

Mr. Riki Ellison:

Good afternoon from Woodside, California, one of the centers of the world of innovation. I'm Riki Ellison. I'm the founder and chairman of the Missile Defense Advocacy Alliance. We were formed 20 years ago as we withdrew from the ABM Treaty and after 9/11 to move forward with deploying missile defenses for our nation and for the world to make it a safer place. I've been involved with Missile Defense since 1980 and the Strategic Defense Initiative in '83.

It's so remarkable today that last Friday our president, Joe Biden, spoke, advocated, and led our nation for missile defense. His speech requiring \$105 billion to give to our allies and partners—Ukraine, Israel, and to Taiwan—is really the second time a president has made an appeal to the American public for Missile Defense as a critical part of deterrent of a World War, of current conflicts in Israel and Ukraine, and potential conflicts in the Pacific.

That was a remarkable speech in the request for missile defense for our world. As we look at the world, we look at these different regions. It is no longer a regional issue. It is a global issue. As you saw, I think Wall Street Journal wrote about it, but we are positioning, taking our time to get the missile defense assets in place in case there is a conflict and to deter that conflict.

And we don't have much [time]. We don't have the capacity of the capability to defend and that's where this discussion is going to go: the urgency of being able to put capacity as soon as possible into these places and to create the already existing capacity with our allies that have big capacities of missile defense like Japan, like Saudi Arabia, like UAE, like Poland. How do we bring all this to bear and take risk?

I think this is a risk taking time where we've got to look at mitigating practice, mitigating over engagement, and then not come out with 100% on each one of those. We have to get stuff into the field. Today's discussion is pretty cool because we got three flag officers of our US Army that own this mission.

We're going to start off with Frank who's in charge of the production, sustainment, development of missile defense capability. We're going to take it to Eric who's the commander of White Sands Missile Range, the biggest testing range in our country. We're going to end it with Brian as a war fighter representative using those capabilities and commanding those capabilities and putting those requirements of capabilities to get that out. We have Mark here to assist me in invoking the discussion and dialogue that we're going to have today, but this is a critical discussion.

This discussion will end up with the results making our world safer, saving thousands, maybe millions of lives of getting this stuff in places as soon as possible.

I'd like to start the conversation with Brigadier General Frank Lozano. He's the program executive officer for the Army's missiles and space, space and missiles. He has a tremendous portfolio with the foreign military sales. I think somewhere up at \$72 billion he has. His budget now equals MDA's budget and is focused on defense and he is under demand by a few of our COCOMs right now. Frank, thank you for taking the time to be with us and the floor is yours.

BG Frank Lozano:

Thank you, Riki. I really appreciate the invite and the opportunity. I do also want to thank Mark and General Gibson and General Little. My schedule is really crazy. Tomorrow it's jam packed and I'm at Texas A&M at the Bush Combat Development Center getting smart on hypersonic research activities that they're undertaking. I think I was the impetus behind the shifting around the schedule. My apologies, but definitely thank you gentlemen for being flexible enough to allow me to participate in this very important discussion.

A lot of things I want to get to, I'll try to be quick, but not so quick that I don't allow for some Q&A or garner some discussion amongst the group. I think first and foremost, I want to talk about priorities and the air and missile defense enterprise in our army is a priority from a lot of multiple different perspectives. I think what we realized first and foremost a number of years ago was an enemy never attacks you at your strength. An enemy comes at you at your weakness.

For a good long period of time, when we focused on a counterinsurgency fight in order to be successful in that fight on behalf of our army and our nation we accepted risk in other areas. The air missile defense portfolio was one of those areas we accepted some risk in. We're realizing that now and, as we shift to more of a LSCO and near peer threat comparative advantage position, we realize that there's some significant investments that need to occur.

Right now, my portfolio from an FDG perspective up in G8 is the largest of all the portfolios from an air and missile perspective. These capabilities are powerful. These capabilities are exquisite and they're also very expensive. It's not only a lot of pressure on me to deliver for our army, but to deliver in a meaningful and relevant way and in a way that I make sure and adhere to some good fiduciary principles and responsibilities. I owe it to our taxpayers to make sure that we get the most benefit from every dollar that we invest in these strategic capabilities.

From a priority perspective, I'm laser focused on the CFT priorities, MSHORAD, the Integrated Air and Missile Defense Battle Command System, LTAMDS, which is the Patriot radar replacement, and the Indirect Fire Protection Capability, IFPC. Those are my four primary lines of effort associated with the CFT. I'll also wrap in that as of within the last year the CFT also took responsibility of the counter UAS efforts. I'm the Army OPR for all counter UAS systems.

If you've been watching the news, you know that our systems are getting exercised in the CENTCOM AOR very heavily and very thoroughly over the last couple of weeks. Once again,

we've got systems in the fight in a global perspective with many different partners and we've got systems in the fight protecting our soldiers each and every day at least in the CENTCOM AOR. That is important. That's the near term, but what does the longterm fight look like?

Obviously, we're looking at directed energy, working very closely with the Rapid Capabilities and Critical Technologies office under the command of Lieutenant General Rasch. He's developing a whole suite of DE capabilities. I'm explaining to a lot of people as I talk directed energy. There's a lot of learning going on within the Army and the way that I see it is there's a lot of barriers to entrance into this market sector. From a DE perspective, we're trying to find where that best entry point into the market sector is.

This capability is very powerful, but it can be quite expensive and there's different levels of capabilities against varying threats. What we're trying to assess is where do we get the most bang for our buck and entry of the DE capability into this market sector? One of the things I'm very enamored with is the IFPC high energy laser, a 300 kilowatt laser, that is fairly stationary. It's mobile, but it will not maneuver, right? Anytime you can put a powerful laser on a somewhat stationary platform you're going to enhance its reliability.

You're going to enhance its consistency and performance and all those things are benefits to employing that capability. DE brings you a significant magazine depth. DE also brings you a higher rate of fire than you could potentially achieve with some other kinetic effects. If you think about a fight in the INDOPACOM AOR, there's going to be lines of contested logistics. It's going to be hard to move missiles from island to island to island, but if you have a DE capability hooked up to the right amount of power, you potentially have a somewhat unlimited supply chain of DE effectors, right?

That's something we definitely have to look into the calculus. As we learn more about it in the Army, it's where can I enter that market sector and then show the goodness of the capability, garner the leadership support and investment for that capability while also potentially driving down that price point, and then lowering the barrier of entry into that DE market space by other DE systems, DE MSHORAD, palletized health, AMP health, and a lot of other good capabilities? That's on the horizon too.

The other program that's on the horizon too from a priority perspective is Lower Tier Future Interceptor, LTFI. A lot of discussion is going on with LTFI in the Pentagon right now, especially as we look to close on PBR-25 and potentially make some future investments. What our enemy is starting to understand is they're starting to better understand the battle space and they're starting to better understand the PAC-3 battle space. What they're looking for, it's kind of that probing mission, right?

They're looking for that seam and then they're looking for ways to exploit that seam. LTFI helps us grow that battle space from a lower tier perspective to help cover down on some of those seams. I'm advocating very strongly for investments in LTFI. Whether we do it or MDA does, it doesn't matter to me who does it. It's something that our army and our nation needs because again these capabilities are very complex, very exquisite. They take some time, right?

If we think we're going to need that missile for a 2040 fight, we need to start developing it now because it's going to take some time to develop it, to test it, to qualify it, and then, as Riki mentioned, produce it in sufficient quantities to have it be a relevant arrow on the battlefield. I'll move from that to integration. We did a major reorganization within my PEO in 2019. We've moved away from stove pipe project offices that looked at just closed loop architecture systems to a componentized project office configuration where now all of my PMs are managing different components of the kill chain.

I have a mission command PM. I have a sensor PM. I have an effector PM. What that drove us to is an agnostic method to make sure everything is integrated because it's not about tailoring to a particular threat, but it's about tailoring the system or systems of systems to a combatant commander's needs to defeat their unique threat. It's by creating componentized project offices led by an integrated fires directorate that does the early system engineering to understand how everything needs to work and then by working with General Little's team to perform an integrated fires test campaign plan.

On an annual basis, I take out increased elements of this kill chain to the range and test it. That allows me to create a Chinese menu of capabilities that the EUCOM commander, the CENTCOM commander, the AFRICOM commander, the INDOPACOM commander can do a threat assessment and then look at my portfolio and say, "I need three of those, two of those, one of those, six of those."

I can pull out those components of the kill team, deliver them forward to their COCOM, and have them work together because I've created a PEO level system of systems and have tested every element of the kill chain to make sure that it works in a very coherent and seamless manner. Where this is really going to be realized is in the Guam defense system. We're working very closely with MDA to create that unique architecture for the Guam defense system that integrates a lot of our components.

I always like to say necessity is the mother of all invention. Admiral Aquilino has put a line in the sand for me and said, "This is the architecture I need out on Guam on this date." We're marching to that date to do tests and developmental activities every year to make sure that I can meet that date and that objective that Admiral Aquilino has defined for me. That rolls into urgency, right? The bottom line with urgency from my perspective is that it's a risk proposition.

How much risk am I willing to accept? I'll be honest with you. In today's day and age, when you look at Ukraine, when you look at Taiwan, when you look at Israel, and when you look at China you have to be willing to accept risk, right? I'm going to tell you right now if this is my last job in the Army, I'm good. Lozano doesn't matter. What matters is the delivery of capability to help defend and help our nation and our army fight and win our nation's wars regardless of where that is on the globe.

I have been very aggressive in working with OSD, working with INDOPACOM, working with CENTCOM to accept as much developmental risk as I can, to be as aggressive as I can to make sure that we are pushing the edge of the envelope. Again, General Gibson has been great from a user perspective to help me understand the needs that he needs to fulfill. General Little has been a great teammate out at WSMR to allow me to go as fast as I can from a testing perspective.

Testing is critical. We have to do that objective testing out on the range to collect that data so that I can use that data as leverage over the prime vendor, hang it over their head, and say, "Hey, here's where you're falling short. Here are your critical defects. Let's take a look at a get well plan and how we fix those defects and get back out to the range and test again." It's a very aggressive plan. Everybody accepts a lot of risk, but it's necessary because you got to cross those bridges, right?

I tell my kids every day. Every Saturday when me and my boys go hit leg day and we're deadlifting I tell them all the time. When we put 405 on that deadlift bar I tell them, "Don't be afraid of failing. Be afraid of not trying, right? Go try to lift that weight, right?" It's the same thing here. We've got to test. We've got to be not afraid of failing. We've got to be afraid of not trying and not learning to get better. That's what from my perspective the urgency drives.

Now we are looking across the board at production capacity. I will tell you I am investing almost in every element of the kill chain from Prism to Guided MLRS, to PAC-3 MSC, to Patriot family of missiles, to IFPC, IFPC launchers. We are making investments right now to ramp up the rate of production across the board because we know we're right in the midst of an FMS bow weight. I'm doing about \$72 billion worth of FMS cases.

It's picked up as of late as you might imagine because of all that capability that we put into Ukraine. Now that they've seen the goodness of those systems performing in combat scenarios, there's a lot of international partners asking for that capability as well. We're leveraging those investments to ramp up production. At the same time, because we've donated so much equipment to Ukraine, between 1 May of 2022 and today I've received \$9.1 billion of Trump's replenishment funding to buy back munitions we've donated and put those on the inventory.

I'm spending a lot of time going around to production and manufacturing facilities and talking to employees and reinforcing employees that everything they're doing, everything they're making is critical. I don't care if you're working third shift and it's 3:30 in the morning and you're torquing down a screw of lock tight. You make sure you're torquing down to the right specification in accordance with the work instructions because everything everybody is doing is value added and it's got to work all the time.

From a production capacity perspective, from an aggressiveness perspective, from an accepting risk and a developmental perspective, I am investing in capabilities. I will be putting systems under contract for production in '24 a year before some of those systems go to their milestone seed production decision in '25. That means I'm going to Mr. Bush and saying, "Sir, I request your acquisition authority to buy before the milestone decision." That's a big deal for an Army acquisition executive, but it illustrates his commitment to lean forward in the saddle to buy IFPCs, to buy IBCS, to buy Patriot interceptors, to buy LTAMDS radars for Guam and for other entities and other combatant commands because that's the amount of aggressiveness and commitment we need to make sure that we're fielding a capability by 2030 that will protect us in a way that our enemies look to exploit.

I've already talked about Ukraine. I've got three presidential drawdown activities going on. Ukraine, Taiwan, and Israel. And the one thing I'll say about Ukraine, so people ask me a lot, what's your number one lesson that you're learning from Ukraine? Just to level set everybody. We're shipping stingers, we're shipping Javelins, we're shipping HIMARS, we're shipping guided MLRS. We're now shipping ATACMS. If you read the news, you know. We bought and sent NASAMS, we donated a Patriot battery. We went through McAllister and cleaned out old Hawk systems and sent Hawk systems with international help. We sent Avengers.

And so when I went to Poland back in April and I sat down with the Ukrainian soldiers training on the German-donated Patriot battery and the US donated Patriot battery. And I asked them a very leading question. I said, "Okay, I'm familiar with your defense design because some of my teammates help put your defense design together. And when I look at where you're putting your Patriot batteries and where you're putting your NASAMs and where you're putting your Stinger MANPADS and where you're putting your Avengers and where you're putting your Hawk systems, I can clearly see those critical assets that you want to defend. But how do you know that you're seeing the entire picture? How do you know there's not missile wastage going on by two different systems shooting at the same target? And how are you managing that fight?"

And they said, "Yeah, well, you've kind of hit on the biggest thing we struggle with. It'd be great if you could deliver to us a system that would provide a single integrated air picture that would pull in all of that sensor measurement data, perform a track fusion function, run it through a threat library, identify it, pump it into an engagement calculator, and tell me which interceptor would have the highest probability of kill against a given threat and then show that to the operator so that they can make an engagement decision."

And I said, "Yeah, we're working on that too, and as soon as the President tells me to send you something like that, then we're all over it. But I can't get ahead of him."

But I tell that story to everybody when I get asked that question because it reinforces in my mind that what we are doing as an Army from an air missile defense perspective is exactly the right thing to be doing because we're seeing it play out in real time in Ukraine. And not only are we seeing the successes, but we're seeing the gaps and we've already identified those gaps and we're already working against those gaps. So I don't want to say that we're ahead of the game, but we're on pace to be where we need to be.

And what I've been advocating for within DOD, within members of industry, industry leaders and on the Hill is to maintain the commitment, stay on message, stay aligned with where the Army needs to go because it's exactly where we need to go if we're going to be successful in a near-peer fight.

The last thing I'll hit on is foreign military sales. Foreign military sales is a challenge. It competes. It competes with what we do. The first thing I'll say is from a program protection plan perspective, there's only certain things that we can give to our foreign partner. There's exportable versions of our systems, right? So we have to be very careful in understanding and defining what capability we're going to give to our foreign partner.

And since I have to oftentimes test that capability before I deliver it to them, it creates a scenario where I'm managing a US configuration of a system and an international configuration of a system. We have to be very smart and very careful about how we do that because sometimes those can be somewhat divergent, not wholly divergent, but somewhat divergent.

The other wrinkle in that is sometimes a foreign partner wants to invest in a capability that we would like to have too. We just don't have the money or can afford to invest in it. So then we may say, "Okay, we'll agree to do that for you as long as we're able to get that FMS lift." So then I'm just buying it in production and I'm not sinking the R&D dollars into that effort. We get their agreement, we take that FMS configuration, let's say for Poland whom we just delivered the first battalion of IBCS and Patriot to, we make that investment. We test and qualify it on Poland's nickel and then they get it and then we're buying it for free just in production. So that's a good news story.

But the other thing is contractor priorities. So I've got a lot of contractors who love to spend a lot of time in the international market space selling their wares and just to level set everybody, contractors like to sell unique configurations of items because when they sell somebody a unique configuration of an item, they create a situation that we call vendor lock. And then that

country or the US is always going back to that particular vendor to maintain and sustain that unique configured item. Where we would rather have a government owned configuration of an item and make sure that the international partners remaining aligned with the US so that our efforts from a maintainer and sustainability perspective are more aligned and more efficient and more complimentary.

So a lot of goodness going on in the international market, the international market recognizes us as a leader from a BMD and a technology leader perspective, and we try to maximize that. There's a lot of goodness that comes from it, but it's also a challenge that we have to manage very carefully. I've got a great team that does that for me and I like to think that we're being successful, but there's hurdles that we have to clear every day to make sure that we're moving forward in the right manner that's ultimately beneficial for the Army and our nation. So I'll hold right there, Riki.

Mr. Riki Ellison:

Awesome. Frank, I know we're moving fast here, but just real quick, you got to balance this, right? We fight tonight, whether that's 27 or 30, and then we fight in 30 and beyond with DE. So that is a difficult thing to move, especially with the pressure you're getting. Can you just talk about that and does that increase your risk taking from being able to do 3D parts to being able to do document, being able to put things out there that are not a hundred percent and just throw them out there? Just real quick as we go through.

BG Frank Lozano:

So a couple of different ways to answer that. The first thing I'll say should be evident to everybody and I know to my teammates here, I've got an incredible team, right? I've got a magnificent capable deputy, all of my project managers, all the engineers and the logisticians and the business management folks. So we wouldn't be able to accomplish all that we're accomplishing if PO Missile and Space wasn't just such a magnificent organization. So I'm very blessed to be a part of that organization because they're accomplishing some significant things.

The other thing that I'll say though from a .mil PF perspective is I'll sing the praises of Army Futures Command here. So although we have been very successful from a material perspective, we've also been successful from a cross-functional team perspective because that garnered the weight and authority of Army leadership from a cross-functional team perspective to pull together all of those disparate functional teammates and coalesce them around a singular set of objectives and a mission and then drive that across the goal line.

I wasn't sure that that was really how it was going to play out, but that's how it's ended up, at least from my perspective. I have a tremendous relationship with the AMD CFT and the LRPF

CFT and those relationships are important because again, they coalesce those functional experts in this disparate community of an Army enterprise, and get them all focused on achieving a mission and getting that mission across the goal line. So there's nothing I'm doing in a singular fashion that leads to success. I would say holistically, we in the Army have thought real hard about how to do this better and we're on our way there.

Mr. Riki Ellison:

Okay. All right, thanks Frank. That was awesome.

Okay, we're going over to White Sands Missile Range and the commanding office there with Eric. We do want to mention that MDA shot successful yesterday off of the Senator Carl Levins destroyer that shot down two short range missiles and cruise missiles and how important that demonstration test range is. Eric is the commanding General. I think Eric and Brian were going to move up into USSPACECOM, so it's great to have that perspective as well. Eric, we were just out there. We'd love to hear about what your range can and can't do to help Frank move this thing fast.

BG Eric Little:

All right, Riki, I appreciate the introduction and I'll echo kind of how Frank opened with one thank you. But it is a privilege to sit on this panel with these two gentlemen. I've worked together with them, Frank, I think just about every system that he mentioned in some form or fashion, either in developmental tests or operational tests we see out here on range at White Sands Missile Range, and General Gibson more in his previous capacity, but the fact that he's on this panel and really is the one who is working the plans and the architecture, everything that Frank produces and that we test and evaluate is being employed in the theater with Major General Gibson and he's overseeing that. So a lot of important pieces to the equation here.

And as you talk about the challenge that you opened up with lack of capacity and really the urgency to get after this problem set, I will speak from a range perspective and a test evaluation analysis perspective in support of these two gentlemen. White Sands, I would say, is not the sole solution, but as I talk and explain some of the capabilities and what we do, I think it will become very evident. And I think these two gentlemen will agree that we are a very, very large part of the solution with getting after this problem set because the capabilities that we have here on range are pretty unique and pretty awesome.

So really what I'm going to talk about is kind of what we do and why we do it. But then more importantly, I'm going to get into where we are right now with regard to capabilities aligned with the technology that's out there. Really where I see us going from a test evaluation, and I'm even going to say experimentation and potentially training aspect as well.

So really the things that we do is we provide confidence in a capability through developmental and operational tests. When we put a munition, a system, a capability into the hands of the war fighter, it has gone through rigorous developmental operational testing and that war fighter will employ that capability with a high level of confidence. So you can tie that to risk in that our piece of the equation is we are really buying down risk by elevating the confidence and really showing that the capabilities that go through Frank's PMs and his PEO, that they're going to work as advertised in any environment.

I'm going to dive into the environments because that is one of our biggest challenges right now is replicating a realistic and accurate environment. So with regard to where we are today with that mission set that we have here, and really if you come down to White Sands, what you'll see is radar optics, telemetry, how we manage the spectrum and then the networks and the data processing to bring all of those together in real time to provide analysis to support these programs.

I would tell you, and I think most would agree that WSMR is likely the best instrumented open air range in the nation. And I have oversight of all the developmental test ranges in the Army, have visited the other ranges, not trying to downplay the capabilities of the others, but I'm just stating the fact when you look at the radar optics, telemetry, all those things I just laid out, we are the range where folks go to do test and evaluation.

That said, if you look at the infrastructure here, again, this is the snapshot of where we are today. We do have an aging infrastructure, there are challenges that we have. We do have a way ahead with improving our radars, optics, telemetry, things like that. Don't forget that I said we are the best, but with technology and where we're going, we have to keep up with technology. Frank talked about, and we're talking kinetic and non-kinetic, all the long range precision fires that are coming down the pipeline, hypersonics.

And then on the non-lethal side you talk direct energy and things like that. We have to make sure we are keeping up with that technology so we can do proper testing evaluation. And that's on the TE side. I'm going to broaden a little bit, try not to stray too far from the air missile defense topic and our mission here on the range, but I'm going to tie in multi-domain operations from the Army side and all domain operations from the joint side. And that ties into the environment that I'm talking about.

Very confident in our ability right now. We have to keep up with where we're going. And now as I look towards the future in talking about that operational environment, it is going to be ... the acronym we use in the military is denied, degraded, intermittent and limited operational environment. We have to be able to replicate that during test and evaluation, but also for our

war fighter. Last thing we want to do is have our war fighter go into a fight in an environment that they are completely unfamiliar with.

One of the benefits that we have here at White Sands Missile Range is that it is 17% of the Army's landmass. A lot of people don't realize that the landmass that we have here and in the airspace, probably the most unique aspect is the airspace. We own the airspace from the surface of the earth to outer space. No other place in the United States has that benefit. And when you talk about the challenges we see in the detailed environment I just mentioned, really in the electromagnetic spectrum. We have a lot more freedom to maneuver here with regard to the spectrum and the airspace and then combine that with the mass we have on the land.

There's a lot of opportunity and we're getting after it on the test and evaluation side. I mentioned experimentation. I think we as an Army, we as a joint force have to do more. And I mentioned a joint force because we have a naval test attached, we have a naval desert ship on range, we've got an Air Force test attachment, we've got Space Force guardians on range, so we are very joint in nature as well. But if you look at all those capabilities, this place really is a gem with regard to getting after that operational realistic environment that we have to test in.

And again, and I talk about multi-domain operations, we had an operational maneuver division commander on range last week talking to our workforce and I'm speaking just ... to our south, you've got Fort Bliss in the First Armor division. If you combine their maneuver space with what we have, it is 25% of the Army's landmass. So Fort Bliss, White Sands Missile Range combined, 25% of what the Army owns on the land. And if you don't see the opportunity there, there's a lot, and we are eager, and First Armor division is eager to explore opportunities of how they can work experimentation and potentially into training.

I have to be careful talking about training because our bread and butter is test and evaluation, but we also recognize that this is going to be a premier, not the sole solution, but a premier location for where the Army is going to get after the challenges with that multi-domain operations, all domain operations, that environment. And I'm pretty excited about it. I'm going to circle back to the spectrum a little bit and some of the opportunities we have there. And Frank mentioned directed energy. I will say that I think White Sands is the only designated special use space range over land. I think we have one other special use space range over water.

What that means in simple terms is we can do things with directed energy that other ranges in other locations can't. As we look at the air and missile defense problem set, it's going to be layered, it's going to be very synchronized, kinetic, non kinetic. We can get after a lot of that on this range. So if I sound excited about it's because I am, I see great potential with this range. And it's not about White Sands, it is about supporting the needs of the Army and the joint force and there is tremendous potential here.

I kind of covered a lot of ground kind of quick. I want to make sure if there are questions that we have time to get after the questions. So I'll pause there. Anything right now that you have?

Mr. Riki Ellison:

Thanks Eric. Hey, it's an Oppenheimer moment. This is a national security moment and I think you were in the right place at the right time. And what Frank was talking about the Guam system, why would you not? You've got long distance air corridors now being opened up to give you long distance fires coming in. You've got VLS in there, you've got joint, and most of all you're protected. You don't have Chinese balloons or Chinese ships or anybody looking at you.

And it seems like what Frank was saying, getting a prototype, whatever that is, that may go to Guam, but it could go to San Francisco, go to Hawaii, go anywhere, and he's got the ADA sitting right there with him. It just seems perfect. I know we've got to demonstrate Guam, but testing all that, you can't bring all that stuff from White Sands and our ADA community. So we're a hundred percent behind getting your range the number one for this kind of stuff that we need to do, ASAP.

BG Eric Little:

Yes sir. So I'm going to pile onto one of your comments and then I'll pause again. But to your point, to reinforce that point, there's a reason why we do overland testing and the three primary reasons. One is it is cheaper than testing over water with regard-

BG Eric Little:

The three primary reasons. One is, it's cheaper than testing over water. With regard to optics, radar, telemetry. Probably the most important reason why we test over land, you mentioned, is when you test over international waters, we are a test bed for our adversaries. They are collecting as much or more than we are. So, we have to secure the information that we're gathering. And then, lastly, is fidelity. When you test over land, you can police up the systems and products that you're testing and do forensics and learn more. So, there's just huge value to testing here and over land in general.

Mr. Riki Ellison:

That's awesome. Way to go. We're 100% percent behind you.

Okay. Here we go to the warfighter, Brian Gibson, major general. He has experience in every one of these theories. When he was a young soldier he's been in Germany, he's been in the Middle East, he's been out in the Pacific, and I think the president mentioned too much of it, but

there's a lot of activity going on in the Pacific and air missile defense is huge there and doesn't have the capacity. It's probably the least one that has the capacity out of the other areas. So, great to have you, Brian. It'd be great to hear your perspective as a warfighter and what those requirements you're given and what you're getting and what you're not getting from your community.

MG Brian Gibson:

Thanks, Riki, really appreciate it, and, for Eric and Frank, thanks for letting me join you. While I was on mute listening to you, I was reminiscing and remembering either walking on the ranges, flying over the ranges, talking with many important folks, trying to help them understand, as you've just both described, the complexity involved with getting things developed, tested, fielded, and then deployed. I think what you should see from this and take from it is that it's a team sport, and it has to stay a team sport. There's no silver bullet from industry to the fore lines of the battlefield, wherever that is. And, when we think there is a silver bullet, it's all of the other unintended risks that has a tendency to creep into operations over time, once we do things fast. And we can do things very fast, and urgency creates necessity, right?

As you described, Riki, with things going on around the globe, direction from our national leadership, it's always, it has been and it will continue to be, it will be our army air missile defense forces that remain strategically and vitally important, and among the first to go and the last to leave.

There are geopolitical considerations that are always at play inside of the Fires Warfighting Function for our capabilities. Iron Dome, we won't spend much time on it, but that's a great lesson how, in five years, we've come full circle publicly to now provide a capability that we helped develop, purchase back from them, and now, giving back to the war fight out of our stocks. I think that lesson is important for all of us to remember, is that, when we do things, the conditions at the time won't be the conditions in the future. And we should be very careful when we develop and test to be as flexible as we can based on our best assumptions of future conditions. Because I know this, we're going to be completely wrong if we base it on today's conditions. We always have been. We always will be.

So, you've seen publicly the call and the deployment of our forces at a pretty significant level back into the Middle East. That matter, that's not going to change, regardless of the theater where we find ourselves, whether the Pacific Europe, the Middle East, or in our homeland. So, urgency is there, and I know the risk calculus that our leadership has to deal with. Not just money, but time and risk of operational capability as we develop and where we test it and the outcomes that we test against. I'm always going to be an advocate to test where we can, to learn what we must for the decisions we have to make. The real capabilities that are resonant at White Sands that reside nowhere else.

But I also know that learning occurs in multiple environments and in different ways based on the decisions we're trying to make. Deterrence doesn't have to automatically be achieved by full-throated, full development, and operational testing on our ranges in the States. Deterrence, in many ways, can occur by learning of our soldiers or future weapon systems and learning about how to deploy those forward in a less formal, less rigid manner.

So, I agree wholeheartedly that it's a risk calculus and it needs to stay that way. And, I am the benefit, and our forces in the theater are a benefit, of many decisions that I had never seen made before in my career of being willing to deploy early, learn forward, fail often, and test where you can in a forward configuration before we go on to make future production decisions, especially in the prototyping space where you get soldiers on the pieces of equipment.

But that tension isn't going to change. It will always be there, and I think it's a recognition and underwriting of more risk acceptance and tolerance of the national level that you are starting to see things perhaps forward earlier than what we may have in the past.

For us and the Pacific, there are certain things that are truisms, just not in the Pacific, and some of those things aren't going to be a surprise to you. This idea of integrated outcomes, interoperability is important not only inside of our country lines, but between country lines. But it shouldn't be the goal line. Integrated outcomes should be our goal line. Interoperability is the way to that goal line as we progress through time. Sometimes, we may not be able to achieve integrated outcomes for a range of very good reasons, security policy, money, national level interests, but we should be dogged to try and get to integrated outcomes through development, testing, fielding. The more that we have that as our shared goal, the better off our outcomes will be.

So, that's not a call to, IBCS is the solver of all things. That is not true, but, certainly, it is an example inside of a singular warfighting function today that can hopefully lead to greater learning inside the service space, the joint space, and the combined space where these real things can be achieved and integrated outcomes. Frank's description in Poland was a good example. The testing that can be done in White Sands to get after, what does integrated really mean and our understanding of what we were trying to achieve is very true for White Sands.

We've got to continue to pursue greater range, just not in our sensing, but in our legs for kinetic and non-kinetic outcomes. We've got to continue to pursue greater lethality. We've got to continue to pursue greater maneuverability. Those are not a surprise. Since the red coats marched in the northeastern United States way back when to today, those basics have driven our development and of our capabilities to try and outmaneuver, outman, outgun and out-sustain adversaries. We just have the unique capability, the unique requirements, that we operate all the time in multi-domains, and just not from the land. So, bringing the space

application into this is important. Assured access to space, persistent sensing from space, and then, eventually, the ability to execute fire, direction, and control from space, absolutely essential against the adversaries today that are out there around the globe.

This idea of passive sensing, absolutely important, and the ability to just not have it be a contributing sensor inside of an architecture, but the ability to take full opportunity to shoot, scoot, and not communicate, because we can do that based on passive sensing. We sense we're targeted. It's the bottom line. We put something in the electromagnetic spectrum, we should expect to die, and we should take that in all of our development approaches and our testing approaches to try and get after that very real, detailed environment that Eric described really well. That passive sensing is an important part of it.

This idea of counter UAS, Frank hit on it a little bit. Sure, they may be, today, seeing a lot of this in the public space for things that are unfortunately occurring in the Middle East. It's not just constrained to the Middle East. It is a global challenge, and today, there are hot fights around the globe where there are kinetic counter US activity and outcomes occurring that are lethal, that are more than just intelligence and surveillance collectors, and that we have to deal with collectively.

And that "we" is not an Army Air Defense we. We that is an army we, that is a joint we, that is a combined we, and this is a problem that I know our national level of security leaders from OSD and our Secretary of Defense, all the way down through our services, have made a priority: to make sure through Frank's lines and others that we're giving the best capabilities to all of our war fighters to try and counter a very ubiquitous threat that is not decreasing. It will continue to increase, and it will increasingly become more and more lethal. So, it's something that I know, inside the branch, but also across DOD, that is an important thing that we're getting after.

Frank hit on this idea, or you did, Riki, this idea of decreased opportunities for missile wastages. And that's multi-variable dependent based on the environment you're in, the systems you have, the authorities you have, but that as a key premise absolutely needs to stay front and center. Guam will be a good case example where we've put in a lot of effectors from a lot of different systems in a very small amount of space. And there's, as you can expect and appreciate, a ton of things that are going on right now from unclassified to very classified, to try and best understand the most efficient application of defensive outcomes that are commanded and controlled via different weapon systems.

But we can't afford to over expend missiles and we can't afford, and that "afford's" not a money thing. That's part of it. We can't afford it from a capacity perspective against the numbers that our adversaries are developing. We should all be astonished, and we should be absolutely laser-focused, on what the PRC has done in the last 10 years. And, I know many of us are, and many of us, all the way up to the congressional level, stay focused on it. But they're not building

that with an intent not to use it. It's not to defend their land borders, from Brian Gibson's personal warfighting perspective. So, this idea of efficient use of a range of interceptors inside of service and joint lines needs to stay a key premise as we continue to get after it.

And then, lastly, the soldier. Our soldiers, our sailors, our airmen, our guardians, they are still going to be in the fight and they must remain in the fight as long as we can keep them there. How they're in the fight, based on the technologies we field, is an evolution in time as we continue to field advancing capabilities. But I know this, I trust the soldier before I trust the system. That doesn't mean I don't trust the system, but I know that, at the end of the day, I'd rather have a thinking, breathing, trained soldier, with responsibility and authority, to initiate a lethal outcome, or have the ability to override when a system automatically produces that as an option. So, this idea of soldiers on a loop at whatever level at echelon, that's a really hard topic, but we are an army. Our job is to fight and win our nation's wars, and we do that via soldiers with incredible technologies that are forward deployed.

So, air missile defense, it's obviously a growth industry, it's an urgent industry, it's a relevant industry. And these two gentlemen, along with others, are helping us get down the road faster than what perhaps we ever have, and the urgency forward, I hope that, at least for today and others I've talked about, doesn't go unnoticed that it's real and we need to stay on this path. And I look forward to the questions.

Thanks Riki.

Mr. Riki Ellison:

Thanks Brian. Thanks Brian. 100%, percent people win. People win. The systems will be here.

I'm going to defer my question to you to Mark, but we'll go over a little bit, Mark. I do want to just ask you, from your integration position, the Guam architecture seems to be the be all end all for this architecture, and I'll pass it over to Mark.

RADM (Ret.) Mark Montgomery:

Okay. Hey, thanks Riki. We've got a couple questions in here.

Mr. Riki Ellison:

We can go over, Mark, a little bit. So, you're good.

RADM (Ret.) Mark Montgomery:

Yeah. General Lozano, and one for General Little that just have come in. Two quick thoughts.

I love what General Lozano said. "Don't be afraid of failing." I'm really afraid in hypersonic defense that the Department (DoD) is taking an approach where we're only spending about \$300 million versus \$3 billion on hypersonic offense. There's an opportunity to down select to one of the companies and let them get racing, and I think the department, in fear of failure, is going to hold off until there's a second or third company competing in this. And we could be delayed 3, 4, 5 years on hypersonic defense. I'll just tell you, the Congress is going to find that unacceptable, that we're going to let authoritarian countries have a hypersonic offensive capability, China and Russia, but we have no defense. We have not had that kind of strategic mismatch in a conventional weapon system since the mid 1930s with German armor. I mean, it's been a long time since we looked ourselves in the mirror and said, "Some other country can kick our butt in a conventional capability," and we're about to let that happen. So, hopefully we'll take some risk. This is outside the Army. I think it's in the Department and the Missile Defense Agency.

All right, so questions, for General Lozano. I think there's two good ones here. One, "Is there an impact from semiconductors on your programs? Are you seeing that? Is it slowing you down?"

BG Frank Lozano:

There is an impact. It hasn't slowed me down, yet. There's a significant potential for it to slow me down.

I'm not seeing an impact from a capacity and delivery perspective. What I am seeing an impact on, and there's not a lot that I can say about it on this forum, but we classify it in the realm of supply chain risk management. And so, where are those semiconductors made? Who owns the companies where the semiconductors are mounted on motherboards? Who owns the chain of custody? How tight is that? How tight and closely monitored is that chain of custody, and are there foreign entities getting access to those semiconductors? And, from a software perspective, are there services embedded on those semiconductors that potentially contain cyber-related vulnerabilities or malware? And so those are some of the unknown unknowns that really keep me up late at night because I get the classified briefings that scare the daylight out of me about where our supply chains go around the world, our reliance on some foreign entities for some elements of those supply chains, and the fact that some of our tier three and tier four subs don't have the monitoring on their chains of custody that I think that they should have.

And so, we are constantly... Sometimes I feel like I'm spinning my wheels. We are constantly expending energy running down rabbit holes with semiconductor elements of my supply chain to ensure that they're secure, that we're mitigating vulnerabilities, and that we're continuing to do updated cybersecurity vulnerability scans as often as possible, as my IT elements and elements of CCDC, the Combat Development Center, become more wise and savvy on those threat

vectors, and then, from a blue on blue perspective, assess and scan those vectors to try to give me relative surety that our systems are secure. Over.

RADM (Ret.) Mark Montgomery:

That's great.

BG Frank Lozano:

... that our systems are secure over.

RADM (Ret.) Mark Montgomery:

That's great. One more for you, Frank. Especially coming... It's a great question coming off your discussion that IFPC's moving and you're making good investments. It says, "Will IFPC be fielded if it's ready, first as a standalone? Or do you have to wait until it's fully integrated with IBCS, which could I think would delay it a few years?"

BG Frank Lozano:

Actually there is no standalone instantiation of IFPC. If the IFPC launcher is currently being integrated with IBCS as well as the Sentinel A4 Radar. If an IFPC battery were to deploy all by itself, it would deploy with IBCS and with the Sentinel A4 Radar. Today, so my prime on IFPC is Dianetics. Their sub is Raytheon who provides the AIM-9X missile right now.

Raytheon's responsible for providing a missile interface controller and a weapons interface controller and software that interfaces with an up-linker and with IBCS. And we're getting engineering releases of those softwares today as we speak. And we're running those through simulations and hardware in the loop ground test activities in my ground system integration lab, my GSIL at Redstone. We've been doing that for about six months. When I move, I'm about to move into a DT test phase from January to June where we will be at White Sands with about 10 IFPC launchers, three EOCs and Sentinel A3, Sentinel A4 prototype radars to do that DT portion of testing.

Then we take about a two-month reset and we move into an operational assessment in the August to November timeframe. And then we pause to collect data, write the documents. And then IFPC is scheduled to go to its Milestone C in the second quarter of '25. We'll do a low weight initial production and then it'll roll into IoT and E in '26.

What's key about that IoT and E in '26 is that it's going to qualify and test, test and qualify the configuration of software and hardware for an integrated IFPC IBCS Sentinel solution that will

update the 20 IFPC launchers in my FY24 PB requests that are being bought in '24 specifically for delivery of 27 to Guam.

A lot of aggressive activity going on here. We're hanging on by the skin of our teeth on the train. It's moving really fast. I'm pushing the team to be as aggressive as possible, but that's what the schedule looks like right now. I think to answer the question it's not am I delivering IFPC first and then integrating it? I have to do both simultaneously.

RADM (Ret.) Mark Montgomery:

That's fantastic. But it does make me wish that in 2021 we'd very specifically purchased some NASAMs, given you a little bit of gap and risk mitigation. But "if ifs and buts were candy and nuts", right. Hey, I'm glad you mentioned the range for Eric. A good question on the range here. And I think you addressed this, but just very specifically you're comfortable, there's no showstoppers to testing directed energy weapons of almost any size out of Windsor, right?

BG Eric Little:

I would agree with that. Yes, sir. And I mentioned the special use space range that allows us really more freedom to maneuver with directed energy over the horizon type stuff than most other ranges. This is typically the place where any of the services land with regard to directed energy testing.

RADM (Ret.) Mark Montgomery:

Do you worry about its proximity to Mexico, one of our borders?

BG Eric Little:

I don't, sir. The technology we have today and the weapon systems are very safe, very controlled, how we employ the capability and the technology. And I think that's the reason why we were actually designated a special use space range because we've proven with the technology and how we implement and employ the systems, we can do it very, very safely. I'm not too concerned about that.

RADM (Ret.) Mark Montgomery:

All right. And General Gibson, I didn't get any good questions for the audience, so I got a good one for you. If you could go back. It seems to me that one of the problems we had is about two and a half years ago, DOD made a — I won't say rash, but a very explicit decision to have a completely distributed system on Guam. We've slowly worked our way back from that a little bit.

Now some things are... The VLS is probably... The missile launches are probably a little less distributed, but the radar is still distributed. Do you think they're going to be on track For that SPY-7 TPY-6 radar to be able to be tested in 2024 or 2025 on a truck in Guam?

MG Brian Gibson:

Yeah. It's a really good question. I think certainly there's several risk areas on an aggressive timeline. I would agree that on the sensing side, new radar, new capabilities, there's some, I'm sure a pucker factor there for MDA out of that one. But outside of my purview to really understand that risk. But just knowing that our experiences with LTAMDS, what we do with Patriot, what we do with other sensors, there's always going to be risk there.

It's trying to understand what that manifests technically as that risk is maybe manifested. I think with Guam, since you brought it up, I was just out there again recently. I'm out there very routinely as you can imagine. We're in the throes of the environmental impact survey with the EIS that has a component of time for that to be completed for public comment. And we are still narrowing down the finality for things to be negotiated that haven't completed the negotiations as well for all the right reasons with the government of Guam.

What I would tell you is that if this were land that was all DOD and with inside the continental United States and had a commander in charge of it, then it would be nirvana. That's not reality and that's not to say that's bad. It's just the conditions are different and we have to go at the pace and willingness of the governance and the populace. And I think that will manifest risk calculus along the way regardless of the technical risks that the capabilities are incurring as they go forward. I don't think it's a one and done to answer your question.

RADM (Ret.) Mark Montgomery:

Thanks, Brian. I think we're actually 0 for 3 on those three things you mentioned there. Hey, first I do want to say with three Army generals on here that I can't say anything bad about this because the Navy completely failed to step up when there was probably a pretty straightforward solution three years ago. And they did us no help and the Army stepped in in taking this. We did get one more question here. It's a great one for the army getting off the table. It is for anybody, but do we believe that aerostats and low risk capability?

MG Brian Gibson:

I'll take it first from a requirements perspective and then I'll let Frank probably go next. Sorry to put you on the spot there, Frank, but you've got a unique perspective. And Eric, to you on your perspective for testing.

As I said earlier, persistence and sensing matters. And regardless of how that sensing is provided. And that is not just from land, sea, air or space singularly. I think it's a combination of all of that. Yes, I believe there is an elevated sensing requirement to be provided. Especially environments where you're much more distributed and you have much more battle space and you face a range of threats that provide much more complexity and also less time to react.

Persistent overhead sensing matters. What you call it, how it's developed, how it's determined, those are all things in the art of the possible and the art of technology and the art of resourcing. But from a war fighting perspective, I'd rather have it than not. Frank, over to you.

BG Frank Lozano:

Yes, sir. Yeah, thank you. Yeah, I can't really disagree. What I'll leverage is a different example. We've worked for a number of years to integrate the very capable X-band radar that's in the nose of the F-35 system into IBCS. And the F-35 aerial sensor platform can locate both air targets and ground targets, can pass that back through metal into IBCS. We can process that, assign a ground target track, pump that through the AFAY CAD's gateway, prosecute an offensive fire mission. That's the vision for integrated fires, from an offensive perspective.

From a defensive perspective, I can't disagree with anything that General Gibson said. Getting higher alleviates a lot of clutter. It also provides a significant amount of over the horizon line of sight capability. I think we on the acquisition core side of the house from an engineering perspective, have to do better in engineering and creating solutions that are robust enough to withstand forces with the environment that are going to be challenging, i.e. high winds and things in remote locations, even enemy threat aircraft that might try to attack it.

None of these weapons were meant to be an end-all, be-all silver bullet all in and by themselves. They work as a part of an architecture to be effective. But I do think that there is a place for an aerial netted sensor capability. We have to design it properly. We're going to have to live with the sins of the past on JLENS and overcome those. But I do think that there is a way forward.

And another example, I'll leverage the aerostats on the Ring Road in Afghanistan. If it made sense to put up aerostats in Afghanistan so we could have more coherent lines of communication, obviously it's going to make sense to put sensors on aerostats so that we can have that same coherent, seamless integrated air picture. Thanks.

RADM (Ret.) Mark Montgomery:

Great. I thought we got six minutes before someone said JLENS. I thought we're going to get clear there, Frank. Sorry. Eric, anything to add on that?

BG Eric Little:

Yes, sir. I'll be quick, but if you would've asked the question 20 years ago, I might've had a different response. Space has become a war fighting domain. 20 years ago, you could have made the argument that everything that you can hang on an aerostat you could get with assurance from space. And we already talked about the detailed environment, space is going to be contested.

That said, I have high confidence in our ability to provide effects from space. But that said, why would you not have a capability to provide more depth, flexibility, in a lot of instances, be quicker to respond if you're challenged and you can run the gamut. ISR, communications, positioning, navigation, and timing. There's a lot you can do to provide that depth and capability and the flexibility and the responsiveness. I do think it's important.

RADM (Ret.) Mark Montgomery:

Yeah, thanks. I love that JLENS is a four letter word. Then the other aerostat we really put some money into about 20 years ago we named ISIS on accident. I mean we can't help ourselves sometimes.

Hey, Riki, we've gone past. These three generals are probably going to all have to work to 23:00 tonight now. I want to pass it back to you for some final words and then get us out of here.

Mr. Riki Ellison:

Okay. All right. I certainly would like to hear real quick closing remarks from each of you, but this has been wonderful. Right. It's a team game and having the three of you all in sync and just explain it. I mean a lot of this is the people in the public don't understand the complexities of this. But look at what you've done today. I thought that was excellent. Thanks for your time and articulation of this critical issue.

And it's so cool. I mean you're given the command by the President. You are given the money, you've got all things going. You've got it. You just got to make it work. As Brian said, it's people. It's people. You got to lead with people. You got to create that environment to win. And this is where we're going. Thank you. I'll pass it over to Brian.

RADM (Ret.) Mark Montgomery:

Frank, why don't you go first?

BG Frank Lozano:

Okay. Just real quick again, appreciate the opportunity to talk with everybody and share some ideas. Riki, I think you kicked it off right when you said the president issued a mandate. We've got to fall in line. I think I've got the best job in the army. The things that we're doing collectively from a material perspective are going to have impacts on generations.

This level of modernization across the army, AMD enterprise is huge. I can't remember the last time we so significantly modernized any one element or branch of the army the way that we're attacking this modernization initiative. I'm incredibly excited and passionate and lucky to be a part of what's going on right now because of what it means for our future. Thanks a lot.

MG Brian Gibson:

All right, Eric. Thank you very much, Frank. Eric.

BG Eric Little:

Yeah. I have to thank you for the opportunity to come together and talk. One thing I'll reinforce is I've talked a lot about the capabilities and opportunities we have at White Sands. We're not the sole solution. But I do think if you listen to everything we talked about, this is a very unique place and there's a lot that we can contribute to the problem set.

I'm excited about where we're headed on that front. And it was a privilege, I think you built, designed a very good panel with Frank and General Gibson being the operational, at the tip of the spear out there in the Pacific. But it was a privilege being on the panel with those gentlemen. Thank you.

RADM (Ret.) Mark Montgomery:

Thanks. And over to the Major General now. Brian.

MG Brian Gibson:

Thanks, sir. Hey, Frank and Eric, you guys should be repeat offenders for Riki. Riki put them on the spot again in the future. I'm nowhere in their chain of command so that's not an order, just a suggestion.

But hey, seriously, an important topic. Hopefully you got out of this that we're in it for the long run. We're in it to win it. We need to continue to communicate clearly, have the help of a whole bunch of folks to include folks like you, Riki, and Mark. But we're going to stay committed to it from the bottom up based on leadership and based on funding.

Thanks for enabling us to do that. Appreciate it.

Mr. Riki Ellison:

All right.

RADM (Ret.) Mark Montgomery:

All right, Riki, we're done. It's over to you to just say bye here.

Mr. Riki Ellison:

Yep. Yep. Winners associated with the winners to win. It's a team game. Let's go get it. All right. Thanks, guys. Great.

RADM (Ret.) Mark Montgomery:

See you.

Mr. Riki Ellison:

Great.