of size and the dynamic way in which you can train up at the JPARC. Between those two ranges that—if you look at any Air Force that we work with anywhere in the world, they want to get to either the JPARC and NTTR to train with us.

Those are the two places, are the destination places. Now turn it over to General Guastella to follow on that.

Lieutenant General GUASTELLA. No, sir. Just to add, it is a national treasure, without a doubt. It is also geographically, in addition to its size, it is geographically located in PACAF. Which affords the both the United States plus our allies the opportunity to train in theater and that is critical capability.

Senator SULLIVAN. No, I know a lot of our allies, I have talked to allied forces, obviously Japan, Korea, but even the Indians, Singapore, they like to get up there and train, and I think we need to take advantage of that.

Speaking of INDOPACOM, my next question is kind of a general one for all three of you gentlemen, and it goes through the issue of the big challenges we have with the tyranny of distance in the

INDOPACOM theater, whether it is a potential Taiwan scenario. I know that the Air Force has been working on the modernization of the B-52 Stratofortress with regard to range extension for that platform, pretty dramatic range extension.

But what else are we doing in terms of combat effectiveness, efficiency, tanker ops, and basing that—again, that can help us get to that issue of giant distances that we need to travel in the INDOPACOM theater.

Lieutenant General NAHOM. Yes, sir. I will start. I will let Gus and Duke pile in after. Certainly the B-52, you are right with the re-engining efficiency offers us increased range. It is not just on the bomber side, you can also add the B-21 in that as well.

Certainly, the platforms, what we are working, the modifications to the F-22. The F-35 and some of the Block 4 and some of the other modernization there. But I will tell you—

Senator SULLIVAN. Does the Block 4 come with—

Lieutenant General NAHOM. It does not come with it added. No, sir, that is not part of it. But I will tell you the other piece is some of our advanced weapons, because you have to look at the range of weapons. It is not just the hypersonics. It is some of the, I don't want to say less exquisite because they are still pretty exquisite like JASSM-ER.

If you look at our budget right now, we are maximizing our production of JASSM-ER because it is such a good weapon for the Pacific for its range and capability. But at the same time, you are also seeing, as you saw this week with our successful test, with the ARRW hypersonic, as well as what we are doing with the other hypersonic effort, the air breathing hypersonic effort.

I think we are very committed to the ranges in the Pacific and making sure that we not only have the assets, but they are in the right place. You see us placing up tankers in Alaska. That is because we are setting up another fifth generation wing up at Eielson and those airplanes are going to need tankers to get where they need to be.

Having extra tankers up there at Eielson with those F-35 is critical to have them to be able to respond not just in the South China Sea, but into the Arctic, the defense of the Northern reaches of the United States. I think we are pretty committed to those distances in the Pacific, sir.

Senator SULLIVAN. Anyone else on that, gentlemen?

Lieutenant General RICHARDSON. I would just add, if you just look at it, Senator, if you just look at our modernization programs, HACM, ARRW, JASSM on the weapons side. It is all based on the exact point that you are making.

Then even on the aircraft side, you know, continuation of some of the ones that we are doing, like B-21, some of our neat fighter programs, and even E-7 are all really geared towards that directly, that direct distance that you are talking about.

Senator SULLIVAN. Great. Thank you. Thank you, Madam Chair.

Senator DUCKWORTH. Senator Cotton.

Senator COTTON. All right. I can't believe the Senator from Alaska didn't asking the Arctic questions. Would you like some extra time to do so?

Senator SULLIVAN. Well, you know, it is Arctic and INDOPACOM, they are all really—

[Laughter.]

Senator COTTON. No, I am—

Senator DUCKWORTH. He is a Pacific State, so. Senator Hawley.

Senator HAWLEY. Yes. Thank you, Madam Chair. Generally Nahom, on the B-21, I saw press reports a couple of weeks ago now that the Air Force is accelerating the production timeline by overlapping development and production.

I am just wondering if there is any possibility of accelerating the timeline, pulling to the left the capabilities, the capability estimates, both in terms of initial operational and full operational capability.

Lieutenant General NAHOM. I will start that, but I definitely get General Richardson in this conversation. The accelerating B-21—right now, we are concentrating on getting through the development piece. If there is any acceleration, it will be after we develop and field.

There may be some acceleration in the numbers we buy after we have a fielded aircraft. But right now, unless Duke you know something, right now there is no acceleration, we are just—we are moving at a good pace, but we don't see an acceleration in the near term.

Lieutenant General RICHARDSON. No, sir, I would not recommend that. I think the program is progressing well. We want to make sure we stay—you know, speed with discipline is our mantra on that program, move as quickly as we can, but do it in a safe, so to speak, at least from a process, from a systems engineering standpoint.

That is what you are seeing, is we are moving as swiftly as we as we feel is prudent to do, and as General Nahom mentioned, I think once we get further along in the system verification or review process, we should then look at doing that.

Senator HAWLEY. Got it. Okay. Got it. That is helpful. General Guastella, you mentioned, I think, agile combat deployment earlier. Can I just ask you to come back to that? Give us a sense of what progress you have made on operationalizing that and where have you met delays, if you have? What are your priorities for the coming year?

Lieutenant General GUASTELLA. Sir, agile combat deployment is absolutely critical to the future as we see air power, especially against a peer competitor. Americans are used to air power or Air Force winning in the air. We also have to win on the ground. It means we have to be survivable.

We have to use, and to do so—that is why we are employing actual combat employment, is to ensure that not only we operate out of main operating hubs, but we have the agility to go out of austere and varied landing services and fields from anywhere. It creates a very complex situation for an adversary. It is a very high deterrent value.

We are doing that in every PACAF—doing as a common employment for a couple of years now. Same in CENTCOM, same in EUCOM. Every major command has been doing their version of—

as a combat deployment, and what we are figuring out is best practices.

It will take investment because there is a logistical element to the agile combat employment to include investments in airfields as well as pre-positioning long logistical kit, aircraft maintenance kit, things of that nature, and we are starting to hone in on what those requirements are to ensure that we can generate air power not only from main bases, but from austere and varied locations.

Senator COTTON. What is the next step here, then, in the progress of this?

Lieutenant General GUASTELLA. Sir, we have already a draft CONOPS [contingency operations], it was quite long actually, that shows some of the best practices. We are working on identifying ways to get the most out of the airmen that we have in terms of multi capable airmen. In other words, get airmen to do more than one additional primary job.

How can they help each other to generate more with fewer individuals? We are also looking at how we can improve our logistics to get our logistics enterprise enabled to provide support even in austere locations.

There is a lot of work there, a lot of experimentation going on, and we are happy to come and talk to you more in other settings, if we could.

Senator COTTON. Great. That is great. That is helpful. Last thing for me, General Nahom, pallets, munitions. I understand that this concept offers a promising way to expand our strike capacity and deliver long range weapons at lower cost. I understand it has also been maybe controversial to some. Can you talk a little bit about this, why you think the concept is promising?

Lieutenant General NAHOM. It just gives you another means to deliver a long range ordinance. There are times in any campaign where certain airplanes have availability. That is why if you look at the Palisades munitions, it is fairly platform agnostic.

You could do on a C-17 and C-130, and certainly a special ops C-130 as well, and it is going to give the combatant commanders some options to deliver ordnance in ways that he or she never thought about.

Senator HAWLEY. Great. Very good. That is all I have got. Thanks, Madam Chair.

Senator DUCKWORTH. Thank you. Gentlemen, thank you so much for coming here today and answering our questions. As you see, there is a pretty bipartisan concern with some of the decisions that are being made to make sure that we are not leaving gaps in our capabilities, but that we also maintain taxpayer interest as well and bringing down costs and the like.

I think we are going to have to have some more discussion in a secure environment for some further questions. So with that, this hearing—we are now closed.

[Whereupon, at 3:40 p.m., the Committee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR DAN SULLIVAN

JPARC

1. Senator SULLIVAN. General Nahom, modernizing the Joint Pacific Alaska Range Complex (JPARC) to the Threat Level 4 standard is an Air Force priority and it requires significant infrastructure investment, including threat emitters that can be rapidly updated with new software to emulate the latest adversary threat capabilities. Last year at this hearing I asked you some questions about why the Air Force was delaying the timeline to get JPARC to the Threat Level 4 standard from fiscal year 2026 to fiscal year 2032. In a response to questions for the record (QFR) I submitted to Chief of Staff General CQ Brown, USAF after the Air Force posture hearing last year, he indicated that the 6 year delay was due to difficulty developing and fielding the Advanced Radar Threats Systems (ARTS) v3. The fiscal year 2023 Budget has \$134.21 million to buy five Australian CEA [common electronic attack] Digital Array threat emitter systems, \$43.57 million in operations and maintenance funding for installation support, and up to \$91 million for range infrastructure modernization. Does this budget request get the Air Force back on track to bring JPARC to the Threat Level 4 standard by fiscal year 2026?

Lieutenant General NAHOM. Yes, the funding referenced in the FY23 Budget is critical to Air Force efforts to get back on track to resource and modernize JPARC and NTTR to a Threat Matrix Level 4 (peer/near-peer adversary) training capability. While we will not achieve full Threat Matrix Level 4 capability by 2026 we will recognize a significant improvement over existing capabilities at JPARC and the Air Force has plans and funding to field additional threat systems annually through FY30. As our adversaries' capabilities advance, it is likely that additional investments—to include the potential for additional investments at JPARC—will be required to keep pace.

2. Senator SULLIVAN. General Nahom, if this year's budget doesn't get us back on track to bring JPARC to the Threat Level 4 standard by fiscal year 2026, why not?

Lieutenant General NAHOM. The Air Force is upgrading JPARC to Threat Matrix Framework Level 4 environment with plans and funding to field additional threat systems annually through FY30. We have an aggressive plan to field two Advanced Radar Threat Systems (ARTS) and ten CEA digital arrays at JPARC between now and fiscal year 2026 with an additional four systems arriving between fiscal year 2027 and fiscal year 2030. These improvements will bring JPARC close to Level 4 status in fiscal year 2026, as we continue to fill gaps until fiscal year 2030.

AWACS MODERNIZATION

3. Senator SULLIVAN. General Nahom, the Air Force finally decided to replace the aging E-3 Sentry Airborne Warning and Control System (AWACS) with the E-7 Wedgetail. The service's proposed fiscal year 2023 budget calls for the retiring of 15 E-3s, or almost half of the service's inventory, yet estimated delivery of the first E-7 platform isn't expected until 2027. Will this divestment and new capability fielding timeline create risk?

Lieutenant General NAHOM. There is a capability gap that exists in this mission area today, and it can never be filled by the E-3. We must move to a modern platform to close this capability gap. As for capacity, the E-3's availability rate has declined to an average of 40 percent and we routinely see lower rates on a day-to-day basis. Divesting the E-3 is crucial to the AF's intent to invest in the E-7A, a modern, more capable, and reliable AEW platform.

(Previous CSAF response to Senator Sullivan DAF Posture QFR.)

4. Senator SULLIVAN. General Nahom, how will the Air Force mitigate the risk in the AWACS gap created by retiring almost half of our current fleet?

Lieutenant General NAHOM. There is a capability gap that exists in this mission area today, and it can never be filled by the E-3. We must move to a modern platform to close this capability gap. Retaining any number of E-3's will not help with the capability we need to fight China. During the transition to the E-7, the AF will leverage other assets including, but not limited to, Control and Reporting Centers and Over-the-Horizon radars.

(Previous CSAF response to Senator Sullivan DAF Posture QFR.)

COMBAT RADIUS OF AIRCRAFT

5. Senator SULLIVAN. General Richardson and General Nahom, as you are aware, the B-52 Stratofortress is currently undergoing several modernization efforts, to include the Commercial Engine Replacement Program (CERP), expected to extend the range of the platform from 7,100 miles to 9,400 miles, an incredible increase of 32 percent. This is the only fixed wing aircraft that I'm aware of that is significantly extending its range through its modernization process. Given the vastness of the Indo-Pacific and the tyranny of distance in a potential Taiwan scenario, what is the Air Force doing to increase the combat radius of its aircraft?

Lieutenant General RICHARDSON and Lieutenant General NAHOM. Currently, the F-35 is being evaluated to receive new advanced engines that will have the benefit of an increased combat radius of 25 percent. While aircraft range is one aspect of a conflict in the Indo-Pacific, the "tyranny of distance" problem can be addressed with increasing the range and effectiveness of our weapons. The USAF is developing weapons that can be employed at significantly greater ranges than legacy weapons, negating the need, and the expense, of increasing the range of every delivery platform.

6. Senator SULLIVAN. General Richardson and General Nahom, how will increasing the combat radius of aircraft and weapons systems increase the combat effectiveness of our Air Force in the Indo-Pacific?

Lieutenant General RICHARDSON and Lieutenant General NAHOM. Increasing the combat radius of aircraft and weapons systems is one facet of increasing combat effectiveness for our Air Force in the Indo-Pacific. Increased combat radius multiplies our basing options and lowers overall fuel needed to support operations. However, increased aircraft range must be balanced with other important aircraft characteristics such as thrust, speed, cooling power, and engine life which also impact combat effectiveness of individual weapons systems. While optimizing aircraft performance is critical, increasing long range air-to-air and air-to-surface weapons performance can help increase overall combat effectiveness by allowing the Air Force to engage targets from outside potential highly contested threat environments.

7. Senator SULLIVAN. General Richardson and General Nahom, how will increasing the combat radius of our aircraft increase the efficiency of our tanker fleet?

Lieutenant General RICHARDSON and Lieutenant General NAHOM. Increasing the combat radius of our aircraft give the joint force commander greater operational flexibility in the employment of the tanker fleet. A recent study showed a 25 percent increase in fighter range could yield a 67-75 percent decrease in tanker sorties required to support fighter operations. This provides our tanker fleet greater flexibility and them to support a broader spectrum of combat missions. The Air Force is currently examining methods to increase fuel at range capabilities for the KC-46, KC-Y and KC-Z. Coupling increased fighter fuel efficiency with greater tanker fuel efficiency/capability could further increase our overall operational effectiveness across a broader spectrum of operations.

 QUESTIONS SUBMITTED BY SENATOR JOSH HAWLEY

INDO-PACIFIC REGION

8. Senator HAWLEY. General Guastella, the Guam cluster will play an important role in future air operations in the Pacific. With this in mind, can you explain how the Air Force's budget request supports development of operational locations and other activities in the Guam cluster? Please provide a classified response if necessary.

Lieutenant General GUASTELLA. [Deleted.]

9. Senator HAWLEY. General Nahom, how does QUICKSINK, the modified JDAM [joint direct attack munition] that the Air Force recently demonstrated, contribute to the Air Force's ability to deny a Chinese invasion of Taiwan, or is it intended primarily for other scenarios?

Lieutenant General NAHOM. QUICKSINK is intended to bring an affordable, ship-sinking capability against large amphibious assault ships today. QUICKSINK gives us the ability to cause catastrophic damage to large materiel-delivering ships that bring the land-based invasion force to the beach. By attacking from below, QUICKSINK puts the necessary lethality at the point of maximum vulnerability, yielding catastrophic damage to large amphibious ships.

10. Senator HAWLEY. General Nahom, are you confident that an F-15 can reliably close-in on PLA [People's Liberation Army] warships to release QUICKSINK munitions, given Chinese ship defenses and other countermeasures?

Lieutenant General NAHOM. QUICKSINK would certainly have to be deployed, like many other of our munitions, in combined force packages to yield the most effective results. The specific details for how we would envision employing QUICKSINK is best left to a CLASSIFIED discussion.

11. Senator HAWLEY. General Guastella, what are some of the high-demand, low-density capabilities that the Air Force provides in both U.S. European Command (EUCOM) and U.S. Indo-Pacific Command (INDOPACOM)?

Lieutenant General GUASTELLA. [Deleted.]

12. Senator HAWLEY. General Guastella, would the Air Force be able to support operational requirements in both EUCOM and INDOPACOM in the event of simultaneous conflicts with Russia and China? Please provide a classified response if necessary.

Lieutenant General GUASTELLA. [Deleted.]

13. Senator HAWLEY. General Nahom and General Guastella, in your assessments, what are some of the capabilities the Air Force currently provides in Europe that our NATO allies could provide on their own if they invest more in their own defense?

Lieutenant General NAHOM. NATO allies have made clear commitments and taken action to increase defense spending in the wake of Russia's invasion of Ukraine. The Air Force provides assigned and rotational capabilities in Europe. With continued investment, NATO allies could provide enhanced capabilities and capacities that are currently provided by the Air Force in 4th and 5th-gen fighter aircraft, manned and unmanned ISR, airborne C2, inter and intra-theater lift. Additionally, NATO ally investment in enabling capabilities such as missile defense, airbase infrastructure (i.e.—fuel and munitions storage, aircraft shelters, etc.) will enhance employment of Air Force and other NATO airpower capabilities in both peacetime and conflict.

Lieutenant General GUASTELLA. NATO allies have made clear commitments and taken action to increase defense spending in the wake of Russia's invasion of Ukraine. The Air Force provides assigned and rotational capabilities in Europe. With continued investment, NATO allies could provide enhanced capabilities and capacities that are currently provided by the Air Force in 4th and 5th-gen fighter aircraft, manned and unmanned ISR, airborne C2, inter and intra-theater lift. Additionally, NATO ally investment in enabling capabilities such as missile defense, airbase infrastructure (i.e.—fuel and munitions storage, aircraft shelters, etc.) will enhance employment of Air Force and other NATO airpower capabilities in both peacetime and conflict.

14. Senator HAWLEY. General Nahom, how will “advanced collaborative platforms” improve the Air Force's ability to counter Chinese air forces?

Lieutenant General NAHOM. Artificial intelligence (AI)-enabled technologies and autonomous collaborative weapons are critical enablers that will transform the future joint force and fulfill a crucial role across the Air Force and joint force. In order to maintain a competitive edge and build enduring advantages, the Air Force will rely on crewed, uncrewed, and cooperative teaming platforms. The Air Force is investing to accelerate the development of advanced collaborative weapons systems to leverage AI and increase lethality in highly contested environments. Human-machine teaming will enable Airmen to process massive amounts of data and arrive at sound operational decisions more rapidly and with confidence.

15. Senator HAWLEY. General Nahom, when do you expect advanced collaborative platforms to reach initial operational capability and full operational capability?

Lieutenant General NAHOM. The Department of the Air Force Operational Imperatives recognize that Collaborative Combat Aircraft (CCA) capabilities are needed as soon as possible to counter the rapidly evolving threats, especially in the anti-access/area denial (A2/AD) environment. The Air Force is currently exploring operational concepts and working with industry partners to evaluate technical maturity. Once these activities are complete we will be able to share more information in a classified response.

16. Senator HAWLEY. General Nahom, has the Air Force considered using C-130Hs as delivery vehicles for palletized munitions?

Lieutenant General NAHOM. “Yes, the Air Force has considered this, and we have not precluded integration on the C-130H in the future. For now, we have prioritized the C-130J and C-17 due to their increased performance, including a larger combat radius, which we will need in Pacific scenarios.”

(Previous CSAF response to Senator Hawley DAF Posture QFR.)

