# Air Force Modernization in Review of the Defense Authorization Request for FY24 and the Future Years Defense Program

April 26, 2023

**U.S. Senate - Committee on Armed Services - Subcommittee on Airland**

**MEMBERS PRESENT:**

**Mark Kelly [D-AZ] [presiding]**
**Richard Blumenthal [D-CT]**
**Gary C. Peters [D-MI]**
**Tammy Duckworth [D-IL]**
**Tom Cotton [R-AR]**
**Deb Fischer [R-NE]**
**Joni Ernst [R-IA]**
**Rick Scott [R-FL]**
**Markwayne Mullin [R-OK]**

**WITNESSES:**

**Honorable Andrew P. Hunter** - Assistant Secretary of the Air Force for Acquisition, Technology and Logistics

**Lieutenant General James C. Slife, USAF** - Deputy Chief of Staff for Operations

**Lieutenant General S. Clinton Hinote, USAF** - Deputy Chief of Staff for Strategy, Integration, and Requirements

**Lieutenant General Richard G. Moore, Jr., USAF** - Deputy Chief of Staff for Plans and Programs

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**SENATOR KELLY:** The hearing will come. Our witnesses today are here to discuss Air Force modernization. They are the Honorable Andrew Hunter, the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics, Lieutenant General James Slife, Deputy Chief of Staff for Operations, Lieutenant General Clinton Hinote, Deputy Chief of Staff for Strategy, Integration and Requirements, and Lieutenant General Richard Moore, Deputy Chief of Staff for Plans and Programs.

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

And today, as we finish our scheduled hearings before we markup the DOD authorization request, I look forward to hearing from our Air Force leaders about the challenges and the opportunities that we face in modernizing the Air Force. All budgets require careful tradeoffs, and we see that across the Air Force budget request.

The question before us today is how well the Air Force strategy in this budget matches our national defense strategy and related modernization imperatives. And I am especially interested in hearing from the witnesses how the Air Force plans to manage its multiple modernization programs in ways that deliver the capabilities that our warfighters need to defeat our most capable adversaries in a timely manner.

And we must do this while protecting our taxpayers' dollars and avoiding too much risk to meeting our combatant commanders' requirements. And these should include the F- 35 fighter, the B-21 bomber, KC-46 tanker, also a new program to procure the so-called Wedgetail aircraft to replace some of the E-3 AWACS aircraft, and also the Advanced Battle Management System, or ABMS, which seeks to replace the J-8, or the E-8 JSTARS capability, and is the Air Force contribution to the Defense Department's joint all domain command and control program, JADC2.

Prompt development and fielding of ABMS and JADC2 are all the more important as the Air Force plans to divest of the E-3 and the E-8 JSTARS

capabilities before we are able to field replacement capability. Two other areas I want to draw particular attention to are electronic warfare and combat search and rescue capabilities.

The Air Force plans to replace the current fleet of 14 Compass Call electronic aircraft with ten newer and more capable EC-37s. According to Air Force's plans, however, we only need six of these aircraft delivered by the end of the Future Years Defense Program, and the Air Force must expedite the delivery of these critical assets, which gives us the ability to suppress enemy air defense through electronic warfare, among other roles.

We also need to fully understand the role that Compass Call and EW would play in a potential confrontation with near-peer competitors like Russia and China, and whether the ten planned aircraft will be sufficient, or is it going to be necessary to expand that fleet as we continue to see the PRC investing in their own EW capabilities.

Also, I want to emphasize the importance of modernizing and ensuring a robust combat search and rescue fleet of aircraft. This is a capability that makes a difference, literally the difference between life and death for downed pilots, troops, and civilians in dire situations.

As the 563rd Rescue Group at Davis-Monthan Air Force Base in Tucson says, they are in the business of making sure someone's worst day isn't their last day. The Air Force's plan to truncate the HH-60 Whiskey program after fiscal year 2023 would leave the Air Force roughly 25 percent short of its original plan to modernize the CSAR fleet.

So, we need to hear how this reduction in the inventories, you know, for these forces are going to affect the Air Force's ability to conduct CSAR operations in future conflicts, including how it might be impacted by new airframes like Armed Overwatch. The Air Force has been particularly aggressive in implementing accelerated acquisition authorities, including for major defense acquisition programs.

Notably, the Air Force began the B-52 re-engineering program under accelerated authorities but has agreed to shift that program back to the normal acquisition process at the next acquisition milestone review.

Congress has given DOD these new authorities but will continue to oversee acquisition activities to ensure that the Defense Department uses its authorities appropriately.

And we need to ensure that these investments yield the capabilities our nation needs to compete in any future conflicts, such as with hypersonic missiles, the next generation air dominance program, and others.

And we can't ignore needs to recapitalize other existing capabilities that give our forces a competitive edge, such as our tanker forces and the fighter squadrons in our Air Guard and Reserve components that represent more than a third of the Air Force's combat power.

We will also take into account lower visibility, but high importance capabilities like the investments we need to ensure we have adequate training ranges for our fifth- generation fighters and forthcoming next generation systems.

These issues are a personal priority and I look forward to working with the Air Force on the way forward.

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

Specifically, our Air Force will bear a large share of the burden of implementing the National Defense Strategy.

Perhaps that is part of the reason behind the Air Force's request of a $12.4 billion budget increase this year – in this year's budget. There is no ignoring the fact that strategic competition with increasingly capable adversaries is a primary U.S. national security concern.

And we need to look no further than the war in Ukraine to see that the world remains a dangerous place with actors who do not always act rationally. And while Russia may have showcased its limitations, we must ensure our readiness to meet challenges that a more capable force could present in the future.

And there are a number of other issues that we need to discuss, but in the interest of time, I am going to stop here and follow up during our discussion.

Again, I thank our witnesses for their service and for appearing before the subcommittee. I will now recognize our Ranking Member, Senator Cotton, for his opening comments.

**SENATOR COTTON:** Thank you, Mr. Chairman. And gentlemen, welcome. Thank you for your appearance here this afternoon. I am pleased to see that the Air Force has requested 72 tactical fighter aircraft for fiscal year 2024 and each fiscal year for the next five years.

Despite repeated underfunding by the current administration, this is a good first step towards repairing and modernizing our hollowed-out Air Force. But I am afraid it is the bare minimum our military actually needs as we try to deter a potential conflict with China. Our Air force, unfortunately, has been characterized by shrinking inventories and an aging fleet since the end of the Cold War.

We should be producing F-35s at full rate production, ramping up F-15EX production, and proceeding quickly to the development of the E-7 aircraft. This is a matter of life and death for many of our nation's airmen and perhaps one day for our nation itself.

I look forward to hearing your plans to get all of these essential programs to where we need them to be despite the fiscal constraints you face.

Second, I would also like to understand how you are maintaining the lethality of the Air Force while we wait to field F-35s with Block 4 upgrades, along with the Next Generation Air Dominance Aircraft, Advanced Battle Management System, and collaborative combat aircraft.

I am concerned that while we are developing capabilities for the far future, we are not making enough near-term upgrades to aircraft that are currently in service and that will be in service for decades to come, like the F-16 and our fielded bomber fleet.

We are dangerously neglecting the upgrades that we need to fight tonight, as the saying goes. I am also not confident that we are prioritizing munitions production for the near or the long-term fight.

Finally, the Air Force is already in danger of becoming overextended in a period of peacetime. I would like to know how you are planning to overcome existing

gaps in capacity, while preparing to deter China and Russia without exhausting personnel and equipment.

I look forward to hearing what you have to say on these topics and others. Thank you again for your appearance.

**SENATOR KELLY:** Thank you. Senator Cotton. I will now recognize our witnesses for some opening remarks.

Secretary Hunter.

**MR. HUNTER** Well, thank you very much, Chairman Kelly, and Ranking Member Cotton, and members of the subcommittee for having us here to provide testimony on our fiscal year 2024 budget request.

Our budget request very much reflects our attempt to align our programs and our resourcing and our decision making with fulfilling the strategy, the national defense strategy. That was absolutely our cornerstone in the fiscal year 2024 budget process. And developing a threat informed future Air Force equipped to win high and fight.

Last year, Secretary Kendall and General Brown outlined their seven operational imperatives that we must meet to succeed. And those operational imperatives absolutely drove everything in our fiscal year 2024 POM process.

They were the combined work of the entire Air and Space Force teams, combining the best insights of our operators, our analysts, and operational analysis teams in our acquisition enterprise, working together to identify initiatives and priorities. And as a result of this analysis and work, we have over $25 billion requested in fiscal year 2024 for OI related investments.

So overall, our fiscal year 2024 request balances investment in critically needed new capability with the recapitalization and modernization of our existing platforms, as you both identified as a priority. And I am going to highlight just a few key investments in my remarks, and my colleagues will touch on several of the other issues you have raised.

Certainly, bomber modernization is a core of our investment portfolio. It is a critical year in fiscal year 2024, in our request for production of the B-21. We do have a substantial investment in the largest modernization of the B-52 fleet in

the history of the fleet since it was first constructed and built. And we are focused on the parts of our bomber force that are part of our enduring force.

I do want to say on E-7, we are working to field E-7 as rapidly as possible, and we appreciate the support provided by this committee as well as others with resources and with helping us with the reprograming request that allowed us to get started early on that program in fiscal year 2023.

And the ABMS program, part of our broader command Control Communications Battle Management, or C3BM Initiative, where we have established a new PEO to bring focus to that effort, is a huge priority and we have a substantial resource request for that in fiscal year 2024 budget. We ask for your support.

I think I will – if you would, be okay with you, sir, I will probably touch on C-37 perhaps as we get into Q&A.

In terms of our top modernization priorities, obviously the F-35 is a cornerstone of our future fighter fleet, and we fielded nearly 400 F-35As today. We are prioritizing fielding the Block 4 capabilities, as was mentioned, and affordability of sustainment is also critical.

We are continuing to make positive progress on our F135 engine module repairs with great work by the team at Tinker, and with support from the Congress with resources.

And we have significantly improved that item, which was degrading our mission capable rates quite a bit.

And we are establishing more realistic affordability targets which will allow us to better prioritize where we focus our resources to improve F-35 sustainment. While crude fighters remain the core of our U.S. Air Force combat power, as well – along with bombers, a centerpiece of our fiscal year 2024 budget is the Uncrewed Collaborative Combat Aircraft, which will provide new combat capabilities and bring cost effective capacity or affordable mass to our force.

The CCA is the single largest operational imperative investment in our budget request, and that is above where we were last year, with over $6 billion requested across the FYDP. In fiscal year 2024, we are investing more than $460 million to rapidly begin development of the first CCA platform, and to leverage our extensive work on autonomy that will underpin the CCA capability.

We are establishing an operational experimentation unit to work with existing platforms and capable partner nations to prove out the concept of operations for CCA. As we modernize the bulk of our F-22 fleet, and transition from F-22 to NGAD, funds guarded from the divestment of the F-22 Block 20s are being reinvested in NGAD development across the FYDP, and the transition timeline is dependent on the progress of NGAD development efforts.

The Air Force is ensuring cost control in NGAD by driving continuous competition for air vehicles, mission systems, software, and by mandating the use of a government owned reference architecture.

We are also changing the way we execute highly complex acquisition programs by taking a hands-on approach to digital engineering that accelerates prototyping, drives efficiencies in manufacturing, and reduces cost in operations and sustainment through the use of integrated digital environments for the design and management and sustainment of our systems.

The fiscal year 2024 President's budget request funding for aircraft design, development, test, integration of advance mission systems, co-authored development of the government's Agile Mission System Suite, Open Architecture, and Rapid Software Development for the NGAD program.

Due to the updated threat environment that was highlighted in both of the chairman and ranking members opening statements, we have made the decision this year to modify our approach to tanker recapitalization, setting aside the three-phase approach that was envisioned in the early 2000s, in favor of prioritizing and accelerating the right capabilities to deliver fuel to the joint force.

The next generation air refueling system, or NGAS, will be an accelerated advanced air refueling system that meets the future needs of the joint force and the anticipated future contested battlespace. We will actively consider clean sheet purpose-built designs for NGAS, potentially with aircraft delivered in increments as part of the family of systems that allows the Department of the Air Force to remain flexible and responsive to the ever- changing threat.

The program is being designed to leverage continuous competition, which is critical to our approach to the program. We have begun preliminary work towards an NGAS analysis of alternatives that will be completed in fiscal year

2024, and inform NGAS requirements and development timelines, and delivery is expected to begin into the mid to late 2030s.

That delivery timeline does mean that there will be a period beyond the current F – KC-46 contracted deliveries and the beginning of NGAS, and we are working through and have included funding to request a tanker recapitalization effort that will cover those years to ensure continuous delivery of modernized and new tanker capability. Our work with the operational imperatives as just begun.

As we begin to implement the recommendations borne out of this work, we are continuing to examine other areas that are cross-cutting operational enablers, such as mobility, and. Mr. Chairman, to your point, also electronic warfare and EMSO, electronic manning spectrum operations.

And so, we want to remain in dialog with you on those requirements, those emerging requirements, as we continue that work. This work will leverage and complement our work on NGAS and the next generation air mobility study as well to identify priorities that enable our future operations.

More than ever, it is critical the department avoid the delays driven by a continuing resolution. The OIs include multiple new start programs that must begin as soon as possible. We cannot cede any more time on a critical moment in the Air Force's transition to the future fight, and we look forward to working with you on that.

I want to close by asking your support for a legislative proposal that was recently transmitted by OMB to Congress that creates a new authority for the military services to respond to emergent technology advances and threats.

This authority will accelerate our ability to respond rapidly to a changing security environment with effective Congressional oversight, and I think is directly responsive to some of the concerns that the committee has identified.

I look forward to working with you and thank you again for your continued support.

**SENATOR KELLY:** Thank you, Secretary Hunter. General Slife.

**GENERAL SLIFE** Chairman Kelly, Ranking Member Cotton, members of the subcommittee, thank you for inviting us here today to provide testimony on Air

Force modernization in light of the budget request being considered by the subcommittee, Secretary Kendall and General Brown have emphasized the need to make hard choices to modernize our Air Force.

The Air Force's component of the fiscal year 2024 presidential budget request reflects a delicate balance between the requirements of the present and the modernization needed to ensure our sustained comparative advantage vis-a-vis our pacing challenges.

Over the last half century, our Air Force has faced four strategic inflection points at which the strategic environment or the threat changed rapidly and we had to adapt from the Air Force we had to the Air Force we would need.

The first of these was in 1973, at the end of the Vietnam War, and the accompanying need for modernization to face down the Warsaw Pact in Eastern Europe. The second was at the end of the Cold War in 1991 and the rapid drawdown of the U.S. military in response to a diminished global threat environment.

The third was the attacks on our homeland in 2001 and the need to adapt to the needs for sustained counter insurgency, counterterrorism, and counterviolence extremist operations. We are in 2023 at a fourth strategic inflection point, one which finds us facing unprecedented set of challenges.

These challenges include disruptive technologies which don't fit neatly into our traditional views of armed conflict, a landscape in which our pacing challengers employ irregular warfare to counter our traditional strengths, the theft of our most sensitive intellectual, personal – intellectual property and personal data to be weaponized against us, and emerging domains of warfare which require new doctrines and capabilities to effectively leverage.

Just like the prior three strategic inflection points of the past half century, the one at which we stand today requires disruptive and uncomfortable change. But as hard as change may be, losing would be substantially worse.

We must change. The budget request being considered by the Congress represents positive change to address the security environment we now face. I look forward to collaborating with this subcommittee as you work to discern a wise response to the budget request before you today.

Thank you for your continued support and I stand ready to answer your questions.

**SENATOR KELLY:** Thank you, General. General Hinote.

**GENERAL HINOTE** Chairman Kelly, Ranking Member Cotton, and distinguished members of the subcommittee, thank you for inviting us here today to provide testimony on the Air Force's modernization efforts.

I would also like to thank each of you for your continued leadership and dedication to our national security. I am not sure if the subcommittee is aware, but I have five more duty days in a career that spanned 35 years.

As you can imagine, that comes with many emotions. I feel honored and proud to have served, but I also feel this sense of urgency to push the changes that we need. I am thankful for the opportunity to discuss those changes with you at this important and timely hearing.

So, I just returned from the Air Force Academy, where I met with the future leaders of our Air and Space Forces.

I know each of you has sent the best from your states to the academies, and I could not be more impressed with the quality of the young leaders getting ready to enter our Force. As I spoke with them, I was reminded of why we do what we do.

Our mission at Air Force Futures is to be the voice of tomorrow's Airmen, to advocate for the capabilities and concepts the next generation of leaders will need to be successful. To do that, our Force will have to change, and change is hard.

During my career, I have served in the Pentagon under three very different administrations. Despite their differences, I found it remarkable that they arrived at three common conclusions.

First, **China** is the primary challenge. Second, we want to deter, and you deter by being ready to fight and win. And third, for too long, we have privileged current risk at the expense of future risk. That last part is important. Sometimes we think of the future risk as some sort of theoretical concept.

What it really means is that we are not handing off an Air force that wins to the next generation. I am not okay with that, and I know you aren't either. This budget helps us get to the change that we need. It is not perfect. No budget is.

But due to the leadership of Secretary Kendall and General Brown, we are seeing real progress in our operational imperatives and Force Design. It is not just about increasing capacity and divesting platforms that won't survive if we have to fight.

There is real and transformational change in this budget. We are shifting major resources to the new capabilities that will be new used in new ways. For years, we have needed a change-oriented budget. This is it.

Thank you for the invitation and I look forward to answering your questions.

**SENATOR KELLY:** Thank you, General. And General Moore.

**GENERAL MOORE** Thank you, Mr. Chairman. Chairman Kelly, Ranking Member Cotton, and distinguished members of the subcommittee, I echo the thanks of my colleagues and appreciate the opportunity to testify on this year's Defense authorization request for fiscal year 2024, as well as the accompanying Future Years Defense Program.

For over 70 years, we have provided air superiority to American Joint Forces, and our allies and partners, and they have rightly come to depend on it. Together, we survived and won the Cold War and we fought the war on terror. But times are changing. While our attention was focused elsewhere, **China** was watching and learning.

Today, we are in the midst of an important transition from a legacy force built for counterinsurgency warfare to one built to deter **Chinese** aggression and to win against any peer competitor. As you heard from my colleagues, there is still much to do as we continue to posture force for future conflict.

What they have described is possible, but time is not on our side and we need your help. Fiscal year 2024 presents another opportunity for the Department of the Air Force and the Congress to work together so that we can remain the world's preeminent power projection force.

Through the lens of the Department's seven operational imperatives, we aligned

our funding request to build a force that will give our adversaries serious pause. The fiscal year 2024 budget request is a strong example of the significant progress we are making towards closing key capability gaps, but the hard choices are not behind us.

Today, and through this budget cycle, we ask for your continued support as we seek to move away from several legacy platforms. In the fiscal year 2024 budget, you will see that we are once again requesting to divest our oldest F-22s, the Block 20s, which are not combat representative and never will be.

We proposed divesting our aging T-1 fleet as we move towards new and advanced undergraduate pilot training programs. And thanks to the support from Congress, we continue to progress on our A-10 and F-15C divestment and transition plans.

Legacy platforms such as these have served us well, but we must be disciplined in our decisions and focus our investments on what we need most. Our most valuable resources, manpower, money, and time, remain limited.

We cannot afford to stop short of achieving the force our nation needs. Looking critically at ways to reduce our excess infrastructure to free people and resources for higher priority mission remains a focus of the Air Force.

The resources, at least as importantly, manpower, freed in these endeavors will directly contribute to bringing – to helping us realize our operational imperatives and to deterring aggression.

This, however, will take time, and as I have said, time is not on our side. American lives and those of our allies and partners rely on our ability to deliver air superiority, and we cannot fail in this endeavor.

Finally, I cannot emphasize enough the importance of an on-time budget. This is critical to keep modernization efforts on track and further discouraging our adversaries.

Time wasted during a CR costs us a modernized future force.

We must act now to modernize in advance our capabilities, and we look forward to once again working with Congress to shape a lethal force that efficiently and affordably provides the most capable air power for our nation.

I am honored to sit here with Honorable Hunter, General Hinote, and General Slife, and together, we look forward to answering your questions.

**SENATOR KELLY:** Thank you, General. I am going to turn it over to Ranking Member Senator Cotton for his questions first, and I will be back.

**SENATOR COTTON:** But I will be in charge until then – [Laughter.]

**SENATOR COTTON:** General Moore, with the Air Force being plagued by underfunding, shrinking inventories, and aging aircraft, can you explain a little bit how the situation has impacted your ability to focus on both modernization and also the current requirements to fight tonight?

**GENERAL MOORE** Yes, Senator. As you rightly point out, there is certainly a balance between current risk and future risk. And we have endeavored to balance what needs to be done to provide a modern force, as well as what it takes to remain ready today.

We have received over the last several budget cycles great support from this committee and others to move past the kinds of legacy force structure that aren't supporting our current operations needs.

It isn't just the dollars that are freed up by moving away from legacy platforms. One must divest an entire squadron of F-16s to buy a single F-35, or an entire squadron of KC-135s to buy a single KC-46. It isn't an issue of economics.

Every bit as important as the dollars, is the manpower that is involved in maintaining and flying legacy force structure. And we need to transition that to, as you mentioned in your opening statement, the force structure that you see in procurement in this FYDP.

There will be some manageable risk to near-term ability for capacity, we will say. But there is no zero- risk solution. There is no way to make any kind of transition without taking risk. We have to balance near- term risk and future risk, and we think we have done that in our budget submission.

**SENATOR COTTON:** General Hinote, would you like to speak to that question? I saw you nodding vigorously on a few occasions.

**GENERAL HINOTE** Yes, sir. Ranking Member Cotton, thanks for the question.

One of the things I think I can say about this budget that makes me feel more confident than ever is I think we have actually started to move the big money to the future.

And I would have told you before, I felt like we had not had been able to do that for lots of different reasons.

So, I think you are seeing quite a big change in the '24 budget going toward the future capabilities. And that has me thinking we got that balanced much more correct.

**SENATOR COTTON:** Okay. General Slife, if I did not see you nodding vigorously, but I didn't see you rolling your eyes or expressing any other opinion. Would you like to express one verbally?

**GENERAL SLIFE** Well, Senator, thank you. What I would offer – I spend the bulk of my days working these current operations issues. And the demand from the combatant commands is insatiable. They all want more Air Force.

But the problem is that unless we can articulate the risk and capacity of our Air Force to the joint force, we will always, as General Hinote said, privilege present risk at the expense of future risk.

I am excited about the progress we have made in our service force generation model, which is allowing us to articulate risk and capacity a little better, which in turn preserves the force's readiness, so that as we modernize, we have the force as ready as possible for today.

**SENATOR COTTON:** All right. And, Mr. Hunter, anything to add? Batting cleanup?

**MR. HUNTER** Yes, I would just I agree with my colleagues and I would say I think the key enabler for us in the Department of the Air Force in arriving at what I think was a balanced solution, a way to balance that risk was the fact that it was done as an enterprise.

That we had all of the various aspects, the operational community and the major Combatant Commands, with the Chief, and with the Secretary, and with the Secretariat, and with the acquisition, the expertise that all these elements bring, including my own acquisition organization, to bear on saying, how do –

you know, what is the reasonable risk we can take in current ops?

What is a reasonable program we can put forward to buy down future risk that we can resource and that is realistic, and drive that a solution that everyone could sign up to.

**SENATOR COTTON:** All right. Thank you. I know that you have done the best you can under very difficult circumstances, but I think the Air Force requires close attention by the committee this year in the defense bill.

I want to dig a little bit further now in my time left and in the next rounds on some of these programs.

The Air Force has stated that collaborative combat aircraft, also referred to as CCA, are a key component of future force designed to counterbalance the rising costs of new fighter aircraft, allowing the department to procure a large fleet at a lower cost, unmanned wingmen to offset our adversaries' growing arsenals and increased survivability of manned tactical fighter fleets. It has been explained that these unmanned systems will be controlled by manned aircraft.

I would like to know if the department is coordinating the required mechanisms for that control across the manned aircraft fleet, and what is the status of that coordination? Mr. Hunter, would you like to start.

**MR. HUNTER** Yes, we are working very closely with Air Combat Command, the major command, as we formulate our acquisition strategy for the CCA, and of course the requirements that exist and sponsors that General Hinote validates for the Air Force. So, critical to that is looking at what aircraft it will interoperate with and how we achieve that interoperability, and that ability to share, you know, C2.

A lot of analysis has been done on that. We think we have a good process for how that should work. There is work to be done in making and demonstrating how it actually will work. And so, we have this operational experimentation unit that has been established where we will work closely with the Australians who have a flyable platform that they are using today.

It is not quite exactly – would necessarily meet our requirements, but it is a very good proxy that we can use to develop the CONOPS for that. But General Hinote could probably speak more to exactly how that is going to work.

**SENATOR COTTON:** Yes.

**GENERAL HINOTE** Yes, sir, and thanks for the question. Sir, you are right in that CCAs will allow us to do something that is fundamentally different. We are going to be able to manipulate risk and impose cost, especially in some sort of great power competition and conflict. What I can tell you is that a lot of analysis has been done, but we are still learning and will continue to learn.

So, where I think we are today is we have a good plan and we have a good opportunity for the operators and the acquisition professionals to be able to work together to figure out what it looks like when manned, unmanned teaming becomes real.

That is something that has not been totally figured out yet, and that is why I am really happy about this operational experimentation unit that can take what we have learned so far and push it into the future with our tacticians.

**SENATOR COTTON:** Thank you. Up next, Senator Peters.

**SENATOR PETERS:** Thank you, Senator Cotton. General Moore, the vast distances that our forces need to operate over the INDOPACOM AOR, I think certainly helped to highlight the importance of having a very robust and reliable refueling capability to go through those distances.

And I remain concerned that the Air Force challenges with modernizing the refueling tanker fleet, as well as the lack of clarity concerning how that will progress, leaving our forces potentially vulnerable. So, my question for you is, can you speak to the importance of aerial refueling fleet and how the Air Force is working to recapitalize existing refueling squadrons?

Particularly you mentioned in somewhere in your opening comments the cost of the KC-46 versus the current aircraft, and particularly how that might be based in the Reserve or Air National Guard squadrons around the country, this recapitalization.

**GENERAL MOORE** Yes, I can, Senator. Thank you. I started my career as a tanker pilot and enjoyed every minute of it. I remain concerned, as you do, about the future of that fleet. The youngest KC-135 we own was built in 1964, and in all likelihood, it will remain on the ramp in 2050.

So, the number one priority in this portfolio is to ensure continuous recapitalization of the KC-135. We have through 2029 for the last deliveries on the current KC-46 contract, and Mr. Hunter and his acquisition organization are working to ensure that we have the ability to continue procuring tankers until we are ready to get to the next gen aerial refueling system, or NGAS.

So, we are also, in addition to procuring new tankers, we are continuing to modernize the KC-135. The fuel panel and the associated navigation equipment in the center pedestal have reached end of life, and we will be replacing those over the next couple of years to ensure that the KC- 135s remain viable. I have flown the KC-46.

It is a fantastic airplane. It has some things that need to be worked at. It has some deficiencies that Boeing is on contract to fix, and they are doing that and we are going to hold them to it.

So, we believe we have a viable plan going forward, but it will require continuous supervision and active management, because, as you say, the air refueling capability is one that we can't fight a war without.

**SENATOR PETERS:** The KC-46 is coming into reserve.

You know, it is our National Guard where some of those legacy platforms are right now. What do you see a timeline for that?

**GENERAL MOORE** So, they are coming in as we speak.

There are both Guard and Reserve aircrews flying KC-46s today. There are still two basing decisions yet to be made in the KC-46 enterprise. Both of those are slated to go to the Air National Guard.

The percentage of Guard and Reserve forces in the tanker community will remain essentially unchanged. That actually in the Guard grows just a little bit across the future years' defense plan, but it essentially will remain unchanged.

**SENATOR PETERS:** Okay. General Slife, the Air Force recently stood up the 350th Spectrum Warfare Wing in Pensacola, Florida. Based on lessons learned in Ukraine and emerging requirements to support the joint force with cyber, as well as electronic warfare from increased distances that we are going to be facing, do you feel as though the Air Force has the appropriate budget and the

strategy for employing next generation cyber and electronic warfare capabilities?

**GENERAL SLIFE** Senator, I do. With investments in things like active, electronically scanned radars, investments in the E-7, the E-10.

These platforms are going to give us the spectrum dominance capability that our crews are going to need to be able to fight and win in the most contested environments.

The other thing that the 350th Spectrum Warfare Wing will allow us to do is make sure that we are updating and modernizing the data files that underpin many of our electronic attack programs at the pace that our adversaries are changing.

As the threat environment becomes more lethal, our adversaries are changing the techniques that they use against us rapidly. We need the ability to stay one step ahead of them. And that is what the 350th will do for us, senator.

**SENATOR PETERS:** Thank you. And finally, Mr. Hunter, the fiscal year 2024 Air Force budget request includes funding for the procurement of 24 F-15EXs in fiscal year 2024, and advanced procurement funding for 24 F-15EXs in fiscal year 2025.

Given that the Air Force initially planned to purchase 144 of these aircraft but has since walked that back to 80 and is now seems to be adjusting to 104, how many F-15EXs does the Air Force actually intend to purchase, and what need is that aircraft filling?

As of today, it is our plan to complete the purchase of the F-15EX in fiscal year 2025. So, that would be the number, the analysis has been done to determine that that would be a sufficient force for the purpose for which the F-15EX is being acquired, which is largely to backfill and replace the F-15Cs that are rapidly divesting from the force.

So, I think we will have enough when we get to fiscal year 2025. The decision really was though, to accelerate that purchase, to acquire those aircraft as quickly as possible, and that is a case where a decision was made to do that in order to buy down, to the extent that we can, some of the current risk more rapidly.

And then we will transition resources once we complete F-15EX procurement into some of the more future focused modernization investments that we have in the portfolio.

**SENATOR PETERS:** Great. Thank you.

**SENATOR KELLY:** Senator Mullin.

**SENATOR MULLIN:** Thank you, sir. Secretary Hunter, having actually the honor to represent Tinker Air Force Base, you can imagine I am very much invested in the progress of the E-3 to the E-7, AWACS transition. Last year's NDAA included the Air Force $300 million unfunded priority request to accelerate the transition. Can you kind of elaborate a little bit more on how that money was spent? I know you spoke about it earlier, but more specifically to this.

**MR. HUNTER** Yes, absolutely. And we very much appreciate the committee's support.

So, we were able to, due to the committees approving our reprogramming request, in fiscal year 2023, got the program office stood up and running, in '23, in the same year in which we made the decision to purchase E-7, which was a huge benefit and allows us to avoid some of the delays that could have been caused by a CR last year.

And then we worked very rapidly to, once the program office was established, to get on contract with Boeing so that we could start to accelerate as much of the program activity, the engineering work, on the E-7 that we need to carry out as quickly as possible.

And so, the resources that Congress provided really helped us to accelerate some of the engineering work. The kinds of things that we have, worked with Boeing to get underway as quickly as possible is – we have begun from the very beginning and talked to them about the technical data that we will need to acquire for the U.S. Air Force to be able to not only sustain the platform but to upgrade and modernize it, to stay current with the threat, which is especially critical for the E-7, although it is critical for everything, but it is especially critical for the E-7.

We will have to work very closely with our colleagues at the FAA on certification

of the E-7. We wanted to accelerate the work, the engineering work required to get after aircraft certification as early as possible. It has been certified previously by other countries that are flying the platform, but not for the U.S.

So, we wanted to get after that as quickly as possible. And we wanted to get after the software work that will put the E-7 aircraft that we are purchasing in a configuration that works in the U.S. Air Force context with our OMS approach to our software builds. And we were able to accelerate that work thanks to the resources that Congress provided.

**SENATOR MULLIN:** Well, the concern that I have is the lag between when we phase out the E-3s to the E-7s. The timeframe continues to be pushed, but yet we are still staying similar to the same phase out period.

Now there seems to be about a three-year lag between where the E-3s leave Tinker, to when the E-4s are supposed to start being delivered – or E-7s are supposed to be – start being delivered.

Are we concerned about that, especially about some of the emerging threats that are taking place today and that there is going to be such a lag between?

**MR. HUNTER** So, the balance that we are striking there is the E-3s that we are retiring are not in a good position to really engage in the most significant fight that we are posturing to be ready for, which is the INDOPACOM, the potential conflict –

**SENATOR MULLIN:** But do we have to take the place between that four-year lag, because it seems to be – continue to grow. We haven't delivered. General, if you want to –

**MR. HUNTER** Well, let me just make one point, which is critical to fielding the E-7 as quickly as possible is having those E-3 crews engaged with us in the acquisition system as we work with Boeing to nail down the configuration.

But also, they are going to Australia and working with the E-7 community that is flying in Australia. And I, myself had the opportunity to fly on the Australian E-7 and it is very impressive, and they have learned a lot in operating that platform. So, having those crews available is a huge accelerant to fielding the E-7.

**GENERAL MOORE** Yes, Senator. We have held the E-3 divestiture schedule constant since we laid it in, so it has not changed. And so far, the E-7 delivery schedule has stayed constant as well. So, that gap was programed in on purpose.

We have preserved enough capacity in the airborne battle managers, the ABMers in the back to see to the E-7 so that it is ready to go. And as Mr. Hunter mentioned, we are even sending them to Australia for training. But there are capability gaps in the airborne early warning portfolio that the E-3 will never fill.

So, there is an issue of capacity, but really what we are getting at is capability, and we have to get to the E-7 to get that capability gap filled. And the way to get there as quickly as possible was for us to draw down the E- 3 fleet in the meantime.

**SENATOR MULLIN:** From when that plan first came through to where we are at today, the threat has obviously increased. Are we trying to really ramp up the delivery time to get the E-7s – you know, in operable conditions?

**GENERAL MOORE** Yes, sir, we are. And you will notice on the Chief of Staff's unfunded priorities list, the number one item is further acceleration of the E-7.

**SENATOR MULLIN:** I saw that. Right.

**GENERAL MOORE** What that does is buy a center fuselage section, which is where the radar sits. That is the long lead item for another aircraft as well as early acquisition or advance procurement for two of the radars.

So, we are – we believe that there is some acceleration possible. The first airplane can't come any sooner than fiscal year 2027, but they can come in greater quantity when they do start to come in, and that is what you see is the number one item on the Chief of Staff's.

**SENATOR MULLIN:** I know Tinker is getting ready for it, and they are prepping for it. They are getting hangars ready for it. You know, it is impressive, and so I appreciate the investment that is being made in Tinker and we want to be helpful. So, any way our office can be of assistance in this, please utilize us.

**GENERAL MOORE** Sir, thank you.

**SENATOR MULLIN:** Thank you.

**SENATOR KELLY:** Senator Blumenthal.

**SENATOR BLUMENTHAL:** Thank you very much, Senator Kelly. Thanks for yielding to me. I am very concerned about the combat rescue helicopter.

We went back and forth about this platform for some time over the past few years, and I am particularly concerned that the additional ten combat rescue helicopters that we added last year have been put in backup inventory.

I know you have difficult budget decisions.

You have decided to terminate the program. We only have 75 out of the 108 that are thought to be necessary.

So, maybe you can tell me what your thinking is about terminating that program, when I think we all believe we have an obligation to leave nobody behind.

**MR. HUNTER** You know, let me just touch briefly on program status, but turn to my colleagues to speak through how we intend to CSAR with the fleet that we are fielding.

But appreciate the resources Congress has provided for acquiring HH-60. We still have resources for 20 aircraft not yet on contract.

So, we are not terminating, you know – as a, you know, acquisition term of art matter, the program. We are working through getting those 20 that have been appropriated on contract with Sikorsky. So, that is a decision being made just, you know, imminently in the next several days. So, we will, you know, fully execute with the resources Congress has provided.

**SENATOR BLUMENTHAL:** Where will that bring us in terms of the number of aircraft?

**MR. HUNTER** So that will be at 85 total inventory.

And I know – I don't know if you want to talk, Rick, to the inventory question.

**SENATOR BLUMENTHAL:** 85 out of 108?

**GENERAL MOORE** Yes, sir. And we believe that is more than sufficient to do combat search and rescue. There is a big distinction in this portfolio between combat search and rescue and personnel recovery. There are literally thousands of platforms in the Department of Defense that can do personnel recovery.

This fleet is for something very specific. It was purchased for Iraq and Afghanistan. It is not particularly helpful in the Chinese AOR. And with that, I will pass to my colleague, General Slife.

**GENERAL SLIFE** Senator, we recognize the moral imperative, as you describe it, to leave nobody behind.

The challenges that much like the infamous attempted rescue of Bat 21 in Vietnam, no matter how dedicated you are, if you are not in a platform that is survivable to the threat environment, you end up losing more people trying to recover somebody than the person you lost to begin with.

And so, the challenge we are facing is really how to address the question of how will we do personnel recovery in a contested environment. We are actively looking at nontraditional ways in order to fulfill that moral imperative of leaving nobody behind.

But until we can come to a definitive answer on that, I think the one thing we can say is that helicopters – and I have 3,000 hours as a helicopter pilot. Helicopters that fly 150 knots, refueled by C-130s with a pair of rescue men that ride a hoist up and down is probably not the answer in our most pressing scenarios.

And so, I share your concern about this mission area, Senator, and we believe that the force that we have programed bridges the gap until we can develop a more suitable solution for a contested environment.

**SENATOR BLUMENTHAL:** Well, I assume the nontraditional or more suitable means would be unmanned?

**GENERAL SLIFE** Senator, that is one of several options that we are looking at.

**SENATOR BLUMENTHAL:** Well, I would like to follow up on what the other options would be, and whether they would be equally cost effective. Since my time is limited, I want to go on to F-35s.

You know, the numbers of F-35, I think are 48 per year over the next five years as compared to the full production rate, which would be 80 aircraft per year. We have been buying F-35s for 18 years now – 18, will be the 18th year.

The production line is stable, but the Air Force is planning fewer than the 60 that would keep the production line stable. Maybe you could talk a little bit about that issue.

**MR. HUNTER** Yes. We have been working closely with Lockheed Martin, the prime, on production capacity. The most recent Block award is 3 lot block by contract with Lockheed Martin.

Essentially keeps them at a production rate of 156 aircraft per year. That is for the entire F-35 enterprise, including allies and partners, as well as Air Force and Department of the Navy. And right now, they would be very stressed to produce at a rate beyond that.

So, the Air Force purchases that we have planned today will fill – will largely fill the production capacity that Lockheed has. If we wanted to go to a higher production rate, we would probably have to tool, increase tooling.

And one of the significant limiters there is the center body piece – the center –

**SENATOR BLUMENTHAL:** So, you are saying that the current rate of buy, it will keep the production line fully at work?

**MR. HUNTER** What we have in our budget request across the POM, combined with the Navy and the allied purchases –

**SENATOR BLUMENTHAL:** And so, the allied purchases must be making up for some of the –

**MR. HUNTER** They are. They are a huge component of the program. And we see that, you know, since the conflict in Ukraine was initiated by Russia, we have had many additional partners and allies make the decision to purchase the F-35.

**SENATOR BLUMENTHAL:** Thank you. Thanks, Mr. Chairman.

**SENATOR KELLY:** Thank you, Senator. Secretary Hunter, I want to talk a little bit about the collaborative combat aircraft program that the Air Force is

intended to begin.

You know, I understand that the Air Force intends that the CCA program would not replace any current capability or platforms but would be an additional capability. And it is intended to provide, you know, the additional missile carrying capacity and firing capability for our fighter forces.

Essentially a wingman with no person in the aircraft.

So, could you explain how the Air Force can afford to buy additional platforms to carry missiles and carry weapons when right now the budget doesn't really afford the ability to buy enough missiles to – and weapons to outfit the fighters that we currently own?

**MR. HUNTER** So, we do have substantial investments in our munitions portfolio and including multiyear production for AMRAAM and the JASSM, LRASM platform. So, we are at an increasing production rates of those munitions as well as JDAM, which by the time that we are fielding CCAs, will be entering our inventory.

So, we have looked hard at how do we ramp up production of munitions, recognizing that that will be critical to our ability to deter and to succeed. The CCA in particular, as you see, it brings affordable mass on the platform side. We are also looking hard at our mix of munitions investment and trying to understand how do we have affordable mass for our munitions.

So, some of our munitions will get cheaper as we ramp up production and we get more economies of scale in that production. Some of them are so high end that, you know, they probably won't ever be affordable mass. But we do have in our plan munitions that will be at a, you know, unit rate, unit cost that will allow us to scale up production of those weapons.

**SENATOR KELLY:** Well, Mr. Secretary, that is good to hear. What I also thought I might hear is it is not just about the number of missiles we have.

And you did mention that this increases the number of platforms and the tactical advantage that you could gain from being able to, you know, put another platform in a strike package, doesn't have an individual in there that addresses the limited ability to recruit, retain experienced pilots.

So, it touches on that problem that we are – we have to address in recruiting in general. But to have additional capability, especially with someone like AMRAAM coming from a different angle, could be an advantage on the battlefield and help us get air superiority.

Can you also give just a quick update on how the development and testing, recognizing that this is not a classified setting, but the development and testing of this, what you are comfortable in saying, and how the warfighter perspectives are being considered and integrated into the program?

**MR. HUNTER** So, with CCA, we have the benefit that there has been ongoing work for some time with industry to understand what capabilities that they can provide and what timeframe in which they could provide those capabilities.

So, we feel like we have a very good understanding of the state of industry, lots of U.S. industry, but also understand there is capability available from partner nations as well. And the CCA program is going to be a fully competitive program.

And so, we will invite those that have been working with us in the concept definition phase of CCA to aggressively compete for our initial platform that we expect to field. And we will work to do some prototyping and do test of those aircraft.

So, I think you will see a program structure that is very – it is rapid. I think you will credit that it is rapid when you see the details and, but at the same time gives us that opportunity to really test out what industry is offering in a competitive environment.

The last thing I wanted to mention is we are also leveraging the Skyward program from the Air Force Research Lab, which really is focusing on the autonomy end of this, and that will be continuously worked throughout the lifecycle of the CCA from the initial platform, through every one of its iterations. And I don't know if –

**SENATOR KELLY:** General.

**GENERAL HINOTE** Chairman Kelly, as one of the warfighters who has been working with the acquirers in this program, one of the things that I think that Secretary Kendall and Secretary Hunter has done is we are working more closely with requirements programing and acquisition than I have ever seen.

And what that allows us to do is iterate in ways that are, I think, very beneficial. This program is going to be an iterative program. We do not know everything we need to know about this, and I can't require what CCAs are going to look like in ten years.

I think the technology is moving faster than we can keep up in certain areas. What I am very excited about is we have a plan to incorporate the tactics and the logistics concerns so that we can learn what an organization looks like to fly these, and I really want to complement our acquirers for that.

**SENATOR KELLY:** Were you iterating on the level 1 requirements for this platform, or is it just a –

**MR. HUNTER** So, we have – Sorry, that is your line – yes –

**GENERAL HINOTE** We have set the first tranche requirements.

**SENATOR KELLY:** Okay. And –

**GENERAL HINOTE** We do have a threshold and objective.

And so, there is a gap between the threshold requirement and the objective requirement, but we have set those.

**SENATOR KELLY:** You know, it seems like one of these programs where we have got to invent, not just innovate, you know, invent things. You know, somebody recently mentioned the B-2 being in that category of aircraft whereas we developed it, a lot of the technologies weren't currently available.

And because of that, we wound up with significant delays, cost overruns. They get rather expensive. I hope in this case, you know, we are aware of it and still try to – and I see the benefit in this capability. But I also am concerned that some of these technologies might be a little bit big of a leap, and we have got to be – we just have to be aware of it.

**MR. HUNTER** Yes. And so, our strategy is very much, we are being very disciplined on our initial requirements set, really scoping based on our work with industry, what we believe is achievable on the timeframe on which we are proposing to field.

And then we will – there will be future increments and that is very much baked

into our acquisition strategy, that – and that is true for the competitors, that those who may not be the lucky winners for initial increments are still very much in the game for later increments.

**SENATOR KELLY:** Thank you. Senator Duckworth.

**SENATOR DUCKWORTH:** Thank you, Mr. Chairman. I humped over here as quickly as I could from that vote. Good afternoon to our witnesses. General Hinote, thank you for your years of service, and obviously to your family as well. In this – gentlemen, in this subcommittee's last hearing, we heard from the Army about its modernization efforts for weapons systems and organizations.

I believe that the purpose of DOD modernization is to drive transformation across the joint force. General Hinote, the Marine Corps Force Design 2030 provides a detailed roadmap and vision for what its future force will look like.

The document describes methodology for the study, identifies capability, identify capacity, and detail of the gaps, and details of the actual numbers of weapons systems and formations required to achieve the envisioned force design.

I know the Air Force just unveiled your future operating concept document last month, which does list key airpower fights. But does the Air Force have a force design 2030 comparable document to share with Congress?

And if not, what is informing the service's RTD&E investments, or shaping its recruiting and retention goals?

And how does the service measure modernization success if it doesn't have an explicit modernization roadmap?

**GENERAL HINOTE** Senator Duckworth, thank you for that question. It is a question that comes up all the time when we talk about force design. So, I will start with, we have unveiled the future operating concept. You might consider that to be a part of the future force design. We also have other things that we are doing.

I believe the operational imperatives that Secretary Kendall has us working on are very much a part of force design. They are closing gaps that we need. To get after your question, yes and no. So, we have a process – and force design is not a 2030 or 2032 one-time thing.

What we believe is we have a process, and ours goes out to beyond 2040, and we are constantly updating what the force should look like at any one point in time. Now, you absolutely can snap a chalk line and say in 2030 or 2032, this is what we think it is going to look like.

And we have that, and we would be happy to share. We don't have it in a paper form right now. What it is, though, is it is a series of concepts that we can show you and show you the analysis behind them. Unfortunately, that tends to go at a pretty high classification level, and so we would need to be able to show you in a classified setting.

Mainly that is because these technologies that we are trying to incorporate into our force design are quite new and we don't want to give our playbook to China. So, and I actually do believe that they could derive some important insights if we were to publish something that – in an unclassified setting, but we would be more than happy to share what we have with you.

**SENATOR DUCKWORTH:** I am just concerned that the Air Force has some way of measuring modernization success, right, even if it is benchmarked as opposed to a timeline base. But there is got to be some way that you can measure that success and there is got to be some way that I can do my job here in Congress to make sure that we are keeping track of that.

What Air Force efforts are underway to redesign Air Force formations or manning? And General Slife and General Hinote, I think you can both take this. How is new technology affecting how the service organizes its personnel, right?

This is followed on to that last question, is you have got to have some sort of a roadmap or plan, and we have got to be able to figure out how your successes are. But then how are you looking at your formation and person organization into the future?

**GENERAL HINOTE:** Senator Duckworth, you are exactly right. So, I will go very short and then hand off to General Slife. So, as we look and we see the pacing challenge is China, we know that we have to present a force that is different than the one that we have right now.

A key component of that is the infrastructure, and we have huge investments in this budget to get after a Pacific infrastructure that allows us to present that

force in the way that we need to.

And with that, I will hand over the General Slife, because the idea of a new way of presenting the force that is compatible with our pacing challenge and then a new way of generating the force is something that he is leading and making great progress in.

**SENATOR DUCKWORTH:** General Slife. Sorry I missed pronounce your name earlier.

**GENERAL SLIFE** No problem. Well, thank you. Senator Duckworth. You have your finger on a question that I spend many hours every week working on. To General Hinote's point about force presentation, just to be plain about what we are talking about, it is what is the element that the Air Force provides, the squadron, a group, a wing – what is the thing that the Air Force generates and provides.

And, you know, the model that we have used for force presentation over the last 20 plus years since 9/11 has been a very ad hoc model. We deploy portions of units and aggregate them in a large main operating base someplace in the Mid-East and project air power from a largely secure, largely fixed main operating base.

We have been able to get away with that because our adversary hasn't pressured us in the way that we think future adversaries can and will. And so, as we look at the future operating environment, we recognize that we have to be much more agile.

We have to be much more focused on those – what the rest of the Joint Force would call combat support and combat service support elements and how those things are packaged and generated in order to provide the platform from which we can project air power.

So that – developing that force presentation model for the future is an enormous part of what I am working on right now. What I can tell you is that, and General Moore may be able to provide some of the programmatic detail underpinning this, is we have made significant investment in the budget before the subcommittee today, significant investment in the capabilities we will need to support those agile combat employment type operations.

You know, we have unit equipped ourselves to operate out of main fixed operating bases. And you know, we may not need the 1.21-gigawatt generator. We may need some, you know, 50 horsepower Honda generators that are much more mobile and enabled to be used in much smaller formations.

And so, we are well ahead on that.

**SENATOR DUCKWORTH:** That leads to – I am over time but can – I have more questions here. Let me keep going till you cut me off. Thank you. General, did you want to add something to that?

**GENERAL MOORE** Ma'am, I would just say in our operational imperative, in the U.S. Air Force's operational imperative portfolio, you will see that what General Slife was talking about is the number two investment.

Collaborative combat aircraft is number one, and there is over $5 billion, of course, across the future years defense plan for pre-positioned equipment, repair of runways and fields that we haven't used since World War II, camouflage, concealment, and deception, and then the continuing sustainment tail that provides all of that into the future.

**SENATOR DUCKWORTH:** This is exactly what I am deeply concerned about, right, especially going into the Indo- **Pacific**. It is a very different way that we are going to be projecting our force into that region as opposed to EUCOM, you know, European command.

And I mean, I understand the AFFORGEN is supposed to provide a balanced and predictable fourth generation model, especially if you are looking at the geographic combatant commands.

But does the fourth-generation model work for all Air Force units? And also, how do you balance the demands – the difference between what you need in Europe versus **Indo-Pacific**?

**GENERAL SLIFE** Senator, the Air Force's force generation model conceptually is a good model for all of us to think about, but it applies unevenly across the Air Force. The reason for that is because some forces have been assigned to combatant commanders, and the Air Force doesn't generate those forces. They are assigned on a day- to-day basis to the combatant commander.

So, you can imagine we have an F-16 squadron in Spangdahlem, in Germany, for example. And, you know, if General Cavoli, the EUCOM Commander, wants to employ that F-16 squadron, I don't have the ability to tell them, hey, sorry, they are in force generation right now, we will be back in 18 months when they are available. I mean, that is an unacceptable answer.

And so those combatant command assigned forces are going to be employed by the combatant commander as they see fit. The F4 gen model that you are talking about is really for those forces that the institutional United States Air Force generates and deploys in support of those emergent requirements where combatant commanders ask for and need a fighter squadron over here – I need a tanker over here.

Those are the forces that we generate.

**SENATOR DUCKWORTH:** Thank you. So, moving on to the equipment, right, as we are looking at INDOPACOM and some of the new challenges – Secretary Hunter and General Moore, I think this probably comes to you.

Secretary Kendall submitted a legislative proposal that provides a service rep acquisition funding authorities. I absolutely understand you need to be agile.

We have new stuff coming out. and we need to be able get to it quickly. And the funding authorities is to initiate new start development activities of emergent technological advancements up to $300 million.

Both NGAD and the next gen air refueling system, NGAS, require significant technological advances in order to become successful. How does this proposal from Secretary Kendall reduce the risk for development of NGAD and NGAS?

Are there other areas in which these proposed authorities would be helpful?

**MR. HUNTER** Yes, I think there are absolutely other areas where it would be helpful, and I think we could use, you know, NGAD or NGAS as an exemplar. As we sit today, those programs are underway, and they are at a – well, at least NGAD is at a stage beyond what our legislative proposal would apply.

So, I don't see us using it necessarily with NGAD because of the fact that it is already, you know, well on its way to – as a program. But in principle, right, a similar idea applies in that those programs came out of a recognition of a

change in the threat environment.

In order to respond to that change in a threat environment, we understand that we have work to do, engineering work and technological work to find a solution and then field it as rapidly as possible.

So, what the legislative proposal is designed to do is allow us to engage in early-stage engineering in the year of execution, with Congressional oversight and approval, without having to wait for a full year appropriation bill, which may be months or even in some cases years away, that we would then have to wait until we receive those funds.

**SENATOR KELLY:** Secretary, I am going to ask you to pause there for a second. Senator Duckworth, I am going to turn it over to Senator Cotton, and then we will come back.

**SENATOR COTTON:** Mr. Hunter, I would like to talk about logistics. The only way we can help to deter aggression and win any potential conflict in the **Western Pacific** in particular is by ensuring our logistics are second to none.

That includes not just our munitions and fuel, but also the spare parts that are necessary to keep our aircraft flying. But reports from the GAO paint a pretty bleak picture of aircraft logistics, with the Air Force missing their mission capable rights for almost every aircraft every year, meaning that our aircraft aren't available to fly their required missions for a significant portion of time.

This includes the F-35, which only had a 38 percent for mission capable rate in 2021. And the C-5, which has, according to a report, exhibited increasingly low aircraft availability and mission capable rates over time.

A major contributor to this issue was identified as spare parts. If this is the state of our logistics in peacetime, I am troubled what it would look like in wartime when logistics are truly stressed by our own demands and by enemy action.

Do these logistics challenges delay our ability to rapidly modernize our fleet, Mr. Hunter, since we have aircraft unable to fly and test new systems? And also do the challenges impact pilot production and training?

**MR. HUNTER** Senator, they absolutely do impact pilot production and training. In fact, that our current challenge with pilot production is very much tied to the

challenges with sustaining the T-38 platform, which is one of the linchpins of our pilot production approach.

A lot of that is driven by the age of our platform. A lot of it is driven by the engine which we are engaged in substantial work to help us manage through the current spare parts shortages, finding new sources of supply and second suppliers for those that may have shut down production in order to keep that engine operating until the T-7 is fielded, which will have a modern engine and we won't have quite the same challenge.

So, it is absolutely an impact on pilot production.

Impact on fielding of capability is a little bit dependent on the platform. And in some platforms, our test capacity is very constrained and is a constraint on how quickly we can move. In some cases, that is where we are doing our greatest degree of modernization.

So, for example, the B-52 is one where the extent of modernization on the B-52 is so large that it is, you know, it is a challenge to the capacity of the test fleet for that platform. When it comes to the F-35, it is a slightly different challenge. Right here, we don't have really old stuff. This is new stuff.

And in fact, one of the things that challenges there is, we were slow to stand up depot capacity, initial depot capacity for the F-35. And that meant that when a part broke, instead of going to depot and getting fixed and coming back, we had to buy a new part.

And we can actually, you know, we can repair parts, generally speaking, faster than we can buy new unless – you know, unless they are off the shelf. So, that has been a big constraint and has driven a lot of our non-mission capable for supply dynamics on the F-35.

But starting about a year ago, the department committed to stick to the plan on depot stand up. And instead of diverting resources from depots into new aircraft production, we held the line. And with the help of Congress because you obviously provided funds for additional aircraft purchases, which made it easier to continue our depot stand up activities.

So, we are actually now starting to burn down some of that challenge on parts for the F-35, but it is going to take us time to get there.

**SENATOR COTTON:** Okay. General Slife.

**GENERAL SLIFE** Senator, thanks. I would just point out, much of what you are describing as what we call weapon system sustainment funding, which funds many of our repairable depot activities.

A lot of the modernization, for example. This budget that is before you today is the highest in terms of the percentage of our WSS requirement that is funded since 2009. So, this issue that you have highlighted is absolutely an issue.

It absolutely affects pilot production. It affects the number of hours that crews are flying in our operational units. We recognize the need to get over it.

And so, I think you will see a stair step approach to improving our weapon system sustainment funding over time.

**SENATOR COTTON:** Yes. And the F-35 is moving to a so- called performance-based contract soon, is that correct?

**MR. HUNTER** So that is in work. Notionally, the current sustainment contract would finish around the end of this year, and we would put in place that next contract structure. We are working hard to have it be the case that that next contract structure is a performance-based logistics contract.

But as you probably know, there is a Congressional mandate that says we have to be able to certify that that PBL approach would meet certain benchmarks in terms of cost and performance.

And we obviously, we have to get there, working with the supplier. So, my hope and my expectation is we will get there. But if we can't get there, then we will not bring a PBL contract back that doesn't meet the requirement.

**SENATOR COTTON:** And would you expect to extend that approach to any other aircraft?

**MR. HUNTER** Well, we do have performance-based logistics contracts on several of our platforms. And I would say across the Air Force, we are probably not the largest user across the Department of Defense compared to some of the other services, but it does work in certain cases.

You know, we obviously have to meet our statutory requirement for the organic

industrial base. And most of our platforms that we are currently bringing on board, we are planning for organic sustainment.

So, KC-46, B-21. So, most of my focus, honestly, is on making sure that that we stand up the organic depots, and we haven't been going after a lot of new PBLs in the Air Force.

**SENATOR COTTON:** Thank you.

**SENATOR KELLY:** Right. Secretary Hunter, I want to talk a little bit about the Compass Call aircraft. We have been pursuing a program to replace these EC-130s with the new EC-37. And this program is slated to replace 14 EC-130 aircraft with 10 brand new EC-37s.

In budget justification, Materiel indicates that we will only have 6 EC-37s from the program by the end of the future years defense program. And this is only because that – I was able to push for fund procurement of four additional airplanes last year.

Secretary Hunter, what steps could we take to accelerate recapitalization of this important capability?

And are there ways to shorten the timeline in a responsible manner on this? And if there is, by how much could we shorten the timeline?

**MR. HUNTER** Well, Senator, I appreciate the support that Congress has provided on this. There is a little bit of an issue of where the window applies when it comes to future years defense program.

So, the four aircraft that Congress has appropriated dollars for that – in addition to the six that you saw that we will deliver within the FYDP, there is one that is right on the dividing line. So, the number seven is right on the dividing line of where the FYDP ends and the next FYDP begins.

And then the other three are just after that window.

So, all ten will deliver. Some of them are coming, you know, some months after the kind of end date of the current FYDP. So, I didn't want you to think that those aircraft are not happening. They are absolutely happening and will deliver. Just so happens they are just outside the FYDP.

And that is a long fuse from when you have appropriated the funding to us to when those aircraft will deliver.

So, I will have to look into why that timeline is that long. You know, this is one case where we are going and acquiring used aircraft because the production line had closed. And that does add some time and complexity versus an aircraft that you can just buy off the line.

**SENATOR KELLY:** So, what is the risk – and maybe the General Hinote, or General Slife, or even General Moore could comment on what is the risk of conducting the mission with fewer aircraft?

**GENERAL HINOTE** Chairman Kelly, right now, Secretary Kendall has us looking at the – what are we going to do about electronic warfare in the future. And this is one of the questions that we are asking ourselves, is how many do you really need?

Where I think, we are going to go from a design point of view is we are going to use the EC-37 as a pathfinder for the open mission systems that we will proliferate throughout our platforms. That will include platforms we could talk about in here and some that we can't. Those will be distributed in the battle space.

And the things that we are able to develop through the EC-37 and the Spectrum Warfare Wing that we talked about before, because we are going to be using software defined apertures, we are going to be able to distribute out the electronic attack capabilities, or not.

And we will have to make some choices about where we will have to go. If that doesn't work, then I think we should go back and reassess where we are with the EC-37.

If it does work, it can be incredibly powerful by distributing all of those electronic attack capabilities in a way that I think would be very difficult for any adversary to counter. So, we have got some.

**SENATOR KELLY:** Is there a timeline to make that decision?

**GENERAL HINOTE** Yes, sir. We need to get some EC-37s in the air and see how they are working. And we also need to do a very solid threat analysis as we get

them in the air versus the waveforms that we are going to field. That hasn't been done yet.

We are – in fact, we are working on those with the new group that is studying the holistic electronic attack across the Air Force.

**SENATOR KELLY:** When I joined the Armed Services committee, one of the big surprises that I experienced was when I found out the Air Force only had initially 14 EC- 130s, you know, doing this mission.

When you look at the Navy and even the Marine Corps, you know, had – the Marine Corps had probably a squadron and or two and the Navy had one in every air wing. So, it seems like a more substantial capability. Obviously, the way we operate the Air Force and the Navy are different.

But this is a capability that I believe we all recognize that our main adversaries are – they do well and have been making some significant advancements in. So, I think it is important that we pay really close attention to this.

And I find the distributed EW capability an interesting idea, but we are going to have to see if we can actually implement that. Senator Duckworth.

**SENATOR DUCKWORTH:** Thank you, Mr. Chairman.

Gentlemen, I am going to continue on my joint – my joint force train of thought. I know that the ranking member earlier asked a question about the CCA, the collaborative combat aircraft and its operability across the Air Force.

At this month's Sea, Air, and Space Conference, the Navy actually highlighted its cooperation with Air Force in CCA development and even previewed the ability of the Navy to control Air Force CCAs and vice versa.

Secretary Hunter, how closely are you working with your counterparts in the Department of the Navy to build interoperable weapons systems while not creating a whole bunch of new requirements that result in program delays or cost overruns?

And also, how do you balance that interoperability with the speed necessary to field new technology? And importantly, how and when will you demonstrate to Congress to progress that – in these truly joint service CCAs? So, it is sort of a

three-part question there.

**MR. HUNTER** Well, I would like to believe that we are demonstrating it today in terms of the work that we have done on the front end to plan the integration of our approaches. And that is very much the case.

So, the reference architectures that are the foundation of the underpinning of all our programmatic efforts tied to CCA, the Navy has indicated in testimony to me directly, but in testimony to Congress, that they are adopting the same approach, the same reference architecture.

So that will dramatically improve our efforts, right.

There is efficiency in it, but there is also power in it, particularly with industry, because it – for all of those capability providers out there who have innovative technology to bring, right, the market space has just doubled for them, so it becomes an even more attractive target for investment. And I am seeing that response from industry.

Their engagement level has been exceptionally high because they see that we are working closely together and giving them common approaches. Maybe not exactly common requirements, but very common approaches to how they can leverage technology. So, we are doing that on the front end.

We are also leveraging each other. So, the Navy – it is not all. They are using our stuff, right. The Navy has quite a bit of work put in, particularly on things like comms and secure communications, that we can leverage and intend to leverage and are leveraging in our CCA approach.

Also because of their work on the MQ-25, you know, they are going to have some systems that could potentially, you know, contribute information about how do we operate some of these uncrewed systems in a reasonable way.

And then in other programs, I would say across the whole swath of our programs, we are trying, working hard to integrate our approach, and I think it is a very good news story.

**GENERAL HINOTE** Senator Duckworth, can I add for the –

**SENATOR DUCKWORTH:** Please –

**GENERAL HINOTE** – from the warfighter side. So, I have definitely been in contact with my counterparts throughout the Joint Force. And one of the things that is quite different right now is that we have a joint warfighting concept that we can all reference, wargame together, learn from, and require to.

And that is just fundamentally a different thing. And there is a real momentum behind this joint warfighting concept. And so, one of the ways that we have been able to work together in this CCA environment is to agree upon whether it is we want to do with them, at least at first.

And so, the Joint Staff sponsored a major war game last summer, I had the chance to participate. And one, I could say without giving too much away, one of the star players was the CCA, not only for the Joint Force, but also for the combined force, because the Australians participated in that war game as well, as well as the UK, and both of them brought their concepts for CCAs in.

I think the idea that they have to be interoperable, you mentioned that the Navy could control our CCAs and vice versa – we all agree on that, 100 percent. And because, and as the Secretary Hunter talked about, we were able to adopt communications standards between us, that is going to be so much easier to do.

But what – I don't know that I have seen a capability that converged as fast across the joint force as what the CCAs have under the joint warfighting concept. So, we feel very good about investing as much as we have, and we are investing quite a bit.

**SENATOR DUCKWORTH:** Is it slowing down the speed for fielding new technology? I just want to make sure that we are balancing things out.

I just think back to the days of the F-35, right, where we develop an aircraft that then actually couldn't land on a carrier, right, because the tailhook was not in the – was, you know, that the distance from the landing gear, the tail was not appropriate, right, so that slowed everything down.

I am all for interoperability. I think it is great.

I just want to make sure that we are handling that balance, that we can still field the new technology as rapidly as possible, but also maintaining that interoperability part.

**MR. HUNTER** Yes, I would say it is central to our approach to CCA, both with partner services but also with partners and allies, that we are not envisioning this where we all have to buy the same thing, or all from the same manufacturer.

And so, the power of these government reference architectures is they are, by design, able to integrate and interoperate, even if they come from different manufacturers, produced in different countries, bought by different services, and have slightly different mission roles.

But the integration of the architecture, reference architecture level, and in the standards that are, you know, that support that architecture will enable the kind of interoperability and the efficiency.

And as I said, from the industry side, it creates a much bigger market space for them to compete for, which helps us drive that continuous competition, which is fundamental to our strategy to get there rapidly and to innovate over time.

**SENATOR DUCKWORTH:** Thank you. I just want to ask the ranking member, I know we are waiting – the chairman went off to vote and he is going to come back. I have another question, if you are – I don't know if you wanted to ask additional questions.

Okay, thank you. This is now, I am going to go up to a very macro level. How does the Secretary of the Air Force's operational imperatives support the joint force?

You know, can you comment on the efforts in your budgets where you can – where those efforts are supporting the joint force? Give some examples.

**GENERAL HINOTE** Yes, Senator Duckworth. In fact, I believe the operational imperatives are truly imperative for supporting the joint force. I don't think the joint force wins if we don't close the gaps represented in the operational imperatives.

I will start with the first operational imperative, which is space. I have never seen a scenario where the joint force is able to win if we lose access to space. It is that important. It is a prerequisite for victory.

And so, what you see is that we are investing in resilience in ways that we have not invested before, and we are able to proliferate the capability across different

orbital structures as well as just across things like low- Earth orbit and the ability to use both commercial and military satellites as well.

But that is just one of many. So, when you look at operational imperatives two, three, and four, we are really talking about our kill chains and how our kill chains come together. And I don't mean Air Force kill chains, I mean joint kill chains.

The core of the joint kill chains are represented in operational imperatives two, three, and four, as is the keys capability. And it is, again, not an Air Force capability, a joint capability to establish air superiority, even just for windows of time. Because we know that China has invested well, they are worthy adversary, and we are going to have to fight very hard.

That being said, two, three, and four can really help us when it comes to bringing the joint force together, aggregating to do the job, and the job that we are preparing for is to stop aggression from China.

So operational imperative five gets after the infrastructure that we were talking about and the ability to operate off of these airfields. So, not only does it include things like refurbishing runways and proliferating the amount of bases that we can use, it also talks about pre-positioning and deception and other areas that help us in that.

So, for many, many years, we have been the source for the Joint Force for Deep Strike and operational Imperative six gets after a new way of doing Deep Strike around the B- 21 but making the B-21 better. Unfortunately, that is about all I can say here, but happy to go into it in another forum.

And then operational imperative seven gets after the fact now that no matter where we are, we might be in your home state getting ready to deploy, or we might be on a Pacific Island somewhere, but anywhere in between, we are going to be resisted. And some of that resistance will be non-kinetic.

We will have cyber-attacks. There will be – they will use space in a way that will make it very hard for us to move our logistics, what we expect to do, and they will try to slow us down in communication, being able to talk to each other. But as we get closer, they will start using everything in their portfolio and that will include kinetics as well.

So, what operational imperative seven does is it examines our across the board ability to go to war and identifies the vulnerabilities. Now, the first step in closing of our ability is realizing they exist. We are finding a bunch, as you can imagine, but we are prioritizing them and knocking them out through operational imperative seven.

So, to go back, where I think the Joint Force benefits from the operational imperatives is that with the joint warfighting concept that I referred to earlier is doable.

You can achieve it if we close those operational imperatives.

And what I think that means is that even in the most difficult scenario, if you might think of a South China Sea scenario or a Taiwan defense scenario or helping Japan defend against China, those are tough scenarios.

You have to go a long way to win those scenarios. But even in those scenarios, if we can close the gaps in the operational imperatives, it allows the joint force to come together. It is almost like we are the glue of the joint force.

We bring it together to accomplish the mission. And one of the reasons why I am more optimistic than I have been in a long time is because we are actually investing in getting after these gaps.

**SENATOR DUCKWORTH:** Expand that to the combined force.

You know, especially if you are looking at the Indo-Pacific region, right. You mentioned cyber, for example, and also space, where the disruptions are going to come from.

We need to be sure, I would think that our allies are able to maintain cyber. And not just allies and partners, but also commercial partners that we are going to be relying on, especially when it comes to logistics in a contested environment. What are you doing there, and expand your discussion to the combined –

**GENERAL HINOTE** Yes, ma'am. So, certainly, from the combined point of view, we see the ability for us to fight together, to be integrated as being the key. It is something we bring that China won't have.

And we have great allies and partners. And one of the things that has been a

real joy for me is working with my counterparts in places like Australia, the UK, Japan, coming together and figuring this out. I will tell you, one of the things I have noticed recently is how serious Japan is about its defense. I think there is a major change there. It is a positive change for us.

And we have always had a very close relationship with the Japanese Self-defense Forces, but now it is just going to that next level. Very happy about that. And that allows us to plan together and it allows us to understand how they are going to fight and how we can communicate with them, command and control, in a way that is fully integrated, so we are truly a team.

To get after the commercial side, that is a tough challenge. And as you know, a lot of the computer systems that we have in our industrial base are unclassified and they may or may not be updated with the best software and things like that.

So, as we look across that vulnerability, we see that there are key gaps we have to close and we are working with the companies to close those. But also, we know there is more to be done. And it is not just a military effort, it is a whole of nation effort, and we know that China is going to test us in this area.

I think we need to get ready for it. And I believe that people are waking up to the seriousness of that threat and they are asking for help.

**SENATOR DUCKWORTH:** I think the commercial side is where we have some real potential challenges. You know, I remember I was touring, when I was in Congress, a civilian contractor that had the contract to make lights more energy efficient on a major maneuver command in the Army. And I went to visit.

And they were very proud because they got this contract, small company, engineers and everything. And they are like, look, let me show you how I can turn the lights on and off at this major maneuver command in Texas.

And they were showing me how they were lowering it on this laptop.

And I said, is that a secure laptop? Because we just walked into this room and it was just left sitting there.

And they are like, oh, no, no, our chief engineer has a TS/SCI so it is okay. But the laptop is sitting there and they are very proudly showing me how they could, like, dim the lights and brighten the lights to save energy, but do you

understand the implications of what you are talking – and they, you know, they were – they just cared about energy efficiency.

So, there are – I think, the commercial sector is where we are going to have some real challenges. And I also think, on top of that, you could also address, you know, you talk about Japan and UK and Australia, but, you know, there are other nations we have to deal with that may not be quite there, Indonesia, Philippines, you know, Thailand. I think that part of cyber, it is equally important to bring both those friends and allies along.

**MR. HUNTER** Well, I am going to talk mostly to the commercial part of the question, and I will just say, you know, things are moving fast.

So, on the Philippines, I am now roughly one year in office, and that has been a huge shift in that – just in that one year of my current service. But on the commercial side, I would say we have forged very strong relationships that you might not have predicted three or four years ago with a lot of our commercial partners.

And that is true in commercial space. It is very much true in commercial networking and advanced compute capabilities, including folks helping us substantially to field robust, secure, cloud-based networking capabilities, which will enable us to do the kinds of things you were talking about, but securely for those kinds of critical capabilities, of which we have many.

**SENATOR DUCKWORTH:** Mr. Hunter, do you want to speak to some of our other partners out there or some of the nations where perhaps they need a little help moving their cybersecurity along? You can always get back to me on it.

**MR. HUNTER** We can get back to you –

**SENATOR DUCKWORTH:** Okay, thank you. Senator Cotton.

**SENATOR COTTON:** General Moore, anything else in your purview that you would like to share with us today?

**GENERAL MOORE** No, Senator. I think we touched on everything we wanted to make sure we talked about. Thank you.

**SENATOR COTTON:** General Hinote, you have got five days left. What do you

want to get off your chest?

**GENERAL HINOTE** Well –

**SENATOR COTTON:** Unburdened by concerns about the future –

**GENERAL HINOTE** – everybody in the Pentagon is excited to hear – in all honesty, I have watched – for whatever reason, I have been in the Pentagon for a while now and know many of you in the room. And I have watched this narrative unfold, this story unfolds.

And we have known we have needed change for many, many years, and it feels like we are finally maybe getting to a pivot point right now.

That is exciting, but it is also scary because it could come off the rails right away and we don't want that.

So, I am cautiously optimistic and I will be cheering from the sidelines.

**SENATOR COTTON:** Mr. Hunter, General Slife, anything from you to close out?

**MR. HUNTER** I did want to mention. So, I think you raised it, sir, in your opening statement and I didn't touch on it as much as would have maybe been judicious on, the importance of our C3 battle management and ABMS related investments.

So, all of the OIs, you know, you think how the OIs operate, they are all fundamentally trying to solve the same problem, which is the operational problem, the pacing challenge. There are sort of different frameworks for understanding and decomposing that problem. They all recompose when you look at OI two and ABMS and C3BM.

To make progress on all of the different OI's, we have to be able to deliver that. We have got a pretty substantial investment resource increase in our budget for that and we very much ask your support for that.

I think we have worked very hard to, with the new PEO, to bring a lot of acquisition rigor and engineering insight, and a lot of a richer set of program activities that you can see when they will deliver results that will be meaningful. So, I think we have come a long way and we ask for your support for that request.

**SENATOR COTTON:** Thank you, Senator.

**GENERAL SLIFE** Senator, we have talked a fair bit today about things like electronic attack, and apertures, and the need to be able to close long range kill chains at scale. One of the things that underpins all of that is the electromagnetic spectrum.

And so, as I believe you are tracking, there are considerations about selling access to the electromagnetic spectrum. There is a study going on right now that should be finished, I believe, in September, that will kind of inform the Defense Department's position on this.

I don't know what that study is going to say, but I would just encourage the subcommittee to remain witting to the potential national security impacts of the loss of spectrum for some of our key capabilities. Thank you, Senator.

**SENATOR COTTON:** Okay. All right, gentlemen. Thank you all for your appearance today. Thank you for your service to our nation. The hearing is adjourned.

[Whereupon, at 4:07 p.m., the hearing was adjourned.]