

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

April 18, 2023

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

**MEMBERS PRESENT:**

**Mark Kelly [D-AZ] [presiding]**

**Deb Fischer [R-NE]**

**Gary C. Peters [D-MI]**

**Joni Ernst [R-IA]**

**Tammy Duckworth [D-IL]**

**Rick Scott [R-FL]**

**Tom Cotton [R-AR]**

**WITNESSES:**

**Honorable Douglas R. Bush** - Assistant Secretary of the Army for Acquisition, Logistics and Technology

**General James E. Rainey, USA** - Commanding General, United States Army Futures Command

**Major General Michelle A. Schmidt, USA** - Director, Force Development, G-8 United States Army

[Begin transcript - formatting by [chinasentry.com](http://chinasentry.com)]

Mark Kelly, chairman of the subcommittee, presiding.

**SENATOR KELLY:** The Airland subcommittee will come to order. And first, I would like to say how honored I am to have the opportunity to chair this subcommittee and its oversight responsibilities of our nation's primary land and air forces.

Not sure how a Navy guy got this job, but, you know, don't worry, I am not going to start asking Army and Air Force pilots to land on a ship. And luckily, I have got an Army guy next to me to partner with.

Senator Cotton, I look forward to working with you and all of the committee members as we continue the subcommittee's collaborative approach during this critical time. And I know we can find broad agreement within the subcommittee and work jointly to confront the issues facing our soldiers, our Airmen, and their families.

And I would like to welcome our witnesses to the hearing this afternoon, Mr. Douglas Bush, Assistant Secretary of the Army for Acquisition, Logistics and Technology, General James Rainey, Commanding General, Army Futures Command, and Major General Michelle Schmidt, the Director of Force Development or Army G-8.

I welcome each of you and thank you for your service, and your willingness to appear before us today. And as we meet to review the Department of the Army's Investment and Modernization Strategy as presented in the Fiscal Year 2024 budget request, I want to acknowledge the work soldiers are doing all across the globe and express our gratitude to them and their families for the vital role that they play.

Today's Army remains engaged in operations and training events worldwide that build confidence and interoperability with our allies and our partners, test and experiment with equipment to identify needs, capabilities, and present combat credible forces to deter our competitors.

Today, as Ukrainians battle to defend their homeland, thousands of U.S. soldiers remain deployed to the European continent to deter the expansion of Russian aggression. I had the occasion to meet many members of the 10th

Mountain Division in Poland just last week. And these missions underscore both the complexity of contested logistics and the importance of our pre-positioned stocks.

Operations in Ukraine also demonstrate how critical effective multi-domain operations are for a ground force, as well as the power that joint and coalition operations can have. They also provide a stark contrast to the complexities the Joint Force would face if compelled to conduct similar operations in a contested maritime theater.

This is why the Army's focus on long range fires, integrated air missile defense, deep sensing and contested logistics is critical to the current and the future force.

And we look forward to hearing about lessons learned over the past year. And as we begin work on the 2024 National Defense Authorization Act, we recognize that the Army continues to operate with a largely flat budget.

At the same time, the Army is providing significant equipment and munitions in support of Ukraine. Mr. Bush, we have had occasion to discuss this work before, and today I would like to hear how the Army is using the replenishment of these items to build future modernization in concert with the organic industrial base modernization strategy, and your assessment of any additional risks the Army may be incurring in discussion of any additional resources or flexibilities that would further improve munitions development and production.

In this budget submission, the Army continues to prioritize its signature modernization efforts while slowing procurement of enduring capabilities. This supports the current National Defense Strategy that I think accurately ranks **China** as the most consequential strategic competitor and the pacing challenge for the Department.

As you all know, **China** has been investing heavily in its military and in emerging technologies, and the best way to deter them is not to just keep pace on the cutting edge, but also to continue modernizing our forces to make clear to our adversaries that they cannot beat us on the battlefield.

At the same time, Russia continues to demonstrate an aggressive posture, and operations in Europe remind us that enduring systems require modernization

investments too. We would like to better understand how the army is balancing risk between newer modernization priorities and supporting enduring programs.

And we are interested in the specific investments and capabilities the Army included in the '24 budget requests that continue the implementation of the current NDS, including efforts across six modernization priorities, which are long range precision fires, next generation combat vehicles, future vertical lift, the Army network, air and missile defense, soldier lethality, and its rapid capability – capabilities' development efforts in hypersonics, directed energy, indirect fire protection, and mid-range capability.

We appreciate the Army's employment of more flexible acquisition authorities and increased use of experimentation and soldier touch points to better defined capabilities and requirements. The Yuma Proving Ground in Arizona has been a proud host for signature efforts like Project Convergence, which continues to guide modernization activity.

These practices make more rapid fielding possible, and we applaud the Army's progress in this area and are interested in the Army's assessment of its current testing and training facilities, that capability and that capacity to support the modernization force.

The broader organic industrial base also remains critical to the Army's overall modernization strategy. We would like to better understand how the Army is ensuring that it is identifying and maintaining critical industrial capacity. The Army is now faced with competing pressures on its structure, a significant shortfall in recruiting and a generational modernization effort.

For the purpose of this subcommittee, we are deeply interested in how the Army is determining the structure, ops concepts, and posture it requires to field these new capabilities and best meet the threat environment.

Additionally, we must understand the impact of these decisions on the modernization of the Army National Guard and Army Reserves, and critical components of the total Army.

The Army continues to make significant progress in these efforts, but difficult decisions lie ahead, and I have great confidence in all of you and look forward to a productive year here as we work to continue to field the world's best Army.

On that, I now recognize our Ranking Member, Senator Cotton.

**SENATOR COTTON:** Thank you, Mr. Chairman. Let me begin by saying congratulations on your new role as chairman of the Armed Services subcommittee on Air and Land Power. I look forward to working with you.

I had a productive working relationship with your predecessor, Senator Duckworth. And I know that we will have one as well, despite your suspect service in our Navy.

I want to thank our witnesses for being here as well. The subcommittee meets to discuss the Army's modernization efforts with a focus on the Fiscal Year 2024 budget submission from President Biden.

**China** is this nation's chief threat, even as we face continued threats from adversaries like Russia, Iran, North Korea, and others. Ensuring that we can prevail in any conflict with **China** will require a joint effort, and the U.S. Army will play a key role in any such conflict.

Beginning in 2014, **China** undertook a force reorganization and modernization plan that has resulted in key advantages, including strategically located forces, mass and magazine depth. If called upon to compete with this improved **Chinese** force, the U.S. Army will need to be modernized and ready to provide key capabilities such as command and control, logistics, and long-range precision fires.

But I am still concerned that the plan for the Army of 2030, and now General Rainey's plan for the Army of 2040 may be insufficient to produce the Army we need now and in the near term to counter **China**. For instance, Russia's unprovoked war of aggression against Ukraine has exposed severe weaknesses in the Army's industrial base, as in the other services.

I want to commend Assistant Secretary Bush for his yeoman's work in executing drawdown authorities and contracting new equipment to support Ukraine. But the Army's World War II era plants and depots cannot fully support the Army's munitions and equipment needs, and the industrial base continues to be undermanned and under-resourced.

Mr. Bush notes in the Army ammunition plant modernization plan that "several projects could be moved to the left if additional resourcing becomes available."

The Army's unfunded priority list and also includes funding for planning and design, as well as one project, the Radford Army Ammo Plant.

I look forward to hearing about these and other organic industrial base projects ready for funding in Fiscal Year 2024. For the past several years, the Army has focused on its – focused its modernization efforts on six critical areas, long range precision fires, next generation combat vehicles, future vertical lift network, air and missile defense, and soldier lethality.

I am most encouraged by the progress made in long range precision fires, specifically the Fiscal Year 2024 budget support of the precision strike missile, mid-range capability, and long-range hypersonic weapon. All three will play direct roles in any future conflict in the **Western Pacific**. But as Mr. Bush noted in a recent interview, important trades had to be made in crafting this year's budget.

I believe the Biden Administration did the Army a disservice by forcing it to make these trades. When adjusted for inflation, President Biden's budget proposes to cut the Army's funding by 2 percent compared to last year's enacted levels. As a result, the Army submitted almost \$2 billion worth of unfunded priorities, including air defense, tanks, helicopters, military construction, and training.

All of these priorities will help modernize the Army, and this subcommittee will look to include many of them in this year's National Defense Authorization Act. Again, I thank the witnesses and look forward to their testimony.

**SENATOR KELLY:** Thank you, Senator Cotton. I will – testifying today are the Honorable Doug Bush, Assistant Secretary of the Army for Acquisition, Logistics and Technology and Army Acquisitions Executive, General Rainey, the Commanding General of the United States Army Futures Command, and Major General Michelle Schmidt, Director of Force Development, or G-8.

I know the witnesses together submitted a single joint statement, but I want to start with Secretary Bush for an individual statement and then we will go in that order.

**MR. BUSH:** Sir, thank you. Chairman Kelly, Ranking Member Cotton, and distinguished members of the Senate Armed Services committee on Airland, good afternoon. Thank you for the invitation to appear before you to discuss the

Army modernization program and the resources requested in the President's budget for Fiscal Year 2024.

I am pleased to be joined by my teammates, General James Rainey, Army Futures Command, and Major General Michelle Schmidt, the Army Deputy Chief of Staff, G-8. We appreciate your making our written statement a part of the record for today's hearing.

With your support, the Army's Fiscal Year 2024 budget gives us the opportunity to maintain critical momentum across the board. The Army's budget request puts us on a sustainable path to equip today's soldiers with modern equipment while we invest in the technologies and systems necessary to build the Army of 2030.

It represents our sustained commitment to our key modernization portfolios that both the distinguished chairman and ranking member outlined in their statements.

It also continues modernization and procurement of our enduring platforms and equipment that will remain in the force for years to come.

However, no budget proposal can be built without balancing risks, and this one is no different. I believe that this budget request reflects a thoughtful and balanced approach between developing future capabilities and modernizing our enduring systems. But at the end of the day, members of Congress will decide if we struck the appropriate balance, and I welcome that dialog.

In that spirit, I would like to address a few specific issues raised in the invitation for this hearing. First, the hearing invitation asked us to address how the Army's budget request supports requirements in the **Indo-Pacific** theater, including long range fires, area missile defense, and sensing capabilities.

I can say with confidence that this year's budget request fully recognizes and funds the Army's role in the **Pacific** in these areas. As you look at the future years' defense program overall, you will see significant new investments and procurement dollars for the network, long range fires, air missile defense, and deep sensing, all vital to the Army's mission in the **Indo-Pacific** region.

And critically, to shift from doing just R&D to actual procurement is a major step for the Army that gets us another step closer to fielding real capabilities to

real soldiers, not just doing R&D. Second, the hearing invitation asked that we provide an update on the Army's efforts to expand critical munitions production, including opportunities to further expand production timelines – or reduce production timelines.

As part of the Army's role in the overall U.S.

Government response to Ukraine, we are using the generous funding from Congress and every authority at our disposal, including those new ones we received in the Fiscal Year 2023 NDAA, while working closely with our industry partners to dramatically increase production rates across the board.

We have here a generational opportunity working with Congress to improve the quality and modernization of our organic industrial base, as well as making capital investments with our private sector industry partners to put the United States Army in a better place in the long term.

Through your support, production rates in key areas such as munitions replenishment is on – they are on the rise and we are able to address obsolescence issues with the machinery in our precision munitions manufacturing as well, critical to deterring **China**.

Third, the hearing invitation requests an update on the Army's efforts to adapt experimentation and testing to support concept development and accelerate our modernization efforts.

As highlighted in our written statement, the Army is modernizing our business practices by embracing industry best practices, such as the use of soldier-centered design and rigorous experimentation.

General Rainey will elaborate further on the great work AFC is doing in this regard, specifically in the areas of Project Convergence and the Experimental Demonstration Gateway Event, otherwise known as EDGE, and other efforts.

Lastly, the hearing invitation asked how the army is managing risk in modernizing enduring capabilities while concurrently prioritizing future programs. As members are aware, in order to protect the Army's highest priority modernization efforts, the Army did accept some risk in other areas, and specifically the pace of modernization of our brigade combat teams – armored brigade combat teams, excuse me.



However, in doing so, the Army sought to ensure that we didn't go so low on any system that we put the industrial base at risk to a degree that forecloses the ability of the army to ramp back up if the Army's priorities change. In short, we sought to ensure we did not close off options for Army leaders or Congress to adjust our plans in the future, if they judge that is the right thing to do.

That is a careful balance to strike. I acknowledge we don't always get it exactly right. There are often differences of opinion with industry on the right balance between a production line being viable and fully productive, but I look forward to working with you and other members to – on this issue of where you think the Army got it right and where you think we got it wrong.

A final issue I would mention is the Army is fully utilizing the new acquisition authorities provided by Congress, such as the urgent need pathway, middle tier acquisition pathway, and software acquisition pathway to make the Army's acquisition system work much more quickly than in the past.

In closing, I want to say thank you for both the funding and authorities we need to support our modernization efforts. Thank you for your time today. I look forward to your questions.

**SENATOR KELLY:** Thank you, Secretary Bush. General Rainey.

**GENERAL RAINEY:** Chairman Kelly, Ranking Member Cotton, distinguished members of the Senate Armed Services subcommittee on Airland, good afternoon and thank you for the opportunity to testify about how the Army's Fiscal Year 2024 budget request supports the Army's comprehensive approach to modernization, as we both deliver the Army of 2030 and design the Army of 2040.

Army Futures Command is accountable for transformation or transforming the Army, and modernization is obviously an essential part of that important mission. I am honored to be here with great teammates, the honorable Mr. Bush and Major General Michelle Schmidt. I agree with Mr. Bush that Army modernization is on track.

I think there are four primary reasons for that, that I would offer. The first is very strong teamwork. AFC works very closely with ASA (ALT). I respect Mr. Bush. We have a very positive and professional working relationship, and I

think that transcends both of our organizations and is critical to our success.

Putting new equipment and weapons into soldiers' hands to increase lethality is what both of us work hard on every day. Teamwork also includes integrating efforts across the whole army, so Training and Doctrine Command, Army Materiel Command, FORCECOM, our service component commanders.

So, working closely with General Flynn and General Williams, who are out on the edge in Europe and **INDOPACOM** are critical partners in them because we don't fight as an Army, we fight as a Joint Force.

Our teamwork with the rest of the Joint Force has been very positive and is contributing to our success. The second thing is consistency. We have gone on five years now where the Army has stuck with the modernization priorities as previously discussed, and that consistency is translating into success.

The third one is organizational changes. Five years ago, to get after those six priorities, the Army came up with the idea of cross-functional teams that have been one of the absolute success stories of the adjustments, not just of AFC, of the way the Army has adjusted, and sustaining those where we are capitalizing on that success by adding, as we announced recently, a new contested logistics, CFT, to get after what is absolutely one of the things we have to address as we modernize the Army. Fourth is our commitment to continuous learning.

As asked in the invitation, Project Convergence is the Army's campaign of persistent experimentation. So not a one-time event, but a campaign of persistent experimentation. Project Convergence includes linked learning events throughout the year that inform each other.

For example, Balikatan, an annual bilateral exercise is underway now in the Philippines. And we have AFC teammates and analysts participating with General Flynn in that critical experiment. An Experimental Demonstration Gateway Event, also known as EDGE, is scheduled to take place next month, 1 through 19 May in Yuma Proving Grounds, and I would be glad to talk more about that.

All of these things work together to deliver the speed, range, and convergence our Army needs as part of the Joint Force to ensure overmatch against our adversaries.

Material modernization is absolutely essential part of transforming our Army to ensure war winning future readiness.

Transforming turns material modernization into true warfighting capability and lethality to make sure that we are the dominant land force in the world now, in 2030, in 2040, and every point in between. And transformation means thinking in terms of formations, not just platforms.

We buy things, but we fight formations. It is absolutely essential that we modernize our equipment in a holistic way, but also address organizational changes, continue to develop our people and develop our leaders, create the training capacity for that equipment, make sure we have facilities that enable us to utilize that equipment.

And transforming means thinking further out into the future also, out to 2040 and beyond. So, we are reaching out to the best experts we can find to think with us about the future of warfare as we define the future operational environment, develop future concepts, and experiment aggressively.

We need to approach 2040 with a sense of urgency now, over the next 18 to 24 months. Transforming the Army to ensure we are winning future readiness and doing that persistently and urgently is the best guarantee that our successful material modernization efforts will produce lethal formations that can dominate the land domain.

Thank you for your support to the soldiers and civilians of our organizations in the Army. I look forward to your questions.

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

**GENERAL SCHMIDT:** Good afternoon. Thank you, Chairman Kelly, Ranking Member Cotton, and the distinguished members of the Senate Armed Services subcommittee on Airland for the opportunity to appear and testify regarding the Army's Fiscal Year 2024 modernization efforts.

A special thank you to our committee members for your enduring support of our soldiers, civilians, and our families as they continue to play such a vital role in defense of our nation.

I am honored to be here today with the Honorable Bush and General Rainey,

who are both incredible professionals and leaders. Our modernization budget request for Fiscal Year 2024 reflects our multiyear effort to accelerate focused modernization and place transformational capabilities into the hands of our soldiers.

Our single focus is to make our soldiers and units more lethal to fight and win our nation's wars. And these investments will assist with building enduring advantages over our nation's adversaries, whether in the **Indo-Pacific** or European theaters, or wherever threats may arise, and the transformation you are assisting us with is being brought to bear.

We must modernize responsibly, maintaining readiness now, while transforming at a pace informed by available resources. Several years of difficult prioritization, eliminating, reducing, and deferring lower priority and less necessary modernization efforts, as well as divesting legacy capabilities, affords little flexibility in our budget top line, so every decision we make now is a difficult one.

These are hard choices, tough choices about the pace of modernization and the balance we must achieve in integrating new capabilities while maintaining our ability to deter and respond to crisis. As such, we ask for your continued support to maintain a sustainable modernization path for the Army.

In closing, I would like to thank your staffs and all those who professionally facilitate the engagement necessary to advance our shared commitment to the defense of our nation. Thank you, and I look forward to your questions.

**SENATOR KELLY:** Thank you. And I will start by recognizing myself here for five minutes. And let me start with General Rainey.

You mentioned cross-functional teams in your opening statement, and I understand that the maturity of efforts in the original Army's Futures Command cross-functional teams, you know, your focus, as you mentioned, is shifting to the Army of 2040 and you are considering adding, and you mentioned, new cross-functional teams to tackle additional challenges like contested logistics.

So can you please describe in more detail to the committee how you are shifting AFC's focus, and what requirements you may be considering for our cross-

functional team on this specific issue of contested logistics.

**GENERAL RAINEY:** [Technical problems] – thank you very much, Chairman. I appreciate that question. If I may, when I talk about 2030 and 2040, so I don't want to create the impression that I am shifting away from 2030 to 2040. To be clear, Army modernization is going well.

We need to stay laser focused on delivering on the modernization efforts we have going and start thinking about the opportunities to outthink and get ahead of our adversaries as we start to think about what is going to change in this like second and third depths of that time period, but not at the expense of staying focused on delivering on our current efforts.

The contested logistics CFT, working in partnership with Army Materiel Command, who does the strategic and operational level. So, the CFT initial operating capability, our Chief and Secretary improved the stand up, so they have already started with the small team. They will be fully operational, I would say, by about 1 October of this year, and they are going to focus at the tactical level of contested logistics.

To specifically answer your question, predictive logistics, the technology absolutely exists today for us to do a better job of understanding what the logistics requirements, because one of the keyways to reduce domestic – our logistics burden is to be more precise. So, we can't afford to push stuff just to push it.

We need to know what the maintenance status, fuel status, and ammo status of our combat systems are.

Autonomous and robotic distribution, so how can we leverage technology to minimize the amount of humans we are putting at risk to deliver logistics and sustainment. Demand reduction, hybrid electric, for example, that can start by lowering the amount of fuel we require forward. Tactical power generation.

As we become more and more technology focused in and for all the great things that brings you, it also creates an increased demand in terms of battery, which especially at the most important level of the Army, the rifle squads, the soldiers who are walking and carrying everything they have, every pound matters, so I think there is opportunities there –

**SENATOR KELLY:** General, does that mean the ability to generate power forward or carry more dense batteries?

**GENERAL RAINEY:** Chairman, I think that the opportunity of the CFT, the way it has been successful, is to clearly identify a problem, put together the right talent from across the organizations, and let them develop those things.

So, I wouldn't want to rule out any possibilities, but to reduce the amount of energy consumed forward and reduce the weight on the soldier would be two of the things that they would start out pursuing.

**SENATOR KELLY:** Are you looking at any artificial intelligence decision making in the logistics decisions?

**GENERAL RAINEY:** There are opportunities. We are employing AI and machine learning now to manage the massive amounts of data and analyze it. So predictive logistics has an opportunity – well, now it is an opportunity to use AI to analyze the amount of data. The opportunity to get into aided decision making in terms of predictive logistics, I have not seen that yet, but I would not rule that out.

**SENATOR KELLY:** I had dinner with the V Corps Commander last Thursday night in Poland. And, you know, this is an area where we do really well, logistics. And he was – but he was stressing just how critical it is for any large-scale Army operation is we have got to get the logistics right.

And I have got more questions about this for Secretary Bush, when it comes back to me. But for now, let me recognize Senator Cotton.

**SENATOR COTTON:** Thank you. Mr. Bush, I want to return to what I said in my opening statement and commend you for your work to try to accelerate timelines for production of munitions.

I know you and a lot of others have really been rolling up your sleeves and working long hours, but I think you would agree that we are still not producing enough of what we need fast enough. That is both in our Army ammunition plants and the industrial base. I have dug into the tables behind the budget request.

It is a shocking timeline, really, in some of these cases. Basic munitions, not

ones that are complicated or advanced, like artillery shells can take up to two to three years to produce. Can you give us a general sense of why that is? I mean, we built the Pentagon in less time than it takes to make basic artillery shells today. So, what is up with that?

**MR. BUSH:** So, Senator, the actual time, I believe – the timeline is reflected in the formal budget documents are, I guess I would say those are the traditional timelines that assume a lengthy contracting process, followed by, you know, a staggered, sometimes slow on purpose to maintain a level workload at the factory, approach.

So, for conventional munitions, I can tell you that artillery shells, for example, it takes about a month to get the steel once it – now there is always a flow of steel, but about a month to get the steel. That steel is only at Scranton Army Ammunition Plant for about three days. Then it goes to Iowa.

Army Ammunition Plant for load, assemble, pack, which also only takes about a week. So, when we are going as fast as we can, like we are right now, those timelines can be faster. However, sir, right now, as you mentioned, the issue is capacity, not timeline. On precision munitions, your point is very well taken and still very much the case.

So advanced munitions, patriots, sometimes even GMLRS, things with seekers or advanced electronics, we are still, sir, in those, at times, one- or two-year timelines, but trying to go faster right now.

**SENATOR COTTON:** So, thank you for that, and I probably want to continue that distinction. Another distinction I want to drill down on is what you said about contracting processes or timelines.

I view those as bureaucratic constraints. Those are gordian knots. I think in my opinion, gordian knots exist to be cut, in many cases a sword, or at least this Congress can be the sword. Then there is actual real-world constraints on the availability of certain inputs, whether it is steel, energetics, ships, what have you.

Let's focus on that area first. What are the single worst bottlenecks we face in the real-world constraints about these munitions? Because again, we are not talking about an aircraft carrier or stealth fighter.



We are talking about in what are – most cases are man portable munitions. But what are the concrete real-world bottlenecks that the Army is facing right now?

**MR. BUSH:** Yes, sir. So, I think, you know, if we are talking about precision munitions, often it is the sensitive electronic components. So, computer chips and everything behind that leads to some of those timelines.

So, the – if you trace back to the original sources, that is where some of that comes from. Also, of course, our systems, you have sophisticated systems to make them safer than what the Russians might produce or exportable.

That also adds time.

But most often it is the electronic components that take the most time, probably followed by solid rocket motors for a lot of our munitions that are rockets or missiles. The other elements are the explosives and such, sir, really are the shorter holes in the tent.

**SENATOR COTTON:** Okay. And what are the best ways this committee and this Congress can provide the Army with ways to reduce those timelines, to open up those bottlenecks?

**MR. BUSH:** Yes, sir. So, first of all, the most economically efficient way to make a production line better is to buy more.

So that way you let the market do its thing and downstream suppliers get better and it helps the whole system, so that is number one. And thank you for your support on all that. Number two, and thank you for the support last year, is multi-year techniques like multiyear procurement and advanced procurement.

I think when we testified last year, we were exploring the ideas of doing those things for munitions. They hadn't been done before. We are doing them now. And making that normal, not an exception, will be vital, sir.

So, we have to get that right. One other leg in a store would be over time working on continued, for example, Defense Production Act investments. So that is the tool the Department has to go way down in the supply chain and directly invest in companies, often small ones, at the third and fourth tier. Congress provided very generous additional DPA, Title 3 funding last year.



I think we are putting it to great work. I think we did it in the Cold War on a much larger scale, and I think that is a model for how with the right authorities and the right money in the right place, we can be better prepared next time, sir.

**SENATOR COTTON:** So, and to be clear on that, you are not talking about up here at the primes or assembling things, but at the subcontractor or maybe even the sub- subcontractor doing fairly kind of basic inputs, let's call them valves or gaskets or what have you, reaching down to that level with DPA authorities.

**MR. BUSH:** Yes, sir. And it is a big difference with DPA. So really our normal input is at the top with the prime and you hope that funding flows down and goodness of the production line gets down to those suppliers.

DPA lets us go directly at some of those subs, which are often actually the most weak points. It is not the bigs, it is the sub-tier contractors.

**SENATOR COTTON:** Yes. And oftentimes those subcontractors, one or two levels down, are providing those inputs for multiple primes or multiple different weapon systems, so there is a bottleneck there as well, right?

**MR. BUSH:** Yes, sir. In many cases, when – and we have got this now. I think we have got a much better handle on mapping our own supply chains – from the Government side. We see those overlaps, and industry might not see it because they are looking at their supply chain, not the national supply chains.

**SENATOR COTTON:** One final question about inputs drawing from a partner. Are you aware of Nammo's challenges and expanding in central Norway?

**MR. BUSH:** Not specifically, sir.

**SENATOR COTTON:** Their CEO said a couple of weeks ago that they would like to expand. Obviously, they are producing a lot of munitions that are in very high demand in Ukraine, but there is no electricity available in central Norway because all of the excess capacity is going to power servers for TikTok videos.

He said that they literally can't make more munition shells because of cat videos. Are you aware of any constraints on either our Army ammunition plants or in the defense industrial base because of electricity or other power inputs?

**MR. BUSH:** I am not, sir. I believe we have other challenges. Some of I have

mentioned and others, but I have definitely not heard that one – not in the United States.

**SENATOR COTTON:** The Nammo CEO said he wouldn't have even put it past TikTok and the Chinese to specifically have sited their cat videos next to Nammo's production facility in central Norway. All right, I have more specific questions I will save for a second round.

**SENATOR KELLY:** Senator Peters.

**SENATOR PETERS:** Thank you, Mr. Chairman. General Rainey, on several occasions this committee has expressed concerns about how the Department of Defense is as tasked and organized to support electronic warfare operations in support of the Joint Force or our newly established multi-domain task forces.

And although both cyber and electronic warfare personnel are attached to the Army's cyber branch, electronic warfare lacks a designated entity for cross-cutting electronic warfare attack, for sensing and protection across all Army formations and echelon.

So, my question for you, sir, is can you can you outline what entity will own the manning, training, equipping, budgeting, and capability deployment for electronic warfare operations in the Army?

**GENERAL RAINEY:** Thank you, Senator. Yes, I can.

Major-General Paul Stanton is the Commander of the Cyber Center of Excellence and is responsible for the force generation of electronic warfare forces.

And General Barrett is the Army Cyber Command, who is the operational commander, who is the senior cyber and electronic warfare officer we have. If I may, because I share your interest. One, it is something we have been working on as part of the Army 2030. The importance of electronic warfare is blindingly obvious if you are an observer of what is going on in Ukraine right now.

So, it is going to become more and more important as we go forward. And the Army modernization efforts address that. So, we are adding new capabilities at every echelon.

So, technology wise, the TLS brigade combat team capability is an

acknowledgment that we need to put the ability to sense and strike into our most forward formations and work in that at a higher echelon.

Also, organizationally, the Army is adding intelligence and electronic warfare battalions back into our divisions, or at least our Army 2030 priority modernization efforts. So those are a couple examples.

Theater information advantage groups, the multi-domain task force have a dedicated electronic warfare capability both in humans and technology built into them. So absolutely critical. Something we need to keep working on.

But I believe it is a matter of delivering and following through on our plans.

**SENATOR PETERS:** All right. Absolutely. Well, thank you. Thank you for that deeper dive. General Schmidt, outside of JRTC and NTC, do you believe the Army would benefit from having training locations with standing approvals from the necessary DOD and non-DOD bodies to conduct electronic warfare operations during large scale combat operation training exercises?

**GENERAL SCHMIDT:** Senator, thank you. I think our Army is the best army in the world because we are committed to training as we fight. And so, we try to replicate an operational environment, a realistic operational environment, an environment wherever we can.

That said, I know there are some challenges in conducting electronic warfare operations in areas outside of the few designated areas, and I welcome your support in overcoming some of those challenges. If I may, you know, General Rainey, sir, would you have more to offer on that one?

**GENERAL RAINEY:** Well, thank you, Michelle. We absolutely need to continue to add the capability to train with multi-domain capabilities that keeps up with both the pace of war and the capabilities that we are adding.

So, it would be tragic if all our material modernization, Senator, resulted in real equipment showing up in formations that we couldn't then train with. So, there are some clear challenges. I would love the opportunity to follow up and brief you in great detail on this, but some examples.

If you think about what the National Training Center did, standing that up and how that translated into the Army of Desert Storm time frame, that that same

opportunity is presenting us. So, we are adding electronic warfare and multi-domain training capabilities to both Paulk and Fort Irwin.

But there is other great opportunities – Fox training range at Fort Huachuca is uniquely postured to get in there and do things with authorities, populations, and we are probably going to need help from the entire Government because the FCC, FCA, there some authorities and challenges that will have to work their way up through the Joint Staff to oversee, obviously, but I think we should be pursuing expanded capabilities very aggressively.

**SENATOR PETERS:** Well, I appreciate that from both of you. And we have some ideas about how to do that in some locations, so if we could follow up with you offline and talk about that, because I agree this is absolutely essential.

And there are a limited number of places where you can do it, and there are some places where we – I think in my home State, where we can expand some of this, we would love to have that conversation with you. Thank you, Mr.

Chairman.

**SENATOR KELLY:** Senator Ernst.

**SENATOR ERNST:** Yes. Thank you, Mr. Chair. And thank you, Mr. Bush and General, General. Thank you for being here. So, we have witnessed the last year of the war in Ukraine, and it has just made it extremely clear that we need a responsive munitions industrial base.

And Mr. Bush, we have talked this a number of times, and I do commend the Army's investment and the Iowa Army Ammunition Plant and other munitions enterprises. So, thank you very much for that. We know that this is a critical down payment for the future needs of our Army.

There is still an acute vulnerability, though, that exists out there in the munitions industrial base, and something that the ranking member addressed just a bit ago, and that is our energetics. And these are the chemicals that are critical for our explosives and propellants, and yet our supply chain for energetics is decades old.

And we have limited suppliers for energetics, and they have created some very vulnerable points in our industrial base. And so, we all know that if we can't

sustain this for our future fight, we are going to lose – we are going to lose.

So, General Rainey, would you agree that advanced energetics like CL-20 can provide improved munition range, lethality, and size? And will this help U.S. forces end long range salvo exchanges against our peer militaries? Or Mr. Bush. Whoever would like to take that –

**GENERAL RAINEY:** Well, Senator, yes, if I could, please. So, the CL-20 issue, I am aware of some recent thoughtful articles and some studies that have highlighted that potential of using that different formulation to get improved range, for example, out of the same size rockets and missiles.

When I asked my experts at Picatinny, they are doing research on that. I think it is really – the questions come down to safety standards and handling. We have very high standards for that, probably the highest in the world.

But I think my first contact with them on that issue, they said that where in the past it was kind of ruled out that there might be additional potential. So, ma'am, that could be an area of some additional R&D focus, could certainly potentially pay dividends from that or something else like that.

**SENATOR ERNST:** Okay. No, that is important, that we don't completely rule it out, but we continue to research that. So, I appreciate that. And then Mr. Bush as well, what is the state of energetics supply chain? Where are those risk? Where are the vulnerabilities, and how can we shore that up?

**MR. BUSH:** Yes, Senator. I think when we usually – when we do our usually – I have seen that our first pass is the supply chains. What you often see is kind of what the most economical version of that supply chain is, so you often go to lowest price suppliers, which are often in countries, some of which we really don't want to be dependent on. I think we are taking a more fulsome look at that.

I think we are seeing that we need not just suppliers in the right countries, so friend-shoring, or if it is not in the United States, which is ideal, but if it is in like perhaps a neighboring country or a strong ally, and we need more than one for everything.

And critically, we have to spend the money in advance to qualify those sources so that when we need to ramp up, and this is advanced planning for a surge,

you already have a qualified vendor, meaning all the safety and other standards have been addressed to make sure that we get what we pay for. We are doing that now.

But one of my lessons learned from this – in munitions expansion is that that kind of work needs to be done in advance and coordinated with allies. We have a lot of the capability that we can also draw on, and so it is not just us doing it, but using the whole Western world to do this together.

**SENATOR ERNST:** Absolutely. And as we look towards the fight in Ukraine, obviously, what we do at the Iowa Army Ammunition Plant is very important. If we look at other fights that may occur around the globe, it may take different types of munitions.

So, as we are in the planning with that, we want to know how we can be very helpful there because we need to be able to sustain peacetime, but then also be able to surge for any future fight we might have.

So, thank you. Mr. Bush, would you agree that enterprise level coordination would reduce risk in the energetics industrial base?

**MR. BUSH:** Senator, I want to say, yes. Enterprise between –

**SENATOR ERNST:** Different industries, yes –

**MR. BUSH:** Well, I think definitely a Department of Defense approach would be more efficient than the services doing it themselves because we wouldn't want to step on each other. For example, we often go back, you know, the Navy is buying missiles, we are buying missiles, we don't want to step on each other's toes.

And then certainly there are avenues for cooperation through, for example, industry consortiums where you are able to get in the room and really share information with the Government and among the suppliers. That could pay benefits, yes, ma'am.

**SENATOR ERNST:** Yes. Appreciate that very much. And thanks for the great work. I really do appreciate it. I know with Ukraine and all the discussions that we have had, both in open and closed sessions, has been extremely helpful to identifying where some of our vulnerabilities are and where they exist. So, thanks. Really appreciate your input. Appreciate it. Thank you.

**SENATOR KELLY:** Thank you, Senator Ernst. I will now take another five minutes here. So back to the contested logistics, Secretary Bush.

The Secretary of the Army describes the Army's role in the **Pacific**, in part to sustain the Joint Force over vast distances by providing secure communications, establishing an air of theater distribution network or networks, maintaining munitions stockpiles in theater, as well as forward arming and refueling points in the **Western Pacific**.

And this all gets to the importance of contested logistics. I saw not the contested part, but I saw the great job in Chechlo, Poland that the Army is doing in getting the equipment needed for the fight in Ukraine to the border essentially.

Uncontested and contested, but contested is much more challenging – orders of magnitude more challenging situation. So how does the Fiscal Year 2024 budget invest in this Army contested logistic capabilities? Secretary Bush.

**MR. BUSH:** Yes, Senator. So, I think we did start in '24 for moving the dial on logistics investments. So, a couple of areas I would mention, there is more funding than I think if you compared to '23 for maintaining our watercraft fleet, at least keeping it viable, but also starting in '24 production of one of our first new vessels, the maneuver support vessel light in many, many years that will replace some very old platforms. So that is one.

We also put more funding back into things like just trucks and wheeled vehicles. So, the Army has that Title V role, as you mentioned. That logistics force is vast and requires up to date equipment, so we put more funding back there. And also ammunition stocks, conventional ammunition stockpiles, was a third area of investment.

So, I think how that though works in a specific context is where you get into the transport legs, the communications networks, General Rainey mentioned having predictive logistics and more accurate logistics, and also just needing less, so demand reduction, be it ammunition or fuel.

The more efficient platforms we have, that is part of solving a contested logistics problem.

**SENATOR KELLY:** Mr. Secretary, even though it is obviously a different Army, different operations, different tactics, I mean, the needing less is not a scenario



that has played out, you know, well in Ukraine.

So, are there any lessons that were taken from operations in Europe right now? How does that affect our thought here on, you know, getting to the point where we could potentially need less ammo?

Because right now we are seeing in the first major land conflict in Europe that there – it is exactly the opposite.

**MR. BUSH:** Senator, if I could start and ask General Rainey to provide his thoughts, if that is okay. First off, I think, you know, the U.S. Army, when we fight, we tend to fight with a lot of precision.

We also have our Joint Force providing a lot of fires from the air, again, with precision. Ukraine doesn't have that. So, for the large part, they are fighting differently than we would. Does not mean it is not a concern.

And sir, by needing less, I think I was speaking simply at the individual platform level, which would make us more efficient with the same logistics flow. You can sustain more forces if they were more efficient.

I didn't mean to suggest that – overall wars tend to always, as you note, require vastly more resources than we think. And beyond that, if I could have General Rainey talk a little bit more about that.

**GENERAL RAINEY:** Thank you, Mr. Bush. And thank you, Senator. What we are observing is obviously horrific, what is going on in Ukraine right now. But from a military standpoint, we are observing attrition warfare.

Two armies frontally assaulting and using attrition as opposed to maneuver warfare, which is the strength of the United States Joint Force. You know, our really asymmetric superpower is our people.

A close second to that is the fact that we practice maneuver warfare, joint warfare that is underpinned by really disciplined and tough training, which is why things like being able to train on these capabilities, like General Schmidt said, is just as important as having the capabilities.

In terms of contested logistics, the two biggest opportunities for our Army as we modernize is to increase the lethality and survivability of our light formations.



So, we have very deployable formations. They just have a problem with things like protection from counter UAS and the lethality.

So, we have tanks to kill tanks, but the technology absolutely exists, as we have seen, to kill tanks with javelin missiles, for example. So, increase the lethality and survivability of our light formations and do things to drive down the weight and the logistics tail of our heavy formations.

So, pursuing those, and those are – that can give you several examples of how our modernization efforts. Do that, if you are interested. Silent drive and silent watch, for example, is the hybrid technology that lets our tanks not become dependent on electricity, but it makes a better tank because it can be silent, and both when it is standing still and limited approach.

And those kind of requirements as we modernize our vehicles is an opportunity to reduce our long tail and improve the lethality of our formations.

**SENATOR KELLY:** Well, thank you. Senator Cotton.

**SENATOR COTTON:** Mr. Bush, I want to return to one more question about our opening conversation of the munitions issue. At a high level, you stressed demand and how high demand can help keep lines going, you know, keep people employed in their high skilled, specialized functions. I assume that means demand not just from our military, but also allied and partner military as well, right?

**MR. BUSH:** Yes, sir. Ideally, we don't have to provide all that demand. So, it is very encouraging in that light that many countries in Europe in particular are now committing to spending more and buying some of our equipment. That is enormously helpful to keeping healthy production lines.

**SENATOR COTTON:** So, it is good – it is not just good from a military standpoint that we have friends in Europe and the Middle East and the **Western Pacific** that are wanting to buy more ammunition, but it is also good for our workers and our companies here in the United States.

**MR. BUSH:** Yes, sir. Absolutely.

**SENATOR COTTON:** Thank you. Now, I want to get a little more specific. The budget request includes investments to support prototyping for the long-range

hypersonic missile, flight test for the midrange capability missile, and initial fielding of the precision strike missile or PrSM.

As PrSM is one of the key long range fire capabilities necessary and will be vital in a **Pacific** conflict, I just want to dig a little bit deeper on this. The Army is requesting \$273 million to work on future increments of PrSM, and \$384 million for 110, Increment 1, missiles, but I suspect that is likely inadequate for the need.

What are the plans to expand production capacity of the PrSM Increment 1 beyond 110 missiles per year?

**MR. BUSH:** So, Senator, I think that initial number reflects mostly the fact that it is a new missile. We are just ramping into production and transitioning away from ATACMS production to PrSM. I think to the degree we can, I know there was great support inside the Department for this capability.

So, I think there is an opportunity there for expanded production, assuming current initial testing goes well. On the R&D, for Increment 2 and Increment 4, improve future versions, production for those are still a few years out, but if we set conditions right with a healthy production line for Increment 1, that will put us in a better place.

**SENATOR COTTON:** Can you say a little more about your plan for both Increment 2, and especially Increment 4?

**MR. BUSH:** Yes, sir. So, Increment 2, we hope to be able to give us an anti-ship capability that would provide anti-ship capability out of a HIMARS launcher at significant range. Increment 4, we hope, could more than double the range of Increment 1. That will require a new propulsion system, but the science, technology is underway on that.

Again, all launch out of HIMARS, which has proven highly successful in Ukraine. Very difficult to locate, easy to move around. This would be a dramatic increase in the Army's ability to, you know, create problems for a potential fight with **China**, for example, because we could station those everywhere.

**SENATOR COTTON:** Okay. What is the prospect for a multi-year procurement for PrSM, as you have done for PAC-3 and GMLRS?

**MR. BUSH:** So, Senator, as soon as we have that production line up and running, and the cost is well understood on Increment 1, I think it could be a very good candidate for a multi-year approach.

**SENATOR COTTON:** Okay. I also understand from your testimony and statement that the operational evaluation of the extended range cannon has revealed some engineering problems. Would you please say a little bit more about those challenges and about the Army's progress on the cannon?

**MR. BUSH:** Yes, sir. So, the Extended Range Cannon Program, I think we have been on a very aggressive timeline. We have built, you know, seven or eight prototypes, and we took them immediately into full testing.

That testing has revealed challenges. I would say there are more engineering and mechanical challenges, but still, there they are.

While disappointing, I think it is good that we found them now before we went into a full production for this system, for example. We are still doing testing.

I believe we will know more over the summer about the degree of the challenge and the extent to which we need to adjust our budget request this year and in future years and look at the portfolio overall and see where that capability fits in terms of just overall improvement in Army range for cannon systems.

I would mention there is great R&D work going on, for example, on new munitions that can also provide very long range out of existing cannons. So, a mix of those two approaches might be warranted.

**SENATOR COTTON:** Okay.

**SENATOR KELLY:** Thank you. So, General, I want to move on to a little bit of a different topic here, which is, you know, testing critical capabilities.

And General Rainey, you know, I am concerned that our ability, you know, to test certain capabilities ranging from things like electronic warfare to directed energy, to hypersonics, are constrained by some current limitations that we have to conduct like open air as well as hardware in the loop and simulated test environments and experimentation, but also, you know, real world testing.

I come from a flight test, you know, background for a number of years. We have

some facilities around the country. Some really good ones happen to be in Arizona.

The electronic proving ground at Fort Huachuca, the Yuma Proving Ground.

I think both of these facilities are crucial to the Army's efforts. General Rainey, can you explain how the Army is ensuring that it has sufficient capacity and capability to proceed on its modernization requirements at the pace that our National Defense Strategy demands?

**GENERAL RAINEY:** Yes. Thank you, Senator. And to just acknowledge the point there. The ability to test is absolutely critical. We currently are not – that is not the pacing item. We currently aren't waiting for the ability to test on any modernization efforts. But as we continue to make progress, we have identified that as a potential.

And that is why we are continuing to invest heavily in places like Yuma and Fort Huachuca and Camp Grayling and other places. So, what we can't afford to do, from the modernization and transformation standpoint, would be to continue to pay for test capability and pay for training capability as a separate thing.

So, one of the very positive initiatives Army has, is to bring those test and training capabilities together, so to make sure we don't ask for resources, use it in a test, and then let it go to waste. We need to use it for tests and then be able to train.

And that is why a place like the Fox training complex that gives you the ability to both test effectively and train effectively is one of our priorities.

**SENATOR KELLY:** So, at the same facility. You know, I think for Huachuca especially, when we, you know, look at issues we have that we are facing with electronic warfare, and it offers a very unique geography, let's say, to be able to transmit that relatively high-power level without disrupting, you know, populations.

I don't think we do a lot of training there yet. My understanding is I think we might do more in the Yuma area.

But I agree with you that the more we can, you know, integrate those two facilities into one, it would certainly make sense to me. In the Navy and the Air

Force, we traditionally haven't done that.

So maybe more recently we have, but like the Pax River, you know, Naval Air Station is really about, you know, developmental tests. Edwards Air Force Base, you know, the same for the Air Force. So, it is good to see the Army is doing this. Beyond that, like, how do you leverage, you know, the full capacity of an installation?

I have found, as I have traveled down to Fort Huachuca and down to Yuma proving ground, you know, they often have the range – well, what they tend to be missing is like an investment in the test infrastructure.

It might be theater lights, it might be, you know, other equipment to gather data. And I think we often under invest in those systems. Is that your sense, General?

**GENERAL RAINEY:** On the specifics of our investment in that, I will defer to the Honorable Bush. But to your point about how do you optimize them, another thing is using all the tools you have, so live, virtual, and constructed, and having the ability to link those capabilities.

So, linking someplace like Yuma to the National Training Center to Camp Pendleton, which is something that we do during Project Convergence and need to continue to do that to find efficiencies.

To your point about the joint, you know, we need to not just be able to do that in the Army, but we need to be able to train together, experiment together as a Joint Force, and that is one of the main efforts of the persistent experimentation we have in Project Convergence.

You will see a lot of that, hopefully if you can come visit us, at EDGE, when we do the – it is the biggest annual aviation experiment we do out of Yuma next month.

**SENATOR KELLY:** If we have more time, I would like to talk about EDGE maybe at the end of the hearing, Senator Cotton.

**SENATOR COTTON:** Mr. Bush, again, I want to go back to the defense industrial base question. For the past few years, Congress has shown a willingness to fund and accelerate needed projects for the Army's organic industrial base.

To that end, what projects within the Army ammunition plant modernization plan could be accelerated if Congress provides you with the necessary funding? And could you also explain how these projects would prepare the army for conflict with **China**?

**MR. BUSH:** Yes, sir. So, I think the great work done by my predecessor and General Daly at AMC was to develop a 15-year plan. And at the time, some questions, like why have a 15-year plan? Well, sure enough, all of a sudden there were more resources and we had a plan with shovel ready projects ready to go.

We still have that. So, sir, you mentioned one, I think it is the UPL list that certainly would be a strong candidate for Radford. There are others, and we can provide a detailed list. One to and up to perhaps 10 or 15 projects as a follow up, if I could. There is a limit of absorption at some places because we, of course, have to keep these plants running while we are modernizing them.

So, we can't just shut the whole place down and modernize it. We are bumping up against that in a couple of places, but there is – I think we found that there is always more work that can be done. And there are two types of projects. Some are really directly tied to increasing production capacity or automating systems or modernizing with regard to safety. Those are the ones that usually get the most attention.

Others, though, that are equally as important is those long-term investments in the infrastructure of these places. So, security, cyber investments, more resilient electricity, generation onsite, better roads. Those things matter too, sir.

So, I think we are open to a dialog and a detailed level of what projects could be accelerated where based on what members might have in mind.

**SENATOR COTTON:** Okay. We have been talking a lot about how to make these things. Let's talk about it now, where to put them and how we would use them. General Rainey, could you talk a little bit about how pre-positioned stocks could support the Army's role in the **Western Pacific** to include the possibility to pre-position stocks afloat?

**GENERAL RAINEY:** Senator, thank you very much. So, it gets to both the priority of the **Indo-Pacific**, the long lines of communication and contested

logistics. So absolutely, the pre-position has kind of like the deferred term.

So, whether you are talking about APS traditionally, but absolutely, the ability to position supplies forward in theater and **INDOPACOM**, I fully agree that that is something we need to be doing. I know General Flynn is pursuing that aggressively as the Army Commander out in the **Pacific**.

If you look at one of the observations and lessons from Ukraine, I think is if you look at how fast we were able as a country to react and support Ukraine, it was underpinned by a lot of things, one of which was the amount of capability that we already had, forward position, the partnerships we had, the training capabilities that we had in Europe at 7th ATC, and the relationships we had with partners.

So, replicating that in the priority theater, I fully support and I agree with, sir.

**SENATOR COTTON:** And what about the prospects specifically of floating pre-positioned stock?

**GENERAL RAINEY:** There is a business case and ships at sea with a lot of stuff on them, have some risks associated with it. But I would defer to Mr. Bush on that.

**MR. BUSH:** Sir, we have our APS-3 set, which is our current one afloat set. We did have to add funding for it in '24 just to maintain it due to some increased costs, for example, on ship leases.

But that is a vital capability and the Army is committed to maintaining it. Expansion of APS-4 beyond where it is today, heavily relies on really work of the State Department and others on getting access to these countries so we can build the locations. There is, you know, there is – anywhere in the Philippines, Australia, other Southeast Asian locations would be things that the Army I know has looked at and planned against.

I believe the Department is working through getting to good – so we can start that process. I can tell you, you know, in our current, of course we are working on Fiscal Year 2025 already, how to expand APS-4 is a critical issue the Army is still working through.

**SENATOR COTTON:** If they are not floating, they have to be on land



somewhere, as you just alluded to. Just tell us in plain language, like what is the plan or the concept for preventing **China** from blowing all that stuff up in the early stages of a conflict?

**GENERAL RAINEY:** Yes, Senator. So, the ability to position anything gets to the one thing that is an even bigger problem than contested logistics, and that is the ability to protect anything you forward position. And there is a kinetic aspect, so air and missile defense and integrated – that is never going to be the total solution.

So, utilizing concealment, deception. One of the advantages of land-based capabilities, whether it be sustainment or long-range fires, is they are more agile and able to move them. So good tactics and fighting.

You know, we are not going to be able to put anything in range and assume it is going to stay safe unless we fight to keep it safe. So, it is a balancing act. How much you go forward, you better be able to protect it. And we are pursuing those efforts.

**SENATOR COTTON:** You just touch indirectly, so I will ask you directly about something – I sometimes hear from other Senators who are on the committee or just normal Arkansans who wonder about it, it is like, you know, if we are going to be fighting **China** one day, isn't it going to be all out in the sea and in the air?

You know, the Army is fighting on the ground. So, what is the Army going to be up to out in the **Western Pacific**? Why does the Army need to worry about that?

So, could you just here in public, explain in plain language what the Army has to do with a fight that, if you just look at the map, appears to be all on water and in the air?

**GENERAL RAINEY:** Well, thank you, Senator, and I will try and do that. We fight as a Joint Force. So, there is not such a thing as an air maritime theater or any more than there is such a thing as a land theater.

So, the strength of the Joint Force is everybody brings their capabilities to bear. More specifically, the Army, as our Secretary has said, has several responsibilities to enable the Joint Force. So, command and control, our Title 10 responsibilities for both protection and sustained logistics.



But we are absolutely going to be able and need to control land, whether it is to position Air Force assets to support the Navy's operations, or they have to come and touch land, to secure ammunition sustainment.

So, there is absolutely a role. We are going to always need the ability, number one, to deter them first, because this is a war we don't want to have, and that is underpinned by them believing that they would lose in a ground war with us.

And if we do transition to conflict, we are going to have to be able to take land away from the enemy. And if they defend it, that means taking it the old-fashioned way by killing them and secure it and protect the Joint Force.

So, there is absolutely a role for our Army and every other service in what would be a horrific war.

**SENATOR COTTON:** Thank you.

**SENATOR KELLY:** Follow up on something Senator Cotton said about **China** blowing the stuff up. So, if we forward position things, as we should, and, you know, have the munitions, the fuel, the equipment, you know, forward deployed, at some point in a conflict, we might need to be moving fuel, munitions, equipment across, say, you know, thousands of miles of ocean.

I want to see what your thought is about our ability to do that. I mean, it is not specifically the job of the United States Army, but it is your stuff. And right now, today, we have in our Merchant Marine about 85 oceangoing merchant vessels. This is beyond what Military Sealift Command has.

And **China** has 5,500. Are you concerned about the ability, in a conflict, after it starts, about a logistics, you know, chain that goes across the **Pacific Ocean**, and our ability to sustain that?

**GENERAL RAINEY:** Yes, Senator. I think everybody in the Joint Forces is very concerned about that. I mean, you are talking the longest lines of communication that you can possibly imagine, and then fighting a really good enemy at the end of those.

General Flynn is doing a lot of work, I know, to shorten those lines of communications by improving the pre-positioning of assets like we just previously discussed.

But no, we are going to have to fight for that. And there are challenges.

It will be contested at sea. And I am aware of the limitations of the Merchant Marine, but I am not an expert on it. But it is going to be a challenge, and we are going to have to fight for it, and we are going to have to protect it.

**SENATOR KELLY:** I want to turn back in the last three minutes here before I turn it back over to Senator Cotton, about back over to Europe.

So I was in Poland, went to Kyiv, met with President Zelensky, spent over an hour with him, talking about a lot of the challenges he has faced. Some of the lessons learned. Met with his national security team.

There are a lot of lessons coming from this conflict, lessons that they are learning, lessons I think that we should be learning as well. So, General, from what you have been briefed on so far, what have the operations in Ukraine exposed about, first – let's start, first about the value of heavy ground forces and how they are being deployed in Europe.

**GENERAL RAINEY:** Thank you. The observations from – one, I am very proud of the Army and the Joint Force. We had our dedicated collection and lesson learned teams in place before the Russians even invaded – General Brito, the TRADOC Commander. And we have numerous efforts ongoing.

We take it very seriously. We have at my level, chief of staff at the level weekly conversations to pay attention to make sure we are learning everything we can from this tragedy. There are some things that haven't changed dramatically, if I may start there – the importance of humans.

The war is fundamentally still a contest of will between humans and you are seeing the value of people fighting for something they believe in and inspirational leadership, and the impacts of those, you know.

So, some things don't change a lot about the nature of war, the importance of land. I think armored formations are absolutely relevant now and at any point in the future, but specifically now.

Both, you know, we are providing the Ukrainians are asking for them, the Russians are trying to sustain them – the increasing lethality of the war, especially the AG, you know, artillery precision stuff matters and is really

fascinating. But AG artillery is still the number one killer. And you have to be able to protect your soldiers and that space would be another example.

Urban warfare, right. Everybody knows it is not what – you know, nobody wants to do it. It is the worst kind of attrition and it is the hardest thing, but it is unavoidable, when the people move to the cities, and urban areas sit astride your lines of communication.

We are going to have to fight in urban areas and it is impossible to do that without the ability to penetrate them, and you can't do that unless you have mobile protected firepower to do that. So those would be some observations.

**SENATOR KELLY:** You know, one observation I had had to do with, and I hadn't seen this before, it is the way we are helping the maintenance and repair of systems, artillery systems, and others. And it is – reminded me of telemedicine. And the 10th Mountain Division Commander actually mentioned, and he used the word tele-maintenance, and that is what we are doing.

And I think that is something we need to try to capture is, you know, the ability to repair things in the field in a way we never really had before, where you can put the, you know, the company's tech rep, technical representative for the piece of hardware. It might be BA systems, it might be, you know, Lockheed Martin.

You essentially can virtually put them right there on the front lines when they need to repair something, not something I expected to see. Ukrainians are, you know, they are manufacturing parts. They can't make everything.

They can make parts out of titanium. You know, right now, that is a complicated machining process that they don't have the capability within the country to do. But there is a lot they can do.

And I never, you know, really expected – and it is us, you know, with the assistance the 10th Mountain Division is giving in trying to repair their equipment in a way that I don't think we have done before. I think that is a specific lesson that we need to capture and try to expand on. Senator Duckworth.

**SENATOR DUCKWORTH:** Thank you, Mr. Chairman. And good afternoon to our witnesses. General Rainey, thanks for the discussion we had about Futures Command a few weeks ago. I thought it was very illuminating.

Last month, we learned about another delay with the improved turbine engine program, ITEP, and it won't be expected now until 2024. These delays not only affect the new aircraft, but also the already fielded 60s and 64s.

Assistant Secretary Bush, in an interview with Defense News, you characterized the source of the delay as manufacturing challenges and not design challenges for GE Aerospace.

I know the Army is briefing me next month on the finer details of ITEP, and I look forward to getting to this issue in-depth then. But broadly, can you talk about the supply chain and component issues that are affecting ITEP?

Is that what the manufacturing issue is, supply chain, or what is going on here?

**MR. BUSH:** Senator, frankly, it is quality control further down the supply chain. Not – I mean GE is responsible for all of it, but of course, they have hundreds of subs that they deal with.

A few very important ones have had trouble building some of the new parts. For example, some of them are 3D printed. So, we are using some new techniques here, making them at the quality levels needed to get engines to go to test. The good news is we did just last we laid off the second test engine. So, we are on a path to a better situation, but that is my understanding of the challenge.

GE leadership is fully aware of it. I have had many conversations with myself. They know we are watching closely. They know how vital the program is. They are committed to getting it right. Right now, I am cautiously optimistic that our updated timelines will hold, but this will require constant attention, ma'am.

**SENATOR DUCKWORTH:** Yes. I mean, I have been very impressed with the Army and how they have developed this new – the two new aircraft. And, you know, and actually has always moved the timeline to the left, and now we are starting to slip right so, I do – I am concerned about that.

Are these concerns something that would affect other Army modernization programs like combat vehicle, the next generation combat vehicles, the downstream supply chain manufacturing tolerances? Is this something that is going to spread to other areas?

**MR. BUSH:** I don't expect so, ma'am. Not – I mean, of course, in aviation, we

have the highest standards. It is the most difficult things to produce. We have not seen anything like that recently with any of our ground vehicle programs, either of the new ones like mobile protective firepower, or the older ones.

But it is certainly a potential cause for concern.

But I would say right now I don't believe so, but it is definitely worth watching.

**SENATOR DUCKWORTH:** Okay, thank you. General Rainey, in our discussion last month, you described how Army Futures Command was reevaluating cross-functional teams, and how the Command is looking at the Army's new priorities and organizational changes.

As you emphasized, the purpose of modernization is to drive transformation across a Joint Force. And I am interested in hearing more about the integration across the total force, and your 75th Innovation Command in particular.

How does Features Command integrate the experience of its reserve component members? Are there best practices for the Army at large to incorporate into other not – into other active reserve units?

**GENERAL RAINEY:** Thank you, Senator –

**SENATOR DUCKWORTH:** I know – like tee ball, I just put the ball right on top of the tee for you. Just –

**GENERAL RAINEY:** So, the 75th Innovation Command is a great success story of the total Army, right. So, it is not, you know, you get this from COMPO 1 and something less in COMPO 2 or 3. That is absolutely not the case. Some of – when it comes to what I do, I am trying to innovate, trying to find tech expertise without paying a whole bunch of money or taken a lot of time.

So, the fact that the 75th Innovation Command and General Marty Klein, I can call him and say, here is a problem or here is what we think is a solution, we want somebody to troubleshoot.

And his ability to reach out through his entire enterprise and find people that are not just experts but – you know, the best people in the military, a lot of them are the best people in the country in academia and industry, and being able to leverage that capability as we modernize the Army is kind of like a superpower.

So absolutely, we should continue to expand it. As far as integrating across the Joint Force, I would offer Project Convergence as an example of that. It is our persistent experimentation approach nested with exercises and then periodically having capstone advancement.

But we believe that Project Convergence is an Army hosted joint experiment, and as for every year, as we do those capstone events, they become more and more joint, we add more and more partners, and that is another way that we are continuing to apply a sense of urgency into our integration efforts.

**SENATOR DUCKWORTH:** Thank you. Just – I am over time, but if you could reply for the record, I would like to know what the Army’s plans are to a program and integrate Great Eagle into the National Guard and reserve – or active and reserve components.

I want to make sure that the Army has a holistic view of concurrent and proportional fielding of weapon systems to achieve the total true force interoperability so that the National Guard is also getting the Great Eagle in a way that they can actually also train up and operate them.

**GENERAL RAINEY:** Yes, Senator.

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

**SENATOR KELLY:** You could take it. General, I am fine, if Senator Cotton is. If you want to take that and if you could talk about that briefly.

**GENERAL RAINEY:** I can talk about modernization of the total Army and transformation of the total Army. So, General McConville has been clear and adamant, as I know, because he was formerly his G-3.

And there is no modernization effort we have that is COMPO 1 only. They are all spread and prioritized across, and I will follow up with you on the specifics of the Great Eagle.

**SENATOR DUCKWORTH:** Yes, probably General Schmidt would be better positioned to answer that. I am sorry.

Should have asked her that.

**GENERAL SCHMIDT:** No, that is okay, ma’am. But I would also just like to

follow up with you on that one afterwards.

**SENATOR DUCKWORTH:** Thank you.

**MR. BUSH:** Ma'am, I would add, if I could, Congress, we got the message. Congress was very clear about that capability in the Guard. We are in make it work, make it happen mode, with the Guard really in the lead in determining how they are going to build units where – what composition with the MQ1s that Congress directed.

**SENATOR DUCKWORTH:** Thank you.

**SENATOR KELLY:** Just make sure you hang the right stuff on it. Senator Cotton.

**SENATOR COTTON:** Mr. Bush, I want to talk about the integrated visual augmentation system, or IVAS, began a new stage of development recently in December 2022. After several critical soldier touch points, the Army approved the purchase of 5,000 IVAS 1.1 systems.

At the same time, Microsoft agreed to develop the new IVAS 1.2 system, which will, if successful, change the design of the system and improve its performance.

Fiscal Year 2022 appropriations included a \$394 million reduction in IVAS procurement, citing the original spending request as ahead of need. In March 2021, the Army awarded Microsoft a deal worth up to \$22 billion over the next 10 years to move the IVAS program from rapid prototyping to production.

Mr. Bush, why has the Army included some IVAS funding in the base budget while shifting some funds to two different projects on the Army's unfunded priority list?

**MR. BUSH:** Senator, I think what you are seeing there is the Army trying to re-phase that program. We unfortunately, you know, we did a very difficult test with it and found all the problems.

While that is good that we found the problems, still disappointing and not the outcome we were looking for. One thing I would say is our ability to restructure that program on the fly here, very quickly to try to get to 1.2, is because of the new authorities we are using. That would have been almost impossible under a



traditional system.

To your specific question, we laid in funding we thought was sufficient to just get over the line to get 1.2 developed in '24. The UFR items would let us go a little faster into actual production, if it proves successful this year, sir. So, I think we are taking a deliberate approach. Whereas the first time around was honestly very, very aggressive on timeline and production ramp up, this time we are being more cautious.

We want to make sure, you know, Microsoft, they have to deliver. This 1.2 system needs to be exactly what the Army needs or we are not going to produce it. So, I think, sir, that is one reason we scaled the funding back that way.

**SENATOR COTTON:** Okay. General Rainey, Mr. Bush hinted at my next question. How confident are you that the testing for 1.2 will be successful?

**GENERAL RAINEY:** I am very confident. It is not just the technical testing aspect, but the – one of the successes of our modernization effort is using soldier touch points.

So, because we have 5,000 of them, we are going to continue – not putting them into operational units where there would be a potential impact, but we are going to not just let them sit in a Conex somewhere.

We are moving them around to places like the Maneuver Center of Excellence, for example, where we have some of our experienced soldiers continue to do that. We are working with Microsoft, so we have the users working hand in hand as we develop the next thing. And we are going to get it and we are going to test it with real warfighters and get that soldier feedback.

So, I am confident both, that we will test it effectively because we always do, the rigor that we put in the last one. But I am really kind of – what I am going to wait and hear from is the staff sergeants and the lieutenants and company commanders providing user feedback.

**SENATOR COTTON:** Okay. And if that testing does not go as well as we had hoped, the Army is prepared to take a look at the program?

**MR. BUSH:** Yes, sir. So institutionally for the Army, it is always a very hard decision to, you know, admit we can't succeed somewhere.



But this is a potential area where, look, if the testing doesn't prove out very quickly that it is capable and going to get us what we need, the Army is absolutely prepared to end that arrangement and seek a new competition.

**SENATOR COTTON:** Okay. I want to turn in the time remaining to Abrams tanks, Mr. Bush. The Army's Fiscal Year 2024 unfunded priority list includes \$533 million for Abrams set V3 procurement to achieve a complete armored brigade combat team set. Those additional tanks would decrease the estimated costs per unit from \$17 million, that is 34 tanks at current funding, to \$12.3 million, 87 tanks.

In resourcing this, this requirement would accelerate the fielding of the M1A2 set V3 tanks to one active component BCT by year. So, the Army included \$533 million on its unfunded priority list for the Abrams tank procurement, but that seems to have become something of an annual occurrence, appearing on the unfunded priority list as opposed to the base request.

Can you tell me why this seems to continue year after year of this funding for tanks going on the unfunded list as opposed to the base request?

**MR. BUSH:** So, Senator, of course, the Chief of Staff of the Army, it is his list in terms of why it appears there, but your question is a very fair one. I believe, as I mentioned, we have accepted some risk there in the base budget request.

We don't think it is too low, but that is less funding than as articulated in the UPIL would be perhaps ideal.

There is another mitigating factor, however, and that is increased – recent increases in foreign military sales.

So, a very large order from Poland is going to end up being more than 300 tanks worth of work. A recent order from Romania will give us an excess of 50 or 60 or so additional tanks of work.

And then there is, of course, potential for additional tanks for Ukraine long term. So, we are always trying to balance between foreign military sales and our production to keep a healthy production line.

But I think the Chief, as articulated in the UPL, believes that was an important one. It is a very large amount of money, so I think I would defer to him on his

specific thoughts for why that was so high on his list.

**SENATOR COTTON:** Thank you.

**SENATOR KELLY:** Similar to tanks, I want to move to helicopters. Not something I have a ton of experience with, though I did get to fly the Apache last year out of Boeing in Phoenix, which was quite the experience.

The Army has placed a big focus and resources on its future vertical lift priorities, the future long range assault aircraft and the future attack reconnaissance aircraft. Neither of these systems are projected to field until 2030 or beyond, and they are going to augment, not replace, the current, you know, Black Hawk and Apache fleet. And the Chinook remains the Army's only heavy lift capability.

Yet in large part, the Army continues to defer investments in the stuff we have in order to fund these longer term two systems that are just going to augment what we have today. So, does the Army still consider a manned reconnaissance aircraft the right solution here?

And can you just, in general, just give me an update on the future long range assault aircraft and the reconnaissance aircraft?

**GENERAL RAINEY:** Thank you, Senator. And the short answer is yes, there is absolutely going to be a requirement for the United States Army, as part of the Joint Force, to conduct vertical envelopment in the future, now or at any point. So, the ability to avoid that attrition warfare I was talking earlier by maneuvering, by ground, and by air to dislocate our enemies and envelop our enemies.

So, we absolutely need to maintain what is the strength of our current Army, and that is Army aviation.

So, looking forward as our – if you look at your specific question, there is always going to be a requirement for human reconnaissance. So, reconnaissance and security is an essential of warfare. You have to not get surprised and you want to make contact on your own terms.

How much of that can go unmanned versus manned is very much at issue, and we should be paying attention to learning from that. But the ability in an

all-weather chaos, fighting the **Chinese** who are very good at not only disrupting our technical capabilities, but also injecting mis and disinformation, have the ability to talk to a human that you know and train who is looking at something and provide that back to the commander will always be a requirement.

And where that falls out on our other requirements will be a decision that we will make. But pursuing that capability, I agree, sir, I believe is the right thing.

**SENATOR KELLY:** You know, Blackhawks moving people, the Chinook, people and equipment, and the Apache putting ordinance on target. I mean those are missions that we can't, you know, take our eye off of.

**GENERAL RAINEY:** Absolutely.

**SENATOR KELLY:** And they are going to be around with these platforms, you know, for a number of years. So, you know, my concern is that we do have to – you know, we have to focus on the future and beyond 2030.

At the same time, we have got to make sure that we continue to be able to support the warfighter with what he needs today, too, and I think that is those three platforms. Senator Cotton, you have any further questions?

Well, with that, General Rainey, Secretary Bush, General Schmidt, thank you very much for being here today, and the hearing is concluded.

[Whereupon, at 4:04 p.m., the hearing was adjourned.]