Stenographic Transcript
Before the

Subcommittee on Airland

COMMITTEE ON
ARMED SERVICES

UNITED STATES SENATE

TO RECEIVE TESTIMONY ON ARMY MODERNIZATION IN REVIEW OF THE DEFENSE AUTHORIZATION REQUEST FOR FISCAL YEAR 2025 AND THE FUTURE YEARS DEFENSE PROGRAM

Wednesday, May 15, 2024

Washington, D.C.

ALDERSON COURT REPORTING
1029 VERMONT AVE, NW
10TH FLOOR
WASHINGTON, DC 20005
(202) 289-2260
www.aldersonreporting.com

TO RECEIVE TESTIMONY ON ARMY MODERNIZATION IN REVIEW OF THE DEFENSE AUTHORIZATION REQUEST FOR FISCAL YEAR 2025 AND THE FUTURE YEARS DEFENSE PROGRAM

Wednesday, May 15, 2024

U.S. Senate
Subcommittee on Airland
Committee on Armed Services
Washington, D.C.

The subcommittee met, pursuant to notice, at 4:00 p.m. in Room SR-232A, Russell Senate Office Building, Hon. Mark Kelly, chairman of the subcommittee, presiding.

Committee Members Present: Kelly [presiding], Blumenthal, Peters, Duckworth, Cotton, Ernst, Scott, and Mullin.

OPENING STATEMENT OF HON. MARK KELLY, U.S. SENATOR FROM ARIZONA

Senator Kelly: The Subcommittee on Airland will come to order.

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

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

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

Through all of its endeavors, the Army is working to increase its readiness, accelerate its modernization, and improve its interoperability with allies and partners. The

Army seeks to do this by focusing on four key areas: warfighting, delivering ready combat forces, continuous transformation, and strengthening the profession. We look forward to discussing modernization in this context.

I have had multiple opportunities to travel to Ukraine and the Middle East over the past 3 1/2 years. Each trip has shown me the importance of a modern and ready Army. Operations in Ukraine and the Middle East continue to demonstrate the need for ground combat forces in effective multi-domain operations as well as the power of joint and coalition operations.

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

In the last year, the Army has made notable adjustments in some of these portfolios as it makes tough decisions to balance force modernization with maintaining enduring

capabilities. Today, the Subcommittee seeks to better understand how the Army will address remaining gaps moving forward.

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

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

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

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

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

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

force to include the Army National Guard and Army Reserves, which are critical components of the Total Army.

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

I will now recognize our Ranking Member, Senator Cotton.

OPENING STATEMENT OF HON. TOM COTTON, U.S. SENATOR FROM ARKANSAS

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

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

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

During a visit to Fort Campbell this past year I saw firsthand how the Army is transforming one of its best fighting formations. Second Brigade, 101st Airborne is now the first experimental brigade designed to be more

tactically mobile. I was particularly impressed by the brigade's new infantry squad vehicles. I would ask our witnesses to provide more examples of lessons learned from the 101st and other modernized units, including the light brigade combat teams in the 10th Mountain and 25th Infantry Divisions.

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

When adjusted for inflation, the Army's budget proposes to cut funding by over 2 percent compared to the fiscal year 2024 enacted levels. As a result, the Army has also submitted more than $2 billion worth of unfunded priorities, including funding for counter-unmanned aerial systems, a fancy way of saying counter-drone warfare, munitions, and military construction. All of the chief's unfunded priorities will help modernize the Army, and I hope this Subcommittee and the full Committee will look to include as many as possible in this year's Defense Authorization Act.

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

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

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

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

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

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

As the Chairman noted, it represents our sustained commitment to our key modernization portfolios: Long-Range Fires, Next Generation Combat Vehicles, Future Vertical Lift

Systems, Network, Air and Missile Defense, Soldier Lethality, and Synthetic Training Environment, while also investing in All-Domain Sensing and Contested Logistics.

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

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

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

Second, the hearing invitation asked us to address any significant portfolio adjustments made in the formation of the budget. Mr. Chairman, both yourself and the Ranking Member noted the biggest change, which was the proposed

realignment of aviation funding out of the Future Attack Reconnaissance Aircraft and into continued production of the Black Hawk M model and going into production for the CH-47F Block II, as well as acceleration of unmanned aircraft. And we are happy to talk more about the reasons for that and how things are going as we do Q&A. But that was our one biggest change.

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

Third, the hearing invitation asked us for an update on Army efforts to expand production of critical munitions. Thanks to supplemental funding, in particular, and thank you and all the members for providing the supplemental bill, which was absolutely critical to the Army's current and future readiness, we are going to dramatically expand production across the board for both precision munitions, things like Patriot -- and the supplemental included specifically a $750 million investment to increase production of Patriot -- and other things like conventional munitions, including 155 artillery and other conventional munitions. All of those things are now fully funded and on track, thanks to passage of the supplemental, and we are

making it happen. We are now in that phase, and I look forward to talking to you about that in more detail.

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

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

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

Finally, the invitation asked that we provide an update

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

In closing, I want to say thank you on behalf of the Army for this Subcommittee's very strong support of the Army in the fiscal year 2024 bill and the supplemental, and we look forward to answering your questions.

[The prepared statement of Mr. Bush follows:]

Senator Kelly: Thank you, Mr. Secretary. General Rainey.

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

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

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

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

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

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

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

In partnership with the United States Marine Corps and the Navy, the Contested Logistics CFT is working on a joint abbreviated capability to develop and document on an

autonomous watercraft and resupply vessels that grew out of our partnership in Project Convergence. This autonomous watercraft provides a smaller, lower cost, unmanned capability that will enable greater operational endurance and reach for both the Army and the Joint Force, especially in INDOPACOM.

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

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

Most recently, the Army announced the All-Domain Sensing Cross-Functional Team, which has a small headquarters here in Washington, D.C., with the main body of the organization remaining in Huntsville, Alabama. And this cross-functional team is not a new build, new soldiers. It

is capitalizing on the success of the Assured Position Navigation and Timing CFT, which stood up, basically solved that problem, has been able to transition it to our teammates in Mr. Bush's organization, so continuing to evolve the cross-functional teams. This cross-functional team evolution allowed the Army to transfer all the experience and expertise to a new set of challenges. By keeping all that talent in place they contribute to our initial success.

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

The battlefield has become increasingly transparent, and the U.S. Army must remain on the forefront of these technologies and their military applications. The work of these two new CFTs, as well as the incredible efforts from the rest of the transformation enterprise, was on display in February and March of this year during Project Convergence Capstone 4, which, as you know, was an Army-hosted but wholly joint and combined experiment. We had all the services, six different allies and partners, and also for

the first time incorporated OSD's guide experimentation effort, wholly integrated into Project Convergence. It was hosted by our Marine Corps teammates at Camp Pendleton and then also at the National Training Center in California. This experiment tested our latest developments in offensive and defensive fire integration, joint command and control, contested logistics, and developments in human-machine integrated formations and next-generation command and control, as well as counter-UAS efforts, both on the joint side and on the Army-specific side. We pushed the bounds of our network capabilities as we worked to design and implement the resilient, data-centric systems needed to operate on the modern battlefield as a joint force.

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

For the Army to capitalize on the technological advances made by our CFTs and the lessons we are learning from watching what is going on in the world and also during our experimentation campaign, we believe we need greater institutional agility. Specifically, as you heard General George testify on April 18th, we need increased flexibility

to fund and field the unmanned systems, counter-UAS, and electronic warfare systems. This increased flexibility will allow us to rapidly integrate critical technologies more quickly into our combat formations so that our number one asymmetric advance, the American soldier, has everything they need to fight and win our nation's war.

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

[The prepared statement of General Rainey follows:]

Senator Kelly: Thank you, General Rainey. General Gingrich.

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

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

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

Our investments will allow the Army to become leaner, more agile, and most importantly, more lethal. These investments will strengthen deterrence in the Indo-Pacific and other regions critical to our nation's security. As the linchpin of the Joint Force in the Indo-Pacific, these investments will contribute directly to the Joint Force's

ability to deter, and when called upon, fight and win decisively.

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

Army formations are transforming and modernizing rapidly through teamwork, engaged senior leadership, process refinement, and the authorities and resources you provide the Army. We continue to modernize responsibly, maintaining readiness now, while continuing to transform at a pace informed by the available resources.

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

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

[The prepared statement of General Gingrich follows:]

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

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

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

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

General Rainey: Thank you for that question. So if I could take it in two parts, the ability to test is one of the critical steps in the ability to transform, just like requirements and acquisition, as you know, Senator Kelly.

So being able to do that in an innovative, fast way that keeps pace, so that we are not waiting on tests. And we are innovating two different ways there, and there are resources applied in our budget to fully modernize Army Test and Evaluation Command, because if we do not do that we are going to end up with modernized equipment and waiting around for old-fashioned testing.

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

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

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

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

Senator Kelly: I was down at the U.S. Naval Test Pilot School about a month ago, of which I am a graduate, and it was really interesting. I was talking to the commanding officer, and he said he either had there now or a student that was coming from the Army, not a helicopter pilot, but a guy that is an Abrams tank commander or officer, that is going to go through the flight test engineering program at the Naval Test Pilot School, just to be able to better learn how to conduct developmental tests. If it works out well it might be something that you would consider expanding upon.

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

General Rainey: Yes, we do, both capacity and then also testing is expensive. So within the fiscal stewardship

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

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

General Rainey: March and April.

Senator Kelly: And where will that be?

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

Senator Kelly: Thank you, General. Senator Cotton.

Senator Cotton: Mr. Bush, I want to talk about the

IVAS system. It is kind of like a bad penny. It keeps turning up, but it costs a lot more than a cent, hundreds of millions of dollars per year.

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

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

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

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

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

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

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

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

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

Senator Cotton: To receive the systems --

General Rainey: To receive the systems.

Senator Cotton: -- not to test them at the platoon and company level.

General Rainey: Correct.

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

General Rainey: Yes.

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

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

Senator Cotton: Fiscal year or calendar year?

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

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

Mr. Bush: Yes, sir.

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

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

General Rainey: Senator, I don't know. I am very interested in receiving 1.2. We have high expectations that it is going to be much better than what we have received and tested so far. When it comes to IVAS, as a former infantryman, I realize the potential. I mean, if it works it is a legitimate 10x upgrade to our most important formations. But if it is does not work then I think we would have to take a very hard look at whether we continue down that path or use that money for other critical aspects

of our night vision strategy, because we have to make sure the entire Army can own the night, and there are other very good systems, like ENVG, for example, that have demonstrated really strong supports.

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

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

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

With regard to the specific problems, sir, I think this 1.2 is designed to get at the three major flaws you pointed out, which are all very well-articulated. The one that concerned me the most was the form factor, meaning how a soldier wears it. The first version I agree was not

something that was usable in an infantry context. This version, I believe, gets at that very much, and is much closer to what our soldiers are used to wearing with night vision devices they wear, but does more than just night vision. However, sir, it is a new technology, and it may not work out, but we are hopeful that it will.

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

Senator Kelly: Senator Mullin.

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

General, I see that you had shoulder surgery?

General Rainey: Yes, Senator.

Senator Mullin: How long ago?

General Rainey: Three weeks.

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

So anyway, thank you guys so much.

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

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

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

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

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

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

Senator Mullin: Should it be looking at rescoping?

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

Senator Mullin: Okay. Good enough.

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

Mr. Bush: Sir, so we have deployed --

Senator Mullin: And by the way, I would have used the acronym but I do not know how to pronounce it.

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

Senator Mullin: Right.

Mr. Bush: However, sir, that learning, though, on those prototypes is informing all of our other prototyping

efforts in directed energy. We have deployed other systems at lower power levels that are proving successful -- 20 kilowatts, for example, in some fixed-site type setups. And then we have still to be delivered some higher power, 300 kilowatt systems that would also be more of a fixed-site type defense but maybe capable against a cruise missile, not just a UAV.

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

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

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

And as I mentioned, we are learning that directed energy in a lab environment or in a test range is different from a truly deployable, tactical environment. But it is the future, and we are committed to it as part of our overall counter-UAS approach.

Senator Mullin: So what do you figure the benefits are from some of the high energy lasers versus the high-powered

microwaves?

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

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

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

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

Senator Mullin: So you see them working together and deployed on the same battlefield?

Mr. Bush: Potentially, sir. I think for fixed-site defense, for example, the high-powered microwave systems

could make a lot of sense because they do not have to move around. But they give you a capability that individual laser systems do not.

Senator Mullin: Thank you. My time is running out. Thank you so much.

Senator Kelly: Senator Ernst.

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

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

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

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

Mr. Bush: Yes, Senator, I will.

Senator Ernst: Thank you. And given the magnitude of this project, particularly as our allies are relying on us to lead and serve as the arsenal of democracy worldwide, the supply of munitions remains a crucial factor, especially when it comes to that 155. Can you commit to keeping me informed with any updates or issues through the modernization efforts at the Iowa Army Ammunition Plant?

Mr. Bush: Yes, Senator, absolutely.

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

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

Mr. Bush: Yes, Senator. So I think if I could start with critical minerals. The OSD, through funding provided by Congress for Defense Production Act investments has been making those targeted investments in having both mining and processing capacity for certain critical minerals in the United States, and that has been a huge initiative, and a very important one, strongly supported by Congress. I can

get you more details on projects that have already been awarded, and now that we have 2024 funding again, what they have planned to do. But we, of course, support all of that.

With regard to the Army and our responsibility for conventional ammunition across DoD, we have the task from the fiscal year 2023 NDAA -- sorry, fiscal year 2024 NDAA -- to ensure that all of our supply chains for subcomponents, including baseline chemicals, by 2028, are completely either in the United States or with friendly countries, and we are on a path to do that. That will require some continued investment, but it is critical to avoid any dependence on potential enemies for production of ammunition.

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

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

Mr. Bush: So, Senator, the way we have mitigated in the past, and are doing now, in some cases, where downstream, for example, there might be an unfriendly

country that provides us materials, we stockpile. So the goal of that stockpiling needed by time in an emergency or if that source became untenable to produce somewhere else or to get it from another ally. And we have done that across the board, which has allowed us, as part of this ramp-up, to stay on track.

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

I think what we have learned from this ramp-up is the longest pole in the tent of increasing production is the big machine tools and some of the critical materials that are refined and take time. Those things you need stockpiled or you need additional capacity you can localize quickly, on hand, and not building it from scratch, which is what we are doing now.

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

Senator Ernst: Absolutely. I think there are 18

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

Thank you, Mr. Chair.

Senator Kelly: Senator Blumenthal.

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

So this decision has shaken the industrial base to its core. Hundreds of engineers are going to be without work. Probably they will be employed elsewhere, but the Army will not be able to get them back. And my two questions are,

number one, is the FARA decision irreversible? And second, what will be done to develop FARA's X-2 technology?

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

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

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

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

Mr. Bush: Yes, sir. So I think as part of the larger

decision, and it was a difficult decision, on FARA -- and I would, if I could, defer to General Rainey on the operational aspects of why that judgment call was made -- from an industrial base standpoint the continuation of Black Hawk production was our primary focus to retain capacity and talent, as you mentioned, to just do rotorcraft well, not just build them but design them. Number one, sir.

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

Senator Blumenthal: Can you assure us about the commitment to the Black Hawk program?

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

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

Mr. Bush: Sir, some of that would be up to the

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

Senator Blumenthal: But it will not be 400.

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

Senator Blumenthal: So it might be near that number.

Mr. Bush: Sir, I have heard numbers in that range.

Senator Blumenthal: Thank you. Thank you very much, Mr. Chairman.

Senator Kelly: Senator Peters.

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

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

So my question for both of you is given the request for an additional $44 million for the Infantry Squad Vehicle,

can Congress conclude that the Army needs to field the ISV more rapidly than originally planned, and how does this acceleration of the platform help the Army achieve its latest force design initiatives?

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

Senator Peters: That would be great.

Mr. Bush: From a budget standpoint, yes sir, it is proving to be a very good vehicle. We are investing in it. I would also add that the recently passed supplemental, I expect some of that funding to end up buying ISVs because we are sending Ukraine older things. That is one of our best, newest platforms, and we will use some of that supplemental funding to buy vehicles sooner than even the 2025 budget being approved.

Senator Peters: Good. General?

General Rainey: Senator, the feedback is we have started fielding the ISV from our operating forces, not in touch points but actually fielding it to our brigade combat teams, has been overwhelmingly positive. The 2nd Brigade of the 101st, because of the way they are coming in, instead of peanut butter, slicing them all over the Army, we are massing them on one of our brigades, and that brigade is experimenting with the motorized infantry brigade combat

team. Based on what we have learned from Ukraine and now the technology, it is finally to the point where we can bring a system like the ISV to bear.

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

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

Senator Peters: Great. Great. Thank you for your assessment.

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

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

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

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

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

Senator Peters: So what do you see as the future?

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

Senator Peters: Great. Thank you, General. Thank you, Mr. Chairman.

Senator Kelly: Senator Duckworth.

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

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

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

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

Assistant Secretary Bush, you know I have been talking about Rock Island since our time together on the House Armed Services Committee. Maintaining global leadership in

advanced manufacturing is vital for ensuring the strength of our OIB. How can the Army strengthen its relationship with DoD's Advanced Manufacturing Institutes, such as MxD, and our additional resources needed to do so?

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

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

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

So I think it is a question of just staying at it, staying up with industry, and, though, having government expertise like we have at Rock Island, so we know what we are looking at. Otherwise you can be told all sorts of

things but not know what is real, and the folks of Rock Island know.

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

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

I think we have provided members with a list of ideas for potential adds for all the depots, not just the ammo

ones. That could certainly help. And also just continuing to work with us to make sure we know when we are doing something we should not be doing at those depots, meaning we are not investing the right way. That input from members is vital to know, so we get on the right track.

Senator Duckworth: General?

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

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

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

And we are going to, frankly, my last point, is we are going to need your support in the foreseeable future. As we

build this capacity and we struggle with budgets, we may look for congressional help to maximize that capacity that we are building.

Senator Duckworth: Okay. Thank you.

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

Assistant Secretary Bush, General Rainey, and General Gingrich, a toss-up ball. Concerning SDDC's role as the global intermodal surface connection and its mission to seamlessly link the joint deployment and the distribution enterprise with Army Materiel Command's materiel enterprise, what specific efforts is the Army undertaking to prioritize and modernize SDDC's capabilities? Because again, we are going to have to push all this stuff out there, and if they are not modernized efficiently we are not going to be able to meet the need.

General Rainey: Thank you, Senator. You obviously have a deep understanding of this complicated challenge, and I would add that there is a good chance, depending on who we

fight, that it will be contested --

Senator Duckworth: Yes --

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

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

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

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

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

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

Senator Duckworth: Thank you.

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

Senator Duckworth: Yes. Thank you. Thank you, Chairman.

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

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

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

General Rainey: Thank you, Chairman. So fuel and ammo are the two things that are the most important thing in taking care of our casualties coming back, so those three

pieces are just non-negotiable, essential things if you are going to have a good military. So that is why we chose those. In fuel, specifically, the biggest opportunity in the near term is to not move fuel that we do not have to, which sounds like a "no kidding," right? But our current systems, our tanks and Bradleys, are dependent on verbal and digital reports of how much fuel they have.

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

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

to acquire it then.

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

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

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

the Army's current modernization efforts. That is number one.

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

But General Rainey can offer much more.

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

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

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

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

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

So that is the absolute problem that we are facing in INDOPACOM or Russia or anywhere else that we fight, and that is what we are working very hard on. Mr. Bush covered, you know, it is a combination of defensive and offensive fires. We have absolutely got to get better at defending ourselves,

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

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

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

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

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

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

Mr. Bush: Senator, the goal is to maximize that production capacity. I could get back to you with a hypothetical delta between what you see across the out years and then what we believe the maximum you could put in those years would be. This is the kind of thing we are doing right now as you build a '26 budget. But I would be happy to show you the math and what it looks like, based on what we know now.

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

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

The reason for the timeline it is on is we have needed

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

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

Senator Cotton: Thank you.

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

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

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

I was at Project Convergence a couple of years ago and

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

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

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

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

One of the most interesting things is just by focusing on the round itself we got over halfway from 30 to 70, and I can share that range. It has been a long time since we have

updated things like propellant and energetics. Industry is very good at it. And at the same time, big, heavy, armored Paladins are costly. We have a lot of great systems now.

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

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

Mobile Howitzer, our NATO allies and watching the battlefield in Europe, there are some very good wheeled Howitzers that are having great effect in a place like Europe where the road systems are pretty mature, for example.

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

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

the other one.

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

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

Senator Kelly: I will take you up on that.

Senator Cotton, anything else?

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

Mr. Bush: Well, Senator, you alluded to it. I just would want to say that the Chief's unfunded priority list has some counter-UAS and UAS on there that I would highly recommend to members. In a classified setting I think we

could tell you a story about CENTCOM counter-UAS that is actually a pretty good news story. The Army, very quietly, did the diligent work for years, because we have been under attack by various people in the Middle East, that is protecting our troops right now, with Congress' support. So the Army, I believe, has the most capable counter-UAS systems available. With more resources we could go even faster.

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

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

And with that the hearing is concluded.

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

WORD INDEX