

Virtual CRT The Epic Revolution of Missile Defense in the Fury of the Middle East

[Riki Ellison]

Good afternoon and welcome, ladies and gentlemen, from the heart of innovation in the world, Silicon Valley, here in Woodside, California, on a stunning day, as always in California. I'm Riki Ellison. I'm the founder and chairman of the Missile Defense Advocacy Alliance. I've been involved with Missile Defense for 40 years, pre-SDI, all the way back to 1980, to founding MDAA 24 years ago. We only have one mission, and that is to make this world a safer place with the deployment, the development, and the evolution, revolution of missile defense to make our world safer. And over the last nine days, 170.5 million people are safer because of missile defense. That is a statement, and that is what every nation in the world must do. That revolution is happening, and we saw that 13 nations have been struck by ballistic missiles, cruise missiles, and drones by one nation over the last nine days. That includes Israel, Saudi Arabia, Kuwait, Qatar, UAE, Bahrain, Oman, Iraq, Syria, Cyprus, Azerbaijan, Jordan, and today Turkey. So, congratulations to the layered missile defense capabilities of the legacy systems that were there and are there today in defending all of those countries.

This is our 93rd virtual Congressional Roundtable, our title, The Epic Revolution of Missile Defense in the Fury of the Middle East. We look over those past nine days, because we're going to take an assessment from our perspective on missile defense. We're not here to discuss how or why this thing happened or what the solution is. That's not our mission. We are strictly missile defense to make that region safer than it is today and to focus on what the lessons are being learned drastically from that.

From my perspective and open-source material, we have intercepted over 1,000 ballistic missiles, intercepted a few hundred cruise missiles, and intercepted over 2,000 drones. And this aspect is that our offensive capability added another 30 percent defeat before those missiles could have been launched. And that is left of launch. This is one of the first times we've seen this in full operation with left of launch and right of launch. And it doesn't really matter too much. Well it does matter some. It is not the capacity of the missiles and ammunition they have. It's the launchers that enable that. And the offensive capability has done a tremendous job in taking out the launchers, the kill chain, the manufacturers. So that has been huge.

But with all this, we have to recognize the ultimate sacrifice. And I want to recognize and point out that one of the first casualties was a missile defense soldier out of Saudi Arabia on the first day. One of ours, Sergeant Benjamin Pennington. So I just want to recognize that and understand the sacrifices, the ultimate sacrifice it takes to do this phenomenal mission. That's happened.

So I think there have been three to four major movements in the revolution of missile defense that has happened over the last nine days.

I think the first one is the offense defensive integration. I know we've done it and we do it great on Aegis ships with Tomahawks and SM-3s, SM-6s, and SM-2s. But this collaborative effort to be able to plan, strike, and be able to do missile defense together. I don't think missile defense will ever be non-singular ever again. It'll be an integration with our offense.

I think the second biggest thing is the absolute requirement for layered missile defense from ballistic all the way down to drones and terminal missile defense. That's what we watched. And so this is an interesting message to Golden Dome. The Golden Dome has been predominantly space-based for space operational capability. And the world has maybe changed that perspective of what that priority is a little bit to make sure that the layered missile defense capabilities from land up are in place and have as much priority as a space-based capabilities.

I think the third biggest movement is the cost curve one. And this is probably the most frustrating one for us because we've been at the fight of this. But to have a cost curve revolution in our face in a drastic way, where I believe there are four billion dollar systems and TPY-2 radar THAAD systems that have been taken out. And the radar taken out, which is probably a \$300 to \$500 million radar, but it enables the entire batteries of all the THAAD missiles and the Patriot MSE missiles. But most importantly, the early warning time it gives. It gives Israel about nine minutes, they don't have that anymore. It is just baffling that a \$20,000 Shahed takes out a billion dollar system. It is shocking. People have to be held accountable for that. You better have 100% PK or you don't have fixed radars anymore.

And the issue is bureaucracy. Ukraine, three years ago, has shown proven capabilities against drones with both detection and shooting them down with \$5 machine gun bullets. That technology has been real, is working, and yet we, the United States, or those 13 countries, didn't choose to do that. And I can say for the United States of America, we gave, personally, two years ago, that acoustic sensor capability and the automatic gun capability right into the building, right into R&E, right into the previous administration. We tested, developed it, and proved it. It didn't need to be proven, but we did all the Death Valley things and it was taken. It was Death Valley because it probably didn't have a cost margin of any significance, and it probably was a threat to the majors.

You can't do this anymore. The revolution is here, and there's no way you should deploy another system of this magnitude and take it from somewhere else in the world and not be able to defend it and send it there to lose another billion dollars. We got a problem, and it has to be solved, and it will be solved. I think that's why you've seen this administration, this Department of War, Secretary of War, the Deputy Secretary of War, going as hard as they can to revolutionize our aged systems. They're doing a good job. I'm not questioning what they're doing. We're congratulating them for what they've done and what they've done these nine days. But the evolution of missile defense has just happened, and we have to learn fast and furious with our ability to defend our people and the Middle East and the world.

I wanted to open that up that way, and I wanted to bring my board members in here to be able to talk to it. I really wanted to focus on the two biggest groups. I'm not discounting Space Force, but Navy and the Air Force, and I put the Army Air Defense under the Air Force

to have experts on those two areas to bring light to the discussion. I know Mark Montgomery is phenomenal on the Navy stuff that's going on, obviously, but even on the bigger strategic picture, he's been in Ukraine getting that innovation over and then having Ty come to it, maybe as a logistics, but also as the Air Force. They have to command the skies, and this is their number one deal to be able to command the skies, just to be able to handle the air defense and missile defense aspects. We got two different perspectives, and I think a great discussion from experts on this revolution that we're seeing.

Okay. Ladies and gentlemen, former retired Rear Admiral Mark Montgomery.

[RADM (Ret.) Mark Montgomery]

All right. Ready for me, Riki? Hey, thanks. Great discussion up front, I appreciate it. I'm honored to be here with Ty, my old battle buddy.

Look, I want to start by saying I'm impressed with the air campaign. As someone who built lots of campaigns, executed some, I'm impressed with, in the way we're doing it, in a combined way with Israel, a non-ally, non-treaty ally partner, but clearly a country that we are closely, have a shared equipment training philosophy, a lot of tactics and techniques together, and we've begun to exercise in the air pretty aggressively. It's a 20-year long program that's really hit its stride in the last five years under CENTCOM. We've done it, and we've had a ballistic missile relationship with them that goes back even farther and is well integrated.

First, I want to say, look, from a purely military point of view, if you told me you had six lines of effort, hit the IRGC leadership in their facilities, that's one, suppress enemy air defense, that's two, hit the nuclear weapons program, that's three, hit the ballistic missile, the missiles facilities and production, that's four, drones facilities and production, that's five, and then maritime facilities, the equipment, the facilities and production, that's six.

We're working all six over in a judicious way that gets the first things first, and you saw that with the attack that killed the leadership. You weren't going to get the leadership if you hit the other stuff first. Now, that does mean that the strike back at us, the initial strike back at us is slightly bigger, because we didn't make the missiles in the field the first thing first. You had to get that leadership, and that meant a lot to us. I want to say from a ways and means point of view, in other words, if you look at a plan as ends ways and means, the ways and means, these six ways and means are moving. The most important thing to get to consummation on them is persistence.

It's the president not prematurely pulling the plug as he did in the 12-day war for Israel. I'm really hoping the president, by all accounts, he's got his foot on the pedal, and he's pushing hard, and the Secretary of Defense is pushing hard on this. This will be a four-week campaign.

That means, in my mind, probably 14,000, 15,000 targets between the two countries serviced with reseriving on some and new targets emerging that you didn't predict or you didn't know or that the adversary moved to. I'm impressed with that. We've shifted from high precision to low precision because, not that we're trying to keep the cost down, but it helps keep the cost down.

I first want to say that's a fantastic thing. Admiral Cooper and his Air Component Commander deserve a lot of credit for this. I want to say the ballistic missile defenders have done well on ballistic missiles, but they haven't done well on drones. The only thing saving us in drones is the Air Force, and to a smaller degree, the Navy out at sea, shooting down drones with advanced precision kill weapon systems. The rocket that I've talked a lot about Ukraine having on their F-16s. Here's some good news. The Air Force, when they do it for themselves, it's even more kick-ass. On the F-15, I think it's a 0.95 higher acquisition PK kind of weapon. We're destroying a \$20,000 to \$200,000 drone with a \$20,000 to \$27,000 rocket.

The problem with that is that's an area defense weapon. Your F-15s and F-18s can move all over. They can't move everywhere, but they can move a lot of places. They have to have been up. They have to have known. What it isn't is a point defense solution. What you're talking about is vital targets do not have point defense drone systems at them, not effective ones.

I spend a couple months a year in Ukraine for the last two years, and I've come back every time. I don't know that myself or General Corcoran or others who've done this could have yelled any louder at our government that we were fubar'd. You've done it. I think to some degree CD Donahue has quietly done it from US Army Europe, but we could see this problem.

Ukraine defends itself the same way. They use a limited number of ballistic missiles. They have a very tight—they fired less missiles in four years than we and our partners fired in five days. In a very restrained environment, they have a high-value target complex that they defend with Patriot, NASAMS, and SAM-T, a European system. They then use F-16s, helicopters, and legacy Russian aircraft to try to pick off drones.

The F-16s are the champions. As I've told you, one of the F-16 pilots 10 days ago, 12 days ago, shot down 11 drones in one single bag F-16, an hour and a half F-16 mission. 10 with these advanced precision kill weapons. He had two seven-rollers on, so he had 14 weapons, and one with guns. I'd recommend against that in a single engine plane, but it's his choice. He shot down 11 drones in one mission, so they're a great thing.

But then what they have is at their vital units, at their AOC, at their core commander headquarters, at artillery concentrations, at airfields, they have dedicated point-defense counter-UAS systems that can cover, depending on the target they're protecting, but two-kilometer radius to 10-kilometer radius area. Some are indigenous, like General Cherry's bullets. They've got great names these things. Some like Merops from Eric Schmidt, fantastic. The new Octopus is online, which is a quad. They call it a quadcopter. It's got four quad rotors, but it really looks like a bullet with four rotors attached to it, like a 155 round with four rotors attached to it. I've seen at least seven or eight of these in the field that appear to have good PK, or PIAC, on the drone and then PK.

My point on this is it's been out there. It's a known-known. It's how they defend it. The idea that we are at all surprised, the idea that we're losing—I don't know that the numbers you said are right. I hope they're not, but I suspect they are—that we've lost a billion dollars

worth of radar, that would kind of suck. It's not the end of the world, by the way. We didn't lose a billion dollars worth of human. We lost radar. Radar is buyable, upgradable. You might get a more modernized one, but you can never get a human back, so I'm glad it's mostly that. But we should be doing better in defending these things.

I want to comment here that if you ever want to know the difference between Russia and Ukraine, it's a snapshot of Friday. Last Friday, Ukraine offered the United States and its Arab partners, men, people they need, people from their Nemesis brigade, people they need in Ukraine will come to the Middle East with equipment and tactics and procedures and give us that jump start to get going on drone defense. At the same time, The Washington Post revealed Russia was providing targeting data to Iran on US forces.

So I better not see some bullshit next time at the Russia-Ukraine talks where the United States is trying to say this is two equals, or it's silly that the Ukrainians are fighting this. Our model ally is Israel, I get it. Ukraine is a model ally, and Russia is a model adversary, and we need to treat that one that way. So just a sidebar to say, what the frack is going on there? Knock that off. We need Steve Witkoff, he needs to get a new job or get a new attitude. But what's going on there is unacceptable.

Back on this. Good job, I said, on the air defense effort. I do want to give three warning orders.

One is, we're going to have a kick ass ways and means. Week four, when we've done all these targets and everything, the question is, are you okay with the ends not being regime changed? Now look, I'm going to tell you, I am. This is a regime that killed 1,000 Americans since 1983. They've killed several hundred NATO troops beyond those Americans. They deserve every pound of pain they're getting. And I'm absolutely comfortable doing this, and I'm absolutely comfortable removing them as a serious threat for three, five, or seven years to the region. If that's all we accomplish here, that is a significant accomplishment, and it's also a turn to everyone who tries to rope-a-dope negotiate us, where they work on getting their nuclear weapon or whatever it is they're working on, that the United States will not broker that BS, and we will hold you accountable for being an authoritarian, terrorist-supporting organization. And that is exactly what the IRGC leadership was. That's exactly who the Supreme Leader was, and he was absolutely dealt with fairly by the U.S. and Israeli strike force. If that's the end, I'm okay, but say it. This bouncing around on what the end is, is confusing. Say that the end is, we are removing your capability to impact us for three, five, or seven years. Pick a number and then do it.

The second one that worries me is the Straits of Hormuz. Obviously, people are getting worked up about the price of oil. I get it. It was inevitable. And Brad Cooper's hardest problem is going to be holding off the political risk versus the military risk. The military risk is, hey, wait until you've properly set the conditions in terms of mines and missiles to allow for a safe, reasonably, not risk-free, but risk-manageable Straits of Hormuz transit plan executed by ships that have not yet arrived, destroyers, large surface combatants. And that's going to be balanced against a political risk which is the President or the Secretary of Treasury saying, Jesus, we need to get the price of oil back down. Let's do it. And I hope the President has the vision and the patience to do this right and take his time. And that's number two.

Number three is munitions. I know people are getting bent on the offense of munitions. I'm not. First of all, the F-35, by the way, what did Elon Musk call it in late 2024? A dinosaur? I think we all know that's complete bunk. The F-35 is kicking ass and taking names globally, but particularly here, it's doing a fantastic job. Our precision munitions are working. The Israeli position munitions are working. We're shifting to the less expensive precision now, but it's good. And we can buy that stuff. And almost all of those were put into multi-year, many of those multi-year contracts were just allowed. We're going to see a transition in defense industrial base there. I'm okay with that.

But the defensive munitions, as you know, Riki, should have us very worried. Outside of the Saudis who look like a pregnant chicken sitting on eggs with 1,500 Patriot missiles, and everybody else has like 150 in the Arab world, we're tight on the numbers. Israel's tight on Arrow. We're tight on THAAD. The Navy's tight on SM-3 in the Eastern Mediterranean. All these are tight numbers that shouldn't be tight. We've got to figure out how to get defensive munitions in a better position.

Part of it is starting to build cheaper ones. And I see that the work of the Secretary of Defense is helping with that, his innovation things, and you and I are pushing hard, and your MDAA is pushing very hard on this. We've got to figure out how to get the cost per munition on defense glide sloping down like it is on offense. We see that on offense. It's harder on defense. We've got to work on that.

So those are the three things that hit me. I know I bounced around a little bit there, but I'm sure I left a couple of holes to drive through. But back over to you, Riki.

[Riki Ellison]

Okay, Mark. Just interesting that Iran has targeted the UAE out of those 13 countries. It's considerably more than Israel. Everybody would think that that would be the number one strike. But my understanding is because of the short-range missiles that are that close, they have that capability. Go ahead, Mark.

[RADM (Ret.) Mark Montgomery]

Go. That's exactly it. But the other one is they hate each other, the UAE and Iran.

[Riki Ellison]

Over Israel?

[RADM (Ret.) Mark Montgomery]

It's hard to say. Look, over Israel. I mean, they're the little Satan, or the great Satan.

[Riki Ellison]

I couldn't believe that.

[RADM (Ret.) Mark Montgomery]

No, no, no. Look, I promised you the long-range ballistic missiles are for Israel. The short-range ballistic missiles and cruise missiles they can get across are for UAE. They despise UAE. And I'll tell you, it's not publicly reported. I don't know this at some kind of classified level, but at an unclassified level, I'm pretty sure UAE is spanking Abu Musa, the islands that Iran

seizing from them. And I'm confident they're thinking about seizing them. Not now, but near the end.

[Riki Ellison]

But it looks like those are their solid fuel missiles too, the short-range ones, they can't develop the longer-range missiles to be able to use that. So that was interesting.

But I really want to pull you back to the fact that we don't have 100% PK to defend our bases. And our bases are woefully, woefully undefended. And I know that we're now officially moving innovation from Ukraine. It took seven days to figure that out, to get it over there.

But in your mind, are fixed radars survivable in the future anymore in combat? I don't know if that's—you got a \$20,000 drone taking out a \$300-500 million radar, which makes everything else neutered, the four batteries in the shooters. I mean, can we not do it? Can we put it on a damn truck and move it around? But that's what we did in Guam. What's the solution here? Is that a revolution or did you let it go?

[RADM (Ret.) Mark Montgomery]

Yeah, first, let's put the lie to the idea that THAAD or Patriot are mobile. They're mobile, you know, they're mobile like a trailer park. I mean, you know, it's going to take a lot to lift them in weeks. And I always laugh when I heard that about THAAD. I'm like, I'm not sure mobile is the word I'd use. I'd say like slightly movable on occasion.

[Lt Gen (Ret.) Jon "Ty" Thomas]

Relocatable.

[RADM (Ret.) Mark Montgomery]

Yeah, relocatable. Like in 20 years, we can relocate this. So, I try not to get worked up on that.

But your broader question is true. Look, when Ty and I are doing a war game or a combat, and we go, hey, we're 95% successful on the offense, we're like bumping fists and having a good time. When you're 95% successful on defense, you got a problem. And that's that 5%. So, it's a harder game, right? So, it's always a harder game, Riki, on defense than it is on offense.

On the other hand, to not try. I mean, the problem here is we, you know, I don't want to get into if pick, but I just got to say, for 12 years, I've been saying you need to invest in this. And I kind of got, you know, when I was on uniform, I got brushed off. And I was with McCain, I get brushed off. And now I'm at MDAA, I get brushed off. Well, now, congratulations, boys, you really, really looked bad. You have no short range air defense system to speak of. And then, complicating it, you have no drone, you know, you need to stand, you know, defended target drone defense system. I mean, you basically go from, you know, Patriot, a \$3.2 to \$4.2 million kick-ass weapon to nothing, right? Those are your two choices. I mean, this is ridiculous.

We brought this on ourselves, and they're damn lucky, by the way, the Army is damn lucky the Air Force came up with APKWS. The beatdown would be severe without that, Riki. And

this is not like something that's been like percolating for a decade, the Army knew it was happening. The Air Force cooked this up about three or four years ago. Part of it was to help Ukraine, part of it was on their own. But they cooked this system up. In fact, they don't even own the weapon yet. It's still owned by the Navy, because it's a helicopter weapon.

[Riki Ellison]

Well, Mark, I mean, you know, people are tempted to go and take systems from the Indo-Pacific. Is that the answer? When you can't even defend those things from drones?

[RADM (Ret.) Mark Montgomery]

I'm not worried about anything leaving the Indo-Pacific right now, because by the time it gets set in play- Yeah, the pressure, the munitions and so forth.

[Riki Ellison]

Why would you move a new THAAD into that region right now? Why would you do that if you can't guarantee that you can protect it?

[RADM (Ret.) Mark Montgomery]

Well, get the drone. Look, the good news is a drone defense system can be cost effectively procured. You and I know this.

[Riki Ellison]

Absolutely. But they stopped it.

[RADM (Ret.) Mark Montgomery]

The building stopped it. I get it. I think the good news here, Riki, is you can do what I told you so toward about a month.

In the meantime, we just got to hope Ukraine gets in there and get it. Look, I'm with you. I want to burst out loud saying a lot of the lessons here—

[Riki Ellison]

But it goes back to cultural. It goes back to culture, man. That culture is 20 years old, fighting the war 20 years ago.

[RADM (Ret.) Mark Montgomery]

It's a culture that didn't prioritize IFPC, that didn't prioritize drone defense and we're getting punished for it. When this is over, General George could take a look at that and decide how he wants to rectify those issues. Right now, it's get that Ukrainian shit. It's an operational problem. Get that Ukrainian stuff in there.

[Riki Ellison]

But why wouldn't we just have automatic damn guns that they're doing in Ukraine and put them around our base and fight? We're worried about policy and shit and start shooting down things with \$5 bullets. It's ridiculous.

[RADM (Ret.) Mark Montgomery]

I'm with you.

[Riki Ellison]

Anyways, I'm emotional about it—

[RADM (Ret.) Mark Montgomery]

Let's let Ty go before he bursts out.

[Riki Ellison]

All right. I'm going to shift over. Ty, I apologize. You are the former DCOM for the Pacific, laying out all the plans, everything for planning and being under the PACAF commander. I've just with Ty, the last couple of days, one of our most brilliant things MDAA has done is created the ARTEMIS program, which we were there to see the capstones and talk about innovation, talk about going fast with the labs to be able to get what the warfighter wants. We don't end up in the same damn situation. So Ty, thank you for that. Ty, I know we're beating up on the Army a little bit, but you got a perspective here on those lessons that we're learning fast and curious from Iran.

[Lieutenant General (Ret.) Jon "Ty" Thomas]

Thanks, Riki. Aloha, everyone. I'm here on Oahu hanging around for another week at the post conference.

Anybody that's watching from the post conference and you want to take me up on anything I'm saying or what Mark's saying or Riki, happy to do that and have that conversation. Riki, actually, the first thing I'm going to say is just in response to your question about mobile sensors and all that kind of thing. It actually draws back to my safety days as the A310.

We've seen it with what Ukraine's been doing to the Russians. I mean, even systems like the Gravestone and Tombstone, which are central to Russia's advanced systems, and they're more than relocatable. They're going to move faster than a Patriot or a Thaad radar, but those can be found and killed too.

So you can complicate the opponent's offensive targeting solution, but you're not going to completely solve it with mobility, even with the advanced sensors. There's some transferability on this particular question from what we've seen against the Russians. Let me, I mean, Mark said, you know, he's going to leave me places for trucks to drive through.

I mean, you two both covered it pretty quick. There's a couple trucks that I've got, but I want to reinforce a few things. First of all, like hats off to Trapper France, Baja Shoemaker, their teams.

You know, the CFAC has been, had built and is executing a phenomenal plan. I mean, so yes, there's a lot of things that were done before this particular air campaign kicked off, what, nine, 10 days ago. But if we're at the point this far in where we're essentially have a fairly permissive environment, where we're now have the ability to drop coordinates seeking weapons from medium altitudes and remain persistent, that's, even against an opponent like Iran, that's phenomenal.

And what, you know, so in terms of the time epic discussion, we're now in a position where we can watch and we can be persistent in presence. And then if you're the other team and you're having to fight against that persistent overhead presence, it's changing your behavior and you're going to have to show your cards. And when you do, we're going to find you and then we're going to kill that part of it.

And so that is a significant accomplishment to get to that point, to have that kind of dominance. And so it's credit to the Admiral Bradley and his team, but particularly want to call out the airmen that are doing this work.

To get to the defensive thing, okay, you hit on it. I mean, layered defenses are a must and legacy systems matter. I mean, we could talk about the big six and everybody else, but Patriot, THAAD, all of those, they matter. They have a role and we've got to continue to have them. We've got to make them less expensive. We've got to have more of them, all those kinds of things. But let's be clear on that.

But we've missed a layer. It's the layer that you, Mark, have talked about. And that's, it's that short range air defense. That's that detection layer against things like Shaheed 136. And because we have missed that layer, we have paid dearly for it. And we knew, you guys made it, made a very compelling case.

We knew that we were missing that layer because Ukraine had to build it. And then the other guys in Europe have figured out that they got to have it. And so NATO and Eastern flight deterrent line and all those efforts are underway and the allies are energized. They get it. So it poses the question of why didn't we get it? And why don't we have these capabilities that exist elsewhere in the world in CENTCOM?

You said... Why? I mean, my explanation is not that different than what you guys laid out.

There's an element of bureaucracy of just fighting through on the US side and defense acquisition transformation is trying to do that. Well, by the way, whatever happens a few years from now, change of administration, we can't have that change, okay. So let's get institutionalized these things that we want to do to be able to transfer our acquisition system. There's another element, which is just our hubris, Riki. I think, you know, a lot of us senior leaders, we kind of grew up in the military that we had. And we grew up as we understood what the priorities are and the systems that we're familiar with. And we like the woods and we're comfortable with the ones that we know work and new is a little bit unwelcome perhaps. And all of this stuff was new. And I sensed that there was maybe a little bit of unwelcome that came with that. And that requires us as senior leaders to have the mental elasticity to go, you can't be necessarily bad every single time. And let's see what's happening to other people and go, do we really want that to happen to us? I don't know that we did that. We are now, assuredly, minds are concentrated.

[Riki Ellison]

Do you think it was driven by cost, by cost profit costs? Why? I mean, I just, it's unreal. Or they're just too smart. They thought they were smarter than everybody else. And it's, Hey, we're going to develop this. We got this covered. We'll get, we got them in a year or two. And it never, it's like Mark says with cruise missile defense, it's bullshit.

It's a con-job.

[Lieutenant General (Ret.) Jon "Ty" Thomas]

You're not going to get me to like whale on the Big Six and say they're the problem—

[Riki Ellison]

I'm not, I'm not trying to understand how to, how to fix it.

Yeah. Well, what I'm saying is that my answer is there are plenty of small companies that know how to do this.

Mark listed them all. Mark listed them all. And so it's, it's people like us that are advocating just in general for them. And then they can advocate specifically for their stuff. It's us saying to the senior leadership, high and low on the department, like open your eyes and get that, get, get some capabilities fielded because all of a sudden when they're fielded and people start to believe in them and they see that their work all of a sudden, it's not new and it's welcome. And then it gets, you know, it gets fielded out there in the system.

So the, the, the part that I want to touch on that neither you nor Mark have touched on is guess who's watching all of this. It's called the People's Liberation Army, and they've been watching Ukraine, but what they didn't see in Ukraine is the serious thumping that we've taken over the last few days. And those dudes are not any, they're anything but stupid and they're anything but adaptable.

And there's all kinds of weird stuff going on with leadership in the PLA and other things like that. And you can, you can discount this or that with them over the next few years, but they are learning from this. And so we have the same type of key sensors and we have the same type of architecture that is at best relocatable, protecting key nodes sites in the Indo-Pacific that in the absence of them, we will be hurting dearly and badly.

And our ability to prosecute an air campaign and a maritime campaign at the scale and level that's required, which take Iran and go 10 X on that. Okay. We have to, we have to be able to, to solve this problem.

And so I'm talking specifically to friends right now. I'm talking, you know, Gumby Schneider's not listening, I'm sure, but we need to have that conversation. And I hope he's listening. And to Laurel Lenderman, his deputy. And Web Koehler is the PACAF commander. And I don't know him, but their counterpart for the Taiwan Air Force has to be thinking this one through because they're at the bleeding edge of receiving the pounding that, and it's not all going to be the classic ballistic missile cruise missile.

The PLA is building Shaheed-136 equivalents right now. I got to believe it. Don't know what the system's called, but it's coming.

So gotta solve those kinds of problems. And oh, by the way, airmen out there, this is not just an army problem to solve. As airmen, we are often very comfortable saying, you know what, we don't have the mission of air base, air defense.

The army has that mission. And then we kind of back off and go, hey, army, what are you going to do about it? Well, what are we going to do about it if the army can't or won't, or is task saturated with protecting maneuver forces?

Are we just going to sit back and go, you know what, we just lost a bunch of stuff, but it was because the army didn't do their job. We told them that a few years ago, but they still didn't do anything. Is that a really comfortable answer?

Can't be. Cannot be. And you Riki know, and I know that there have been some opportunities for our air force to at least take more part in this mission role and they've chosen not to.

And it's a worthy question to ask the airmen, why? It's not a conversation we have very often in the air force, but it doesn't care who's defending against it. That threat's coming and we know what it can do.

And so we better do something about it. And we better do something about it in the Indo-Pacific before we lose a TPY-2 or two, or before we lose an FPS-132 or the equivalents that are sitting on Taiwan or, oh, by the way, in the Southern reaches of Japan or elsewhere. So, yeah, I mean, that's my big, like, truck to drive through the park and you didn't touch on.

We better be. And the PLA and INDOPACOM is a big truck. The last thing I'll add before you open it up for questions is just to go back on, Mark laid out his three points, well I might add a fourth, maybe, which is, you know, however things play out there in Iran, you know, what we're able to do here in Epic Fury, and then what the Israelis did before.

I mean, it'll have a lasting effect on the proposition of whether you think being a proxy for Iran is a good idea. Doesn't seem to have turned out to be a good investment for a few of them out there. Still undetermined on the Houthis, but Syria, Hezbollah, they're probably regretting some of the decisions that they've made.

So that's goodness, no matter how things play out, because bad actors like Iran, we don't want them to have friends, and we don't want them to spread their contagion. And I think what we're doing is helping with that as well. So that's all I got, Riki, open to questions.

[Riki Ellison]

I want to just follow up before we give it to Mark, because I want you to talk about, can we replace the E-5s, the E-7s, the P-3s, the satellites in space coming? Can we get to the capabilities of ground base? Can we survive?

Can we win off of that? Because that seems to be where you must go until they're able to take out those with cheap stuff. But what's the future there? Is it real or is it not? And that's Mich Guetlein & Golden Dome, a little bit.

[Lieutenant General (Ret.) Jon "Ty" Thomas]

Yeah, I'm trying to derive the exact nature of your question, Riki. I mean, if you're asking about what's our next generation of air moving target indicator capability, and whether that's not coming fast enough, and we have to do it from the ground rather than from the airspace, is that essentially your question?

[Riki Ellison]

Well, can something in the air replace the ground, the \$500 million radar, or do we have to have that? Is there another way we can do this?

[Lt Gen (Ret.) Jon "Ty" Thomas]

Yeah, well, certainly for like cruise missiles and, you know, an air asset and hypersonic glide vehicle stuff like that, it's going to have to contribute because it's got a look down capability that, you know, depending on what the profile is of the threat and all that kind of stuff. But certainly, it's a key part of the architecture. And the E3 is dying.

Just a fact, sports fans out there. I mean, there's a reason why the Air Force is retiring it, and it's still in service, and it's struggling, and it's going to struggle. And the E7 isn't coming fast enough.

Boeing isn't making it easy for the Air Force, quite frankly. Love the Boeing company. But we got to find ways to field the E7 faster. And then even when we do that, will it come in the quantity that we need?

So then you go, what else? So yes, space-based AMTI has been the dream for as long as I have been, you know, reasonably senior in the United States Air Force. It's still not here.

[Riki Ellison]

What about dirigibles?

[Lt. Gen. (Ret.) Jon Thomas]

Dirigibles could help too. And I know Mark loves them, and he'll probably comment on it.

And they can help. Okay. But here's what I would propose is that, is there anything in the capability space that goes from nothing to E7?

The answer is yes, there is. We're not willing to invest in it, but sometimes just good enough to do some of it. Okay. And I'll go back to the scenario that we talked about in others. The fastest way for the PACAF commander to get fired is to not have air domain awareness in the various straits that are around Taiwan. And then a significant PLA force is able to make a demonstration of presence that nobody knew about and puts the second aisle chain at risk.

Really, really embarrassing. Does it always require an E7 to be able to maintain that air domain awareness in those spots of the Western Pacific? No, it doesn't.

And can you do it with something else? Yes, you can.

[Riki Ellison]

And you don't want to touch directed energy there a little bit.

[Lt. Gen. (Ret.) Jon Thomas]

I would say that's an effector discussion. And directed energy has its own history of how close it's ever been to fielding. I think Mark's phrase that I've heard before is it's always been five years away from fielding. And five years from now, it'll be five years away.

[Riki Ellison]

Mark, you got any comments on those?

[RADM (Ret.) Mark Montgomery]

I agree with what Ty said completely.

I think he almost said he supports the E2D procurement by the Air Force, but I don't want to put those in his mouth. I certainly do because the Air Force could have it two years from now instead of seven years from now for 300 million instead of a billion. But okay.

It's all right. It's hard to get out of that light blue once in a while. Okay.

So, hey, look, we got questions here. Good questions. One of them was where's CWIS in this?

I'll just say there's two types of CWIS. There's the CWIS on the ships. It's there if it's needed, hasn't been needed.

Was utilized on occasion in the Red Sea in a high, you know, when the threat environment, when there was some, SecDef has taken to using the word squirter. I believe the right word, leaker, has a little bit more of a military, you know, for a dude that likes pushups, he needs to work on that. You know, so, you know, it's there.

But more importantly, there's several CRAM units, counter rocket and mortar units that have the CWIS Gatling gun on them that are in theater and I imagine have done their job. I think they would be useful against drones. I don't think they're very useful against cruise or ballistic missiles.

And, you know, we have a number of them. We lost a number of them when we abandoned Afghanistan too fast. But, you know, we do have a number of them.

And I'm sure they are in theater and I'm sure they're doing their job. The next question, that was a late call in question. The other question is, I'll handle one or two and then pass two to Ty and then jump off.

It says, after 36 hours of combat.

[Riki Ellison]

Just Mark, before you go there, can I go back to CRAM and Iron Dome? Because Israel has fixed radar sites. They seem to be defending them.

Is their PK better than us?

[RADM (Ret.) Mark Montgomery]

No, they have Iron Dome. First of all, they have a handful of fixed radar sites, right? You know, for Arrow and for-

[Riki Ellison]

They got TPY-2. They got some things.

[RADM (Ret.) Mark Montgomery]
Yeah. Someone has a TPY-2. Yeah.

I think we acknowledge it's us now, but, you know, we have a TPY-2 there. But they have enough Iron Dome for that.

Now look, they're tight. They had 220 missiles fired from Hezbollah in Lebanon into northern Israel. They had to let some of them hit.

But their Iron Dome's continuing to do well for what it's designed for, which is shooting down rockets and mortars. By the way, the reason drones don't bother Israel is the drone has to fly 500 miles. And if you think a U.S. Air Force pilot can kick the shit out of a drone with like a 50-mile warning, give him a 300-mile warning. It's shooting fish in a barrel. I mean, it's just a question of availability of the aircraft at that point, not is the pilot going to shoot it down. So, you know, we have had great success shooting down drones from Iran headed to Israel because of the distance involved.

It's a much- The problem in Kuwait, UAE, Qatar, Bahrain is it's one-seventh the distance or one-eighth the distance. And, you know, it's a lot less time to take action. All right.

The next question. That's a good point though, Riki. After 36 hours of combat, you know, we've expended, and the person lists about 600 weapons across standard missile, PAC, THAAD, and he's probably right. We probably used that many and now more of those missiles. He says, is there going to be a problem getting the manufacturing of the Department of War primes up on this? And I would say the problem hasn't been that the primes have issues.

I'm not saying that, and I don't like the cost of these weapons, but let's be clear. The reason we had the production levels we have are choices by the services and Congress. The primes would gladly, if you would like to buy a thousand missiles today, I mean a year, they would gladly work up to that level, but they demand something reasonable, which is multi-year contracts and some kind of agreement that you'll do it from combat.

You know, the contract from the service is 50% of the way, but you've got to know that the appropriators will fund it each year. And to force that, the Senate Armed Services Committee wrote a section of law last year that listed 13 different current weapon systems that could go into multi-year munitions, including Patriot, THAAD, and then two projected ones, a cheap, a low-cost cruise missile, and a low-cost hypersonic. That's fantastic.

Now the appropriators, and they don't like doing what you need to do, which is make an agreement. No company in the world builds a factory for a thousand a year when the contract is only for one year. But we expect the primes to do that, so of course they buckled a little bit.

But finally, we got a deal where the appropriators agreed to seven of the 13 weapons systems, I think. But one was Patriot, so we have a 9,000 Patriot contract over seven or nine years, and we have a large THAAD contract. Some of the other weapons will now get into that, some of the standard missiles and things.

But there was a problem. The services had to agree, and services always think there's something better around the corner. If we just wait a year, the...

[Riki Ellison]

Mark, if you can't protect the damn radar, then all those missiles don't mean crap.

[RADM (Ret.) Mark Montgomery]

Riki, you're pulling this argument right down to a tactical failure. We all agree there's a tactical failure, and all of us have been yip-yapping about it.

I'm telling you, the primes are not the cause of that radar getting hit.

[Riki Ellison]

No, I understand that. I clearly understand that.

[RADM (Ret.) Mark Montgomery]

Services and Congress and the department are responsible.

[Riki Ellison]

So let's go to where we've got to go. So Mike Guetlein and Golden Dome are going to make a huge movement to try to get cheaper missiles than we have. It's not Frank Lozano's job, he just does part of my records.

Who's responsible for being able... I know it's big R&E, but somebody's got to be responsible for innovation.

[RADM (Ret.) Mark Montgomery]

We're having a shift now in the thinking about what... We have to stop requiring that every single defensive missile we build is a 98% successful missile. We have to flip the thing in our mind and start building defensive weapons that are 80% successful and 10% the cost, but then agreeing that we'll buy enough that we can fire two or three of these 80% successful ones.

I think that's what Mike Guetlein is doing. Some of the space-based interceptors I'm looking at look like, hey, immediately the critics are like "that could miss." Yes, it could, and then you fire two more.

The whole idea is this—

[Riki Ellison]

I'm asking Mark, where is it? It's not P.O. Who's in charge of doing this innovation? Specifically like the cruise missile every two years, every two years. Who's in charge of this for the armament?

[RADM (Ret.) Mark Montgomery]

Well, the cruise, if it was the Army, let's be clear. Cruise missiles were the Army. Ballistic missiles were MDA.

Look, do I think we lost our creativity, ingenuity, and ability to think about anything other than an extremely expensive... The cost of GBI just got jaw-dropping. I think it's nine figures.

I guess that's nine figures, \$100 million a copy. It's starting to really... Even Rodney Dangerfield is catching a sweat.

It's tough. Hey, let me give this last question. I'm going to jump off, but let me give a good question.

[Riki Ellison]
Thanks, Mark.

[RADM (Ret.) Mark Montgomery]
Yeah, thank you, and then let me give a good question. Riki, thanks for your leadership on this. MDAA, I'm sure we're wrong all the time, but we weren't wrong about this. We've been pushing this low-cost drone defense for quite a while. You can go back and watch our tapes.

If you and I have mentioned this five times together, we've mentioned it 10 times. This is two that I'll pass over to Ty to answer. One, why do our interceptors have a limited shelf life?

How can the supply chain be improved to increase production of them? That's kind of a big question. The second one is, I like this one.

"I live in California on the Bay. Will we need a THAAD battery at the water's edge to defend San Francisco?" I leave you with those two, Ty.

[Lt Gen (Ret.) Jon "Ty" Thomas]
All right, that's two great ones. Great to be on there with you, Mark, and thanks for sharing your thoughts. First, we need to defend San Francisco, just like we need to defend America.

How are we going to do that? I'm not sure how well-versed the questioner is on this second one. There's things that we build that are called critical asset lists, as we do a defense design, and then we have a defended asset list.

The critical asset lists are all the things that we wish to defend. We think they're important enough that they should be defended if possible. Clearly, just the Americans that live in the San Francisco Bay Area matter, but there's key technology hubs.

Riki's in San Francisco. Don't we need to defend Riki?

Let me get on the defended asset list explanation for a second. You take that critical asset list, and then you go, what can we defend? What do we have capabilities?

It's the whole string. It starts with sensing and understanding, and then it goes all the way through to affecting and then assessing what your effectors did. There's a limited capacity of those things, and there always will be.

Then the commander responsible for the area or defense commander has to go, how am I going to overlay the two? Then there's, quite frankly, going to be areas that aren't adequately defended or fully defended. Those are just choices and risks that they have to make and risks commanders have to accept.

A long way of saying that San Francisco should be defended. Would San Francisco be defended under the current circumstances? I don't know the answer because that's going to be a NORAD NORTHCOM commander decision.

[Riki Ellison]

Just from my perspective, I don't think THAAD's going to be part of Golden Dome. For the continental United States, THAAD is for the away game. It's built for the away game. It's not built for the home game. I don't think that's happening.

I think what's happening is containers and putting a variety of capabilities in those containers, integrating them from SM-3s, THAAD, whatever interceptions to put them in there. Certainly, California will be defended with a mid-course layer. Sorry, the mid-course layer is already covered, but the underlayer, and I love Vandenberg Space Force Base.

I think that's an optimal place. Long Beach is an optimal place. California will be defended, no question.

I just don't think it will be THAAD.

[Lt Gen (Ret.) Jon "Ty" Thomas]

Thanks, Riki. Just quickly on the other question and then in the minute or two before we close here, I want to make one more point. Why do interceptors have a limited shelf life?

There are several reasons, but one clear one is that all of these interceptors have some form of a solid rocket motor. Solid rocket motors are so important because they make it so that you can put something on a shelf. They make it so that it's in the launcher and is readily available without any fueling like a liquid system would require, anything like that.

Solid rocket motors do age. When they age out, you've got to either replace them, which is expensive, and you may just buy a new missile instead, and or you just got to go out and fire them. When we go out and do live fire exercises with Patriot units or others, it's typically that they're taking out of inventory the older weapons that are coming up on their timeouts on solid rocket motors, for example, and they're going to fire those off because otherwise they're not going to be usable anyhow.

There are other time-limited items inside interceptors, but those time-limited items more commonly, I think, are easier to replace and swap out a component, but that's a little bit of an explanation as to why interceptors have a shelf life. Riki, what I want to come back is the comment that I made about INDOPACOM. Perhaps nobody's asked the question on it, but if you go one of your objections that you come up across, well, yeah, Ukraine is like a land environment, so it's easy to stick an acoustic sensor on a telephone pole or something like that, and it's a lot harder to do that in an environment that's mixed, like CENTCOM, where you've got the Arabian Gulf and Gulf of Oman that weapons and red threats are transiting, and certainly the Western Pacific is maritime dominated. That doesn't mean you can't do it.

It just means you have to be more creative, and going back to one of the things that you mentioned, Riki, is the Artemis program that MDAA teamed with University of Hawaii at Manoa on. There are people that have thought through that problem and are working on

solving it, and it doesn't cost a billion dollars, and it doesn't take three years. It's quicker than that.

We just have to be willing to give those new, small, creative, innovative ideas that don't actually cost a lot of money a chance, and I think that's emerging here, and the momentum that's been generated by the first Artemis cohort is really, really promising, so we shouldn't allow the domain to tell us that some of these things that have happened in Ukraine are not possible. I think they are. Back to you, Riki, to wrap up.

[Riki Ellison]

Thank you. Before I wrap up, just because you said on the aging fleet, they run out so that there's people thinking it's good that we're depleting all these missiles because we need to get them out of the system. Is that an argument or not, or just so it forces us to clean it up?

[Lt Gen (Ret.) Jon "Ty" Thomas]

Yeah, I mean, but hey, like Mark said, he used the phrase tight. We're tight on effectors everywhere. We need to use them at the commander's discretion when he needs to engage a target.

[Riki Ellison]

And to your point, both with the USC SHIELD program and the Artemis program, we're supplementing. We're getting it faster using academia, using civilian support, combined with our warfighters to create cheaper solutions, much more than going through the process. And a lot of this stuff doesn't need to be classified.

A lot of it is non-classified, and that's the cheap way of doing it. And the biggest data are commercial, not militaries, the big commercial cloud providers. We've got to engage them.

We're not doing that. We're doing separate with our own defense. We can't win like this.

This is what's happening here from a bigger battle. Yeah, we got Iran, but I'm just talking about the bigger battle. We have to explore and ignite this place, Silicon Valley, Austin, Texas, wherever that innovation is going, and bring them into the game and have the data share.

I appreciate it. I appreciate this discussion. Obviously, we're passionate about our soldiers and airmen and passionate about our systems that defend them and passionate that they should be done right.

And that's where we're at. So I think it's been a great discussion and different viewpoints. It is a revolution, so we're not going back.

We ain't going back. It's forward, and you've seen it. So we have to adapt quicker.

We have to be able to be agile, hostile, and mobile to be able to be effective in the upcoming days and so forth, as well as the future. So I want to thank Mark. I want to thank Ty for just a great discussion.

And Ty, I'm going to leave. Any remarks for you to close us?

[Lt Gen (Ret.) Jon "Ty" Thomas]

Yeah, just glad to be part of the MDAA team. And thank you, everybody who's listening, whether live or later on when you read the transcripts, for being interested in missile defense and helping us to be advocates. Appreciate it.

[Riki Ellison]

Thank you, Ty. Thank you, everybody from Silicon Valley, Woodside, California. Have a great day.