Mr. Riki Ellison:

Good morning from a rainy summer day, in Alexandria. I'm Riki Ellison. I'm the founder and chairman of the Missile Defense Advocacy Alliance, we've been around for 20 years. I've been around in missile defense for 40.

We have our fifty-second Congressional Roundtable presented to you today, with the Missile Defense North of the Arctic in the Formidable Shield 23 Exercise. It is a very relevant exercise in a very relevant world.

The Arctic is tremendous in its potential, for a lot of reasons, both for transportation, for the minerals underneath, for strategic positioning over the globe, and certainly, what's going on in Europe, with Russia, and how this capability that we have,s enabled that is probably the most advanced in the world, if you look at 360-degree missile defense from space, all the way down to sea.

The U.S. Navy and its Aegis ballistic missile ships are the best platforms right now in the world, operational, to do that mission. Formidable Shield has been started off as an exercise by MDA way back in 2015, to start to look at moving information sensing, specifically, and working with different maritime ships and nations from NATO, from other than NATO, and the United States.

It's graduated to the Sixth Fleet, the very next one, I think, 2017, and it has been a Sixth Fleet MDA combination. This year, it goes every two years, and this year, it's been a complete, basically, Sixth Fleet positioning on that, and it's the first time the exercise has involved land, air, and sea, all elements together, all elements integrated and combined with multiple countries engaged, which include France and Netherlands, and Spain and others, that were with us in this aspect of it.

And it's, for the most part, not the most part, for the real part, it is using real capabilities that we have today, and very exciting of it playing into the HIMAR position, which is a very important element of any of our deterrents, in any of our missile defense capabilities, or offensive strike capabilities around the world.

So this is an exercise, we're really excited to explain it to you, and we have the commander of the exercise to do that in the best way. I think we'll be looking forward to a great discussion.

Captain Jon Lipps is an expert on missile defense, especially Navy Aegis BMD. He is on the infamous ship, the Lake Erie, which is probably our greatest test ship in the history of our Navy, for missile defense, with the SM-3. So he spent a lot of time on that, as well as previous ships.

He also was in charge of the Romania Aegis Ashore , there in Europe, and understands that. He's been involved and been testing the SM-3 Block IB interceptor and he has been put in charge of this exercise. He was a deputy commander.

He is the current commander of the Task Force 64 NAVEUR, that's NAVAF capability that's done it. So ladies and gentlemen, I'd like to welcome Captain Jon Lipps.

Jon, good to see you. I saw you in Germany last year, for an Army Europe change of command. It was great to have your Naval presence there, sir

CAPT Jonathan Lipps:

Thank you, Riki, and good morning out here in Naples, Italy. Good evening from balmy, sunny southern Italy. So it's 85 degrees and the sun's shining, so we know we're getting towards August, and then, the later part of the summer.

But yeah, thank you so much for that introduction. Formidable Shield is really ... I'm biased, admittedly, I will say that upfront.

Having had the distinct privilege to put to sea in this last iteration, as the commander of a task force that was composed of 17 ships, over 30 aircraft, F-35s, F-15s, E-2s, helicopters, a U.S. nuclear-powered submarine, and then, eight ground units that spanned capabilities across the alliance. My international staff that supported me was provided by eight different countries from the alliance. There were 23 officers that came today, came together, the week that our flagship sailed from Ferrol, Spain.

I ask you to keep that in context, and the audience to keep that in context, as we start to talk about some of the complexity, and the notable firsts, quite frankly, that those sailors, airmen, soldiers and Marines pulled together, demonstrating SACEUR's commitment for deterrence and defense of the Euro-Atlantic Alliance. It was an incredible, telling story, of the power of the people that the alliance is able to bring together, with these high-end capabilities, and what is required to be able to successfully integrate and employ the joint sensors and effectors, across a force, in order to be able to demonstrate a credible defense in a modern threat environment.

I think we were very successful in demonstrating the integration and lethality of the alliance across all domains, in both the Arctic Circle and the North Atlantic. That's another piece that we will talk about.

Formidable Shield, in execution, was happening across over a thousand miles of battle space. Simultaneously, kinetic events and engagements were occurring on both the Andoya Space Defense Range in Norway, and the Hebrides range, off of Scotland. And so, successfully exercising command and control over two surface action groups at sea from my flagship, and then bringing them all together, was a powerful testament to the staff, quite frankly, in their efforts.

I referenced we were embarked in Blas de Lato, that's the Aegis F-103, Spanish frigate, that's homeported in Ferrol. It was a privilege to be able to break my pennant in her, at the very end now, of my career.

As a backdrop, I think it's a wonderful bookmark, quite frankly, two months after I took command. In March of 2021, I took command of CTF 64, and in May of 2021, I executed Formidable Shield 21. In May of '23, I executed Formidable Shield, and in August of 23 I will retire.

So I've got two months' separation on both ends of those bookmarks, those rudder stops, as it were, in naval parlance. That is, I think, an amazing testament to the team that pulled this together.

Some of those notable firsts that I referenced, we'll talk. I think one of the neat things that Formidable Shield brings to the table is, '23 was the first time we had involvement with both Joint Forces Command Brunson, and Joint Forces Command Norfolk.

We integrated with MARCOM. As a task group commander under STRIKFORNATO, I had the opportunity to integrate with MARCOM assets at sea. That's almost the equivalent in the US Navy of bringing the integration across two different fleets together.

STRIKFORNATO is responsible to SACEUR for the exercise of command and control over U.S. carrier forces, US Expeditionary forces, U.S. ballistic missile defense forces, in the NATO fight. So, bringing MARCOM and Strike Force NATO together, we were able to do successfully in the execution of an anti-submarine warfare prosecution.

I was able to provide some of my underway replenishment resources and exchange with the SNNG, or Standing Naval Maritime Group commanders' forces in the North Sea, as he was transiting up into the Baltic. So that was a unique first.

We integrated with the US Marine Corps, and Second Marine Air Wing, that had deployed a tactical air operations center to Andoya. Where the integration occurred, there was a sharing of battle space, so that my task group forces at sea integrated with the land-based forces, and sensors and effectors, both offensive and defensive, that the Marines were able to bring to Formidable Shield, allowed for the successful joint engagement zone, live firings from a ship, and from a land-based NASAMS battery, on Andoya.

Now, the piece that is also, I think, integral there, is that we were exchanging before those engagements were occurring, Riki. We had deployed a U.S. Marine Corps recon/ counter-recon sensing force from the USS Oscar Austin, that had gone ashore a few days before.

We were able to identify a surface track, that was a target, put that out over the Link 16 network, that the Task Group was operating under the umbrella of. We were able to share that track with the forces that were also down operating off the Hebrides.

So they were seeing our surface and air picture, as we were seeing their surface and air picture, across the satellite network architecture that allowed that. But that surface track subsequently was the origin of some air launch targets that went to sea, came back around, were identified as hostile, by my air warfare commander, and passed over.

One was engaged by the Dutch ship Tromp. She was the force heir for that Surface Action group. That track was subsequently passed over also to the TEA, that Tactical Air Operations Center I mentioned, who then relayed the track to the NASAMS battery that that was ashore, the Norwegian Army, on one serial, and the Norwegian Air Force NASAMS Sams battery on a second serial, that provided engagements.

While that was happening, I was able to have my surface warfare commander, the USS Oscar Austin, declare that target that the Marine Corps had identified as hostile, which allowed the Marines that had been deployed with HIMARS batteries ashore, to subsequently engage. So there was a lot of integration that was enabled by that local network, that was then displayed by

satellites from the Arctic Circle, all the way down to headquarters here in Naples, at the Sixth Fleet and NAVEUR headquarters, and then, my strike for NATO headquarters in Lisbon, and was relayed from that TEOC and the CRC that was on the shore, in support of the AIRCOM commander, in Ramstein.

So those commanders had visibility over the battle space, off the Hebrides, and the battle space off Andoya, and those fights that were executing, all at the same time. You had referenced, we employed F-35s fives for the first time in Formidable Shield.

Both the U.S. and the Norwegians brought the F-35s right to the serials, these live fire rehearsals. We were able to use them in engagements, where they simulated engagements from the Norwegians, and they were able to provide an early warning of inbound threats. I referenced the USS San Juan, the submarine that we were actively pursuing, prosecuting my anti-submarine warfare commander was the French frigate, Ratain

She subsequently engaged as an ASW Frigate. Ratain not only was very successful in integrating those aforementioned MARCOM forces that we shared, but then, she subsequently engaged a Mach 3 cruise missile that was 10 meters off the deck, as it was coming by. That was a demonstration of my anti-submarine warfare commander and frigate, conducting a Mach 3 engagement with an Astro missile.

We mentioned the live fire, and a joint engagement zone. I don't think I had previously shared, one of the other notable firsts was, this was the first time we not only had air-to-air engagements, but a UK Euro fighter was launched. It was conducting an engagement off of a track that was being provided by the UK HMS Defender, their Air Warfare destroyer, their Type 45.

That was again, though, in concert with them, in informing me as the Task Group Commander of that battle, as it was happening. On my Spanish flagship, a thousand miles away, I was watching the UK local Air Defense Commander in conduct, or in concert, with UK air forces conducting barrier air patrols, engaging with their meteor AMRAM missile layer, advanced medium range air-to-missile, a surface track over water.

Additionally, this was the first time that both fighters and E-2 Charlie from the French, while conducting flight operations, were tracking a ballistic missile that was launched from the Heese. And that track was shared across the forces, towards the conclusion of the exercise.

I failed to mention that one of the other notable firsts was some logistics moves. When you think of a force, the size that we were employing, across the battle space that we were employing across the battle space that we conducted our operations to set those conditions. My tagline for logistics was, if you didn't bring it there, you weren't going to find it there. And what we were able to do was demonstrate the successful expeditionary loading of a harpoon anti-ship cruise missile on a USP8 up in Norway that successfully then launched, integrated with my Spanish flagship and one of the Danish ships that was operating in concert for a simultaneous time on top engagement of a target up above 73 degrees north latitude in the Arctic Circle.

And so that was a successful evolution to conduct both the ordinance handling and loading, but that was day one of the exercise, Riki. I remind you, this staff that was coordinating this across the air and sea domains and the logistics fronts had just come together 10 days before, when we had all met in Ferrol, and then got underway to head up to the Arctic Circle.

So at the end of the summary from a Formidable Shield, I think it's the unprecedented demonstration of cutting edge capability and capacity that reflects the high-end capabilities that the alliance is able to bring to bear in the demonstration of deterrent and defense, but it is absolutely predicated on the network architectures that enable the battle space that allow us to do that across the joint force. To be able to integrate the sensors, the effectors, to augment the battle space that you need because of mach three targets, whether they are cruise missiles or anti-ship ballistic missiles, or they are anti-ship cruise missiles being used to strike land targets, as we see in the Ukraine, where they are ballistic missiles that have been modified to strike ships at sea, we have to be able to employ all of the sensors and all of the effectors. The only way that we can do that is to be able to ubiquitously share fire control quality data across the entire joint force.

Now, I'd like to tell you that we had absolute success in that, and I think Admiral Montgomery would probably call me to task, as he rightfully should, having had the privilege to have been briefing Admiral Montgomery all the way back to when he was Commander Montgomery and then Commodore Montgomery. It's great to see you, sir, but I'll be honest, it was not seamless in the architecture management. It was a challenge. It's hard. We're not where we need to be, be blunt. We're making progress. And Formidable Shield gave us a great opportunity to bring this equipment, this kit across the alliance force together, and we learned a lot. Not only did we learn about the architectures, but having spent a lot of my time operating out in the Indo-Pacific, weather in the Arctic Circle is your adversary.

Mr. Riki Ellison:

Thank you, Jon. And let's go for the bigger public perception and understand the education of why north of the Arctic is important strategically for the war fighter and those challenges in communication because you don't have the satellite coverage up there that you would, there's weather conditions. So now you are challenged with being able to move comms, and now you have to go with intent, and now you're dealing with our allies and partners that maybe don't have the same intent we do. Can you just give a broad brush to the public on that set of why it's important up there and what are those specific challenges that's unique than fighting anywhere else in the world?

CAPT Jonathan Lipps:

So I think, certainly in the European context, if you take a step back and you look at the European continent, it's a peninsula. And most people, to a certain extent, don't look through that lens, but if you look at it at the European continent as a naval officer, it's a peninsula bounded by the Mediterranean, the North Atlantic, and the High North. And so by not operating up there and

generating the repetitions and the sets that we need to be comfortable to recognize the limitations of operating, we are unilaterally removing battle space. And I think that that is not where you want us to be as a force.

And the preponderance of capability that can be brought to bear, from a persistence and a sustainability perspective, is maritime forces there. It is maritime forces augmented by air forces, but principally, it's going to be maritime forces that are able to generate the conditions and effects to support operations and freedom of maneuver and maximizing the front that we need in the theater. It's those maritime forces, quite frankly, that are going to be able to provide for the sea lines of communication that, presuming a land war is an element of the conflict associated with a major peer competitor on the European front, the sustaining of those forces are absolutely vital and integral on the capabilities of the maritime force operations.

And so just at a quick snapshot, I would say that's why it's strategic. Now, the implications, going back to my Indo-Pacific days, one of the things that was very telling, operating at 73 degrees north latitude. The satellite look angles that you referenced are absolutely dependent upon where the operations of those normally geosynchronous satellites are over the alliance capabilities that are brought to bear. And so you go from satellite look angles that are measured in 20s of degrees of elevation and higher to satellite look angles that are measured in singles degrees of elevation, and all of the challenges that that can bring when you need maximum bandwidth associated with a modern architecture.

The other thing, just very bluntly, the water temperature, survivability, and operations up there. Water temperature is measured, or survivability in May, in the Arctic Circle, where we were low Arctic circle, was measured in tens of minutes compared to days in the Indo-Pacific regions. And so how can you respond from a survivability perspective? Are you ready to do that? In May, we're operating my force in snow storms out at sea when we were conducting those harpoon launches. So that's just a quick snapshot of there.

There's also an aspect that, as you operate in the higher latitudes ... I grew up thinking about weather in the context of ducks for my radar and how the meteorological conditions affect the range or the skip zones of my communications. And that can alter the ranges. Well, we have to think about the fact that the solar weather has a more pronounced impact and an implication to operations on both sensors and communications when you're conducting ops in the High North. And those are things that, just as I was being briefed on water temperature and legacy atmospheric weather, I was also being briefed on space weather and the solar weather that was occurring. And so that was, I think, a reflection of the new battle space as we conduct these types of operations.

And then the final piece, the last notable first that I would share with you is the task group commander was ... On one of the days, towards the end of the exercise, you're executing a normal battle rhythm. Administratively, you're taking briefs. I mentioned the weather briefs. There's intelligence briefs, operations briefs, what shifts had a maintenance problem overnight, or what are my assignments for helicopters available, things like that.

That particular day started at about 6 a.m, I got a phone call and we were a couple hundred miles off the Coast of Scotland, that one of the ships we needed to conduct a medevac. We were prepared for that, as you would expect. We had designated a helicopter to be able to support my sea-to-shore movement in a case like that. One of the oilers, actually, the Spanish oiler, Petina, is equipped with a ... I think it was a 12-bed hospital on board. And she goes to sea not only bringing my fuel for the force, but she carried 11 Marines and had a hospital, a dentist, the doctor, and four ICU beds. So we had all kinds of options to be able to execute if necessary, but in this case, we needed to get a sailor ashore. We had indications that, probably, surgery was going to be necessarily involved.

So that's how my morning started. I was planning that medevac, ensuring that we had lily pads for the helicopter to pick up a sailor, fly to another country ship, land on it, and then fly ultimately to the hospital in Glasgow and get this sailor the medical treatment he needed. Upon the conclusion of that operation, we rolled immediately into a refueling of the task force. And so we did that for about four hours, I think, because I had multiple ships that were taking on fuel. I went from that right into the flagship, conducted a missile shot. She successfully engaged an anti-ship cruise missile threat with her organic ESSM. And 20 minutes after the conclusion of that, Riki, I was on a VTC from the bridge briefing sat gear. And so that was a notable first, from my perspective.

Mr. Riki Ellison:

Thank you. I'm going to ask one more question before I get Mark on there. You are more than familiar, you're an expert on EPAA, you're an expert on European SM3, excuse me, SM block 2A, IB capabilities on those sites that we put on there. We, as a European continent, are struggling with open architecture on land, on air to be able to have an integrated fight. We are separating EPAA from Cruise Missile Defense in Europe in ways where you are not. You are out there with multiple nations and you have open architecture, you do.

Why are we not able to do that on land, starting with the Aegis ashore sites? If we had to take on Russia and we had to deter Russia with everyone, the lessons learned and what you're doing there in your exercise, and I'm very curious on your overhead persistent 24/7 365 cruise missile defense sensor capability, whether that's E2s or how you do that to get 10 foot off the ground because we're struggling with that everywhere on that aspect of it.

So I'm asking you directly the lessons learned that can be applicable to the European situation that involves US Navy with both those four ships, Aegis ashore sites Romania and Poland with this Formidable Shield exercise and why weren't they involved with it, et cetera, but go ahead. That's it. Hopefully a short answer, because I know Mark's got his, but I wanted to make sure I hit that with you.

CAPT Jonathan Lipps:

Yeah, it's a great question. Some of it is policy, some of it is programmatics. And the fact is that, as you reference, it is absolutely necessary to ensure survivability in a modern day flight. The fact is, as I had articulated earlier, we did have some network challenges and we were not able to fully integrate all of the capabilities. I do not have a full CEC Link 22 environment across that force where I could exploit the full capabilities of all of the advanced combat systems that are brought to bear. So the impact of that is I'm going into a gunfight with a couple of daggers, quite frankly. And it's a challenge because the adversary is not concerned about my limitations, he's going to exploit them.

One of the reflections that I have is the architectures that we are burdened with fighting with right now, ultimately, if we do not expand them to a complete open architecture framework that allows us to seamlessly share fire control quality tracks across not only nations, but domains internal to those nations, we're going to relearn the lessons that our land brethren learned following World War I, where they were attempting to employ cavalry and musket tactics in an artillery and machine gun fight.

We're going to learn that in the modern day IAMD fight because those anti-ship ballistic missiles, those high-end anti-ship cruise missiles, the hypersonic missiles that are available for proliferation will be a threat, and they're being flown and fired by peer adversaries almost on a daily basis. So are we there yet? No, sir, we are not there. Part of it is policy prescriptions, part of it is rivalries, and part of it is, quite frankly, how weapon systems are designed from a programmatics perspective.

Mr. Riki Ellison:

Okay. All right. I will now pass it over to Mark. Mark was the J5 at EUCOM. Mark was your, as you mentioned, commodore, commander, an expert on the European Theater, an expert in the Navy, and a member of our board of directors, Mark Montgomery. Mark, it's all yours.

RADM (Ret.) Mark Montgomery:

Well, Riki, thank you very much, and it's great to listen to Jonathan Lipps there for a bit. Formidable Shield was a formidable exercise. And Admiral Morley and a formidable exercise. And Admiral Morley and Jon Lipps were great leaders on this. And when I think of Jon, I think he is a BMD force of nature, and I think that his retirement in August is going to be very impactful for us as a force. Almost in a Star Wars method, it'd be like there'll be a disturbance in the force when he retires. And so I hope the Navy's in a position to pick up on it.

All right, look, this exercise. First of all, I love Mike Gilday, the CNO of the Navy. Why he's saying we need a RIMPAC in the Arctic when you're actually running a RIMPAC in the Arctic is beyond me, except this isn't RIMPAC because RIMPAC is the lowest common denominator exercise. This was literally a highest common denominator exercise. And look, should not watch this exercise and go, "Well, that's it. Air defense in the handled list," right?

What we've really done here is show the very best of NATO. The very best of NATO in missile defense is cruise missile defense at sea. In cruise missile defense, we have capabilities and capacity on multiple, multiple hundreds of big NATO ships. I mean 81 cruisers and destroyers just from the Navy, or even more than that from our Navy. 90, just from our Navy. We have capable cruise missile defense in high capacity. And our allies and partners introduce another 40, 50 ships worth of cruise missile defense. 30, 40 ships in NATO. And some of our Asian allies, Japan, Korea, and Australia do as well. But just for the purpose of this.

So we do have it. And look, we get to choose the battle space, geographically where we're fighting by where our high-end naval assets are, and therefore our capacity is more than enough. Now, when you move to at-sea ballistic missile defense, the numbers go down a... Your capabilities are still there, but your capacity starts to go down and it becomes exceptionally US-centric. 80% plus of the forces that could be brought to bear would probably be US Navy in that ballistic missile defense at sea. Not 100%, but about 80%, so it's a lot. And again, though, you get to pick where you put your high-value assets, so you're in a little bit better position.

When you move this problem ashore, even though you bring some of the same countries with good capabilities, the capacity becomes a real problem in both cruise missile defense and ballistic missile defense because your adversary gets to pick the geography where he attacks the targets. Does he go counter value or counter target? Does he hit your systems or your people, your military infrastructure, your civilian infrastructure? After a while, it just becomes you need to defend everything from anything. And we don't have that capability and... We don't have the capacity, for sure. And in a few areas, this is where the US has let it down, we don't have, and you and I have discussed this a million times, Riki, ground-based cruise missile defense capacity in the thickness that we have it in the maritime domain from the Navy.

And there's a lot of reasons for that. And I'm not throwing knives at the Army. There's good reasons why they can't do it. But the bottom line is the systems they've been depending on, as I say, are the Phoenix Suns of missile defense systems, two years away from being two years away. I think they just announced, I believe, a two-year delay, just to make my point for me. Because it was getting a little stale, they said, "Nope, there you go, Montgomery. Another two-year delay." And look, now we're really dependent on our partners and it turns out our partners aren't thick. They don't bring thick capacity. They bring one battalion or one battery. They don't bring the US... the way we come in hard with THAAD or Patriot with thickness in addition to capabilities. In other words, capacity in addition to capabilities.

Now look, if ballistic missile defense... We have capability and capacity. It's a little bit higher US percentages now because of THAAD and Patriot and it's SRBM role, but still not near enough. And then we, insanely, don't use the European Phased Adaptive Approach radar systems, the Aegis ashore systems in Romania and Poland are distinctly set aside just for that Iranian threat that might come in some distant future, as opposed to the Russian threat, which is literally happening on our doorstep.

Now, that's an issue that NATO needs to tackle. They need to tackle it... They should tackle it in Vilnius; they'll probably pass and try to tackle it later at conferences and meetings, which means it won't be resolved for years with an S on the end. So real issue. So from my point of view, Formidable Shield, an excellent exercise that absolutely demonstrates the maritime capabilities and capacity and cruise missile and ballistic missile defense. A few things I'd want to anchor on here. Look, the US Navy, and to a lesser degree the US Air Force, kind of traffic in the idea of firing quality track data. In other words, passing firing quality track data between systems. The Navy's been able to do this for about 35 years with a system called Cooperative Engagement Capability, Lipps has mentioned it.

But truthfully, JADC2 before we thought up the funky name JADC2. But the Air Force 35 years ago didn't want to play in it. Probably for very good reasons. But the bottom line is 35 years later they've had an epiphany that having all sensors and all shooters talking to each other at a firing quality track level is really good. So for about a trillion dollars... I'm joking there. Maybe $100 billion, we're going to make a modern version of CEC and give it to everybody eventually. In the meantime, we need to be using CEC and other firing quality track data systems. So for example, the Air Force should be putting... This demonstrates to us the need for putting CEC on the new E-7 Wedgetail, the AEW&C replacement, similar to what we have on the E-2C and E-2D Hawkeye and Advanced Hawkeye aircraft that the United States Navy and many of our allies fly.

The Japanese Air Force has finally overcome the objection of the US Air Force and put CEC on their most recent purchases here. And just because I've thrown shade at the Army and the Air Force, I'll throw some shade at the Navy. The Navy needs to get hot on Link 22, and doing research for this. The Navy's first order of Link 22 was in 2012. Their first installation will probably be in 2026. This is Army-like in its installation speed. I mean we need to get this moved out to the ships, so that we can be passing firing quality track data around the NATO network as well. We agreed to this. I'm pretty sure SPAWAR designed the system like 20-15 years ago, or actually starting in the 1990s, going all the way back there. So we literally owned it, but have disowned it and we need to take ownership again and get it on the ships. I think we're ready for it. I think most of our systems are Link 22 compatible. It's just an issue of pushing now and getting there.

So a little shade on all three services. There's things we need to do there. But I would say the biggest one is this land-based cruise missile and ballistic missile defense systems getting in capacity. What Formidable Shield shows you is that your forces can operate when they have sufficient capability and capacity in the integrated air missile defense throughout the spectrum. And so we absolutely need to take what we're learning in the maritime and apply it in the ground terrain areas, so that our army and Air Force can move with the same agility, security and safety that Lipps's task force was able to do.

And then, finally, integrating the offense and defense, glad to see that. That's another thing JADC2 will bring us. It wasn't inherent in CEC. But it is inherent in NIFC-CA and other things that the Navy was pushing 20 years ago, but couldn't get joint. We need to pull that together so

that we're integrated offensive and defense because sometimes the best defense is thinning the herd at launch. And so while it's hard to find the launcher that is scooting around in the forest somewhere, it's not hard to find the launcher two to three seconds after it launches its weapon. There's a glaring spot on some kind of DSP satellite saying, "Hey, it's right there." And then it gives you that long you need for a quick counter strike. But you got to be quick, you got to be integrated. And Lipps has shown that in this exercise. So we need to work on that.

And then finally, Riki, what I'd say is that this is something NATO needs to really get focused on. It has its own roles and responsibilities issues coming here. And they're going to work through a lot of French stubbornness and obfuscation, and desire to sell French products throughout NATO. Push through that and say, "Look, we just want the best of breed. If it's an Aster," which I doubt, "that's fine. If it's a NASAMS, which isn't American, it's Norwegian, that's fine. If it's a US system, that's fine. If it's an Israeli system that is properly integrated in the Link networks, and that's an important qualification on it, that's fine too." But we need to get these systems procured and integrated in a fulsome way, and then exercise in a ground-based way similar to what Lipps has shown out at sea here.

So that part really excites me. I guess if I came back to the US side, it's us getting our roles and responsibilities right too. A lot can be learned from this in terms of the need... Again, maritime are okay, the navy's in pretty good shape, but on land base, we have a lot of work to do for defense of the homeland, and we have a lot to do for the ground-based defense, the terrestrial-based defense of our forward-deployed forces. And that's getting some kind of long overdue replacement for the Hawkeye, Hawk systems. 30 years retired now, that needs to be replaced out there.

Let me say one last thing. We mentioned before, you can never say this enough. We have extremely limited hypersonic defense. And by here, I mean the traditional hypersonic defense, not the sudden disinformation campaign coming out of DOD that we have some hypersonic capabilities. I'm talking about hypersonic defense against maneuvering cruise missiles in the glide phase that are out there, able to maneuver around our defenses. We have very limited capability there. A tiny bit we say publicly, with the SM-6. But again, you got to thin that herd up in the midcourse. And so we're going to have to go get those weapons. We're going to have to invest in and get to hypersonic R&D.

And I'm a little afraid that we're not pacing the Chinese and Russian investments in offense. I don't know when they're going to deliver. There's conflicting intel coming out now that it's soon or not soon. Look, we need to be investing in the defense because I do know one thing, no matter when they deliver their offensive capability in this true hypersonic cruise missile defense, we need to have an in-existence defensive capability ready to deploy, to defend our assets and not create a deterrence gap where an authoritarian regime has a first-strike weapon that can really put us on our back heels. So we need to get moving on that hypersonic defense and I just don't think we're there.

And I really worry that as they look at it and go, "Well, this might not work." We're way past the zero defect time in this. We should be investing in multiple technologies and investing to fail. We should be investing in three or four R&D efforts for hypersonics right now, knowing one, two or three, hopefully not all four, don't pay off the way we'd like. And very easily accept that loss. Not fire the PEO, tell people, "Take some risk." Because this is one of those places where we need the kind of Manhattan effort, where you're throwing everything but the kitchen sink at them, and it's happening.

So for me, it's really important... First, congratulations on Formidable Shield to... I was about to call it the Abominable Snowman, but we'll go with Formidable Shield to Jon, and also congratulations on a great much longer than the Navy planned a few years ago for him, extensive Navy career with a final great command. But also, a good set of lessons learned from us on the ways forward. Back to you, Riki.

Mr. Riki Ellison:

All right, Mark. Can you elaborate a little bit more on Link 22 for the audience? Because Link 16, I believe, is not sharing firing data. It's coordinating all the sensing material to be able to pick out what the target is. And is Link 22 the answer for open architecture when Formidable Shield mostly had, I shouldn't say mostly, but the U.S. version with Aegis and I think Spanish has Aegis, maybe that was the only one. Whatever that is, can that be applied to land? And from your perspective, what are the best lessons we can take from Formidable Shield, forget the policy, to apply it to the capabilities that we already have in Europe to leverage that, including those ships, including the eastern shore sites? Those are the things I'd like to have you comment on, Mark, on that. And you can chip in too, Jon, after Mark chips in on it.

RADM (Ret.) Mark Montgomery:

Got to be careful about all the details here. But what I'll say is, first I do want to say this. Let's just say for a moment that Link 22 was something we now want to skip generationally. Sorry, you can't make an agreement with all your NATO allies 10 years ago, have them invest in it... Look, alliances are great force multipliers, but sometimes alliances have small requirements for you. And when you tell everybody else to go get something and say that you're going to get it, you actually got to go get it. So look, we need to get a Link 22. Do I think... Link 22 is not CEC exactly, so I want to be careful with that. But I do think it improves the quality, the situational awareness that you provide a shooting platform when somebody else senses suddenly putting you down.

I don't think it's as good as Aegis-to-Aegis passing. I still think that those kinds of launches and remotes are really the best. But they require proximity and some other things, and positioning, being in the right spot, and they're unique to that. And beyond Spain, Norway has Aegis platforms that aren't always... Well, I think they lost one of them in a sinking, and they've got three left that are very capable. It was okay. I think they could only man three at a time anyway,

so it wasn't a complete loss there, other than the embarrassment. But they have Aegis. And there's other high-quality radars. So what you want to do is where other high-quality radars exist, like on British ships, French ships, Italian ships, you want to be able to pass that data at the highest level of data quality to enhance your firing solution. Particularly when you have a head-on shot and that other ship has a crossing view. Your hummingbird is his Greyhound bus when you're thinking about tracking things. So you want to be able to pass that. But I think it's one of these-

RADM (Ret.) Mark Montgomery:

You want to be able to pass that, but I think it's one of these things too where it's hard. We're going to have to keep all of our systems Link 22 compatible, it means extra. We're not getting rid of Link 16 doing this. Really, the end of Link 11 would be the theory. That's why it was originally designed as a kind of move on from Link 11. So this is not my number one priority for procurement. I've listed those already, but it's on the list and it gets a degree of difficulty factor multiplication because you told your allies to do it and they did it. And therefore, you need to get in there too. In fact, I believe the Taiwans just asked for it and we're getting ready to sell it to them as well as the Japanese. So this has an Asia role too and I'm not sure about the Australians, but I suspect because it's NATO, the Australians are procuring Link 22 as well. So it's just something we ought to be doing.

Mr. Riki Ellison:

Okay, thanks. Mark, what about the application on the stuff in Europe for Formidable Shield or...

CAPT Jonathan Lipps:

So Riki, let me riff off real quickly the Admiral's observations there because I do think one of the serials that we had set the force up, this was an opportunity endearing Formidable Shield where the Norwegian, the U.S., and Spanish Aegis were all operating together and we also had the UK Type 45. And so, you have a diversity of sensors and effectors. You do have different network architectures, but in one of the serials, I'll go back to the Mach 3 anti-ship cruise missile launch. So I've got a target that's flying at the force 3 times the speed of sound and 10 meters or 30 feet off the deck. And the engagement times, I won't go into details on, but to be able to share that track information in a raid scenario, which if the adversary is going to engage the force, most likely it's not going to be a singular shot that's launched, but it'll be a raid scenario.

And I have to be able to maximize the depth of fire and the missiles in flight to be able to not only attrit that archer but defend the force as it was referenced earlier. In one of these serials that we had conducted, the force was set up where a Dutch ship engaged with SM-2 telemetry round, the Spanish ship engaged with the SM-2 telemetry round and then the French ASW frigate had splashed it with an Astor war shot. But what we were able to demonstrate, and this goes back to admiral, you and I growing up steaming around with fizz green from a force perspective and

being able to have confidence in your doctrine and your weapons systems configurations and compatibility to operate in that manner for a significant amount of time. And so, any expansion of the battle space that I can provide my ship COs because or the land or the Air Forces enables greater decision making.

That was the other thing that these fire control quality link paths reinforced ironically enough from my perspective was the paramount importance of mission command to be able to set the environment where my commanding officers, regardless of the flag that was flying off the truck or regardless of if they were operating from an ASAM's battery or from a US Aegis platform, that they had the decision making battlespace required to employ their weapon system to the maximum capability. And that's what we get out of having the architecture that maximizes that. Otherwise, we're not able to employ our weapon systems to the greatest extent possible. So it's really kind of not only does the architecture enable a fire control quality track, but the enablement of that maximizes your battlespace across the domains that we're all fighting in different battles against different threats, and this singular air threat brings all those forces together.

And so, that's a hard nut to crack quite frankly, but it's the world that we're living in today. And I think to your point, your observation admiral that those threats are there today. The defensive capability is not maximized or optimized I would argue to the extent that we need, but the adversary's got the capability and he's demonstrating that daily quite frankly. And so, we've got to be able to employ our systems to their maximum limits and authorities to be able to provide that by that battlespace, both in geography but then temporally as well.

Mr. Riki Ellison:

I'll pass over to you, Mark, on questions and so forth.

RADM (Ret.) Mark Montgomery:

No, so that's good. I've got the questions here. We've got about five minutes left Lipps, and you handled two of the three inbound questions in your discussion. That's great. One got asked and I think I know the answer to, but I want you to go ahead and take a whack at it. Did this exercise include the GBIs in Alaska and discuss the implications of Aegis BMD Burkes being introduced in the Arctic environment?

CAPT Jonathan Lipps:

So no, we did not include the ground-based interceptors in Alaska in our serials. And then the operations of the Arleigh Burkes up in the Arctic, we kind of talked about some of the weather impacts earlier and what those considerations are both from a communications but then also from a radar perspective. One of the things that I would like to note, admiral from a U.S. Navy perspective, both the participants, USS Porter and USS Oscar Austin were very late changes to the serials. And so, due to operational commitments, the ships that were originally planned, that

had been supporting grooms in advance of their assignment for this exercise were replaced in one case literally the week before the commencement of the exercise. And so, that was the force that showed up and was launching missiles and employing their weapon system in the environment that we saw.

But going back to the Arctic piece specifically, the impacts as we continue to conduct operations up there, we have to learn how to maximize the environment. We have to recognize the logistical constraints. And just from a configuration and an equipage perspective, if you're going to conduct operations up there, I think you have to understand that not all of the force, and this is not the U.S., it is not any one nation in particular. But are configured from an equipment perspective to conduct persistent and sustained operations under those environmental conditions easily, simply. Not every ship's got dry suits for every crew member on board. Over.

RADM (Ret.) Mark Montgomery:

Yeah, I agree with that, and I think two thoughts on this. I'm glad it's on groomed systems coming out because there'll be on groomed systems when the war starts and once you're sending 40 ships over to the Pacific or the Atlantic for something, there's not enough grooming teams in the Lockheed Martin, Raytheon world to do that for you. So that's a good thing. With regard to the ships and the Arctic, I think the Navy's been tackling the bow hardening issue and putting into new construction in the higher home numbers and that's good. But look, just because you have bow hardening, it doesn't mean you willy-nilly race around up there. I was in some very heavy seas in an operation called Northern Wedding in the late 1980s and a lot of ship damage was done because we weren't wise about the Arctic is doubly bad because you can't get outside to fix things that are hit with the first wave and remove them. And the second wave comes and you have serious damage as you don't have enough safety clippings and the dry suits and all that.

So I'm a big fan of being risk cautious in these Arctic exercises. On the other hand, we need to practice operating up there. I think the Nome base has finally made it into the NDAA in a way that it'll probably be funded. Senator Sullivan will be happy and with us, that's in Alaska. And so, the US Navy's going to have to get more used to operating in these waters at least portions of the year. And if the adversary's going to drag us up there, then we're going to need to follow. And if we choose to operate up there for some kind of offensive strike reasons, then we need to bring the defensive capabilities up with them. So I think the operation Formidable Shield has beyond its maritime cruise of ballistic missile defense implications, had some great Arctic implications for the year. All right, we got about two minutes left for wrap. But why don't we go Lipps, me and then you, Riki, on the way out the door. So Lipps, give us a minute.

CAPT Jonathan Lipps:

Hey, sir, thanks very much. And again, I think with the exercise, what I call a live fire mission rehearsal actually demonstrated was the ability to successfully integrate and employ the high end joint capability of the alliance in demonstrating deterrence and defense in the battlespace of both

JFC Brunssum and Norfolk simultaneously. And so, when you think about that, every one of you that are listening should be very proud of the US contribution of capability. But just as important, if not more so quite frankly, are those soldiers, sailors, airmen, and marines who are able to employ that capability, integrate it across the joint force. That was my big takeaway quite frankly. Over.

RADM (Ret.) Mark Montgomery:

Thanks, Lipps. First of all, again, for the audience, if you didn't know Captain Lipps ahead of time, you'd know that the Navy's losing one of its really giants of naval ballistics of defense, posture, planning and now operations in this last tour. But definitely the establishment of those Aegis Ashore sites in Europe was among the hardest jobs we've assigned to any surface warfare officer and they were sure. And so, fantastic there. Look, this exercise is important. It demonstrates things we can do, it demonstrates the value of an alliance. It demonstrates that an alliance brings immediate capacity because they are... Yes, we have four destroyers growing to six and Rhoda and we sometimes have a Ford deployed moving through the theater.

But our European allies have in theater, 10 Aegis destroyers are growing and the numbers growing with the Spanish. And 15 to 20 other very capable cruise missile defense shooters, and four or five other ballistic missile defense use. So we have capabilities that give us capacity. And so, in the maritime, we're doing great. But the other part of this lesson is we need an equivalent ground-based capability and capacity. And if we don't get it, the maritime is of little value. The Russians are not going to attack you at your strength, they're going to attack you at your vulnerability. And we have a gaping vulnerability that this exercise has shown is not at sea. So Riki, I'll pass it over to you for the final call.

Mr. Riki Ellison:

No, I commend Jon Lipps. What a stellar individual for the missile defense community and that your run and what you've done has helped the missile defense community, has helped the world in that Navy aspect of the capabilities that you bring. So those years that you have spent as an officer, sir, thank you for your service to the nation to make the world a safer place. Formidable Shield is bringing diversity of strength together. It's got to continue to do it. It is the way out and continuing to push that open architecture to enable all the players to play is what you're doing. And you're ahead of everybody else in Europe on this. And it was so cool to see you work with the offensive HMARS I mean, to play into that game because we have to play in that game and we have to mix our offense with defense to have the best deterrence to prevent conflict and to win if we go in there and you're demonstrating that.

And it's great that you have the candor and the courage to say, "Hey, we didn't do it all right. We got much more to do, but we are moving down that path." And it was great to hear Mark say, "Hey, this is not RIMPAC. This is better than RIMPAC for what it does at the high end aspect of it." So congratulations on that, sir. Congratulations on the exercise. And I think we as a world are

getting better and being put in that domain that nobody wants to go really in and fight is an awesome ability to say, "Hey, we can play and we can play everywhere and we're going to be able to deter you if you're going to try and take us on." So thank you. Thanks, Mark for coming in. It was great to focus on the Arctic and with this great exercise. So thank you, Jon.