Center for Strategic and International Studies

Online Event

"Missile Defense and Defeat: A Conversation with the Vice Chairman"

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FEATURING:
General John E. Hyten,
Vice Chairman, Joint Chiefs of Staff

CSIS EXPERTS:
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Tom Karako: Well, good afternoon. Welcome to our event today. I'm Tom Karako, senior fellow with the International Security Program at CSIS, where I also direct the Missile Defense Project. I'm going to say a couple words to set the stage and turn it over to our featured speaker. We'll then have a conversation back and forth and then we'll take questions that have been submitted from the audience. For those tuning in live, I would ask you to please go to our page online at the CSIS website, and you can find a link to submit your questions.

So our topic today is missile defense and missile defeat. And there's a lot going on in the distinction between those two things, about the relation of active missile defense to other means to counter them. You know, when the 2019 Missile Defense Review was rolled out, senior defense officials noted that our adversaries were investing disproportionately in various kinds of missile capabilities. But there's also been an important vein of discussion over the past eight, 10 years or so about how to deal with the increasing challenged posed by complex and integrated air and missile attack.

Folks may recall the so-called Eight Stars Memo from about six years ago, in which Army and Navy service chiefs called for a more comprehensive approach to these threats. The 2017 update to the joint doctrine, JP 3-01 ["Countering Air and Missile Threats"], reinvigorated the discussion of integrated air and missile defense as the basis for a more comprehensive approach. And integration has been a key watchword for various service AMD programs, as well as joint ones such as JADC2. And when Congress passed the NDAA a couple months ago, it contained a provision for a more detailed integrated air and missile report directed specifically to the chairman of the Joint Chiefs.

And there's a lot of other things going on. Over the past years we've seen considerable attention to developing new hypersonic strike capabilities to defeat adversary strike forces or their air defenses. There are some interesting questions about multi-institutional makeup and acquisitional authorities within what one might call the missile defense enterprise. And all this fits together not in a vacuum, but to support our larger deterrence and defense goals. Active missile defense itself, and integrated air and missile defense more broadly, contributes, after all, in several ways to deterrence by denial.

But that's enough for me for stage setting. To put all this together for us and to answer these questions there's probably no one better alive than our speaker today. General John Hyten is the 11th vice chairman, the nation's second-highest ranking military officer, and a member of the Joint Chiefs of Staff. His distinguished career includes deployments to Operation Enduring Freedom and Operation Iraqi Freedom. And his previous commands include Air Force Space Command and, of course, U.S. Strategic Command.

General Hyten, welcome back to CSIS. You were here I think a little over a year ago, when you did an event with my former boss Kath Hicks, who's gone on since to do some other things. Over to you, sir.

John Hyten: Yeah, your former boss, my current boss. Just kind of funny how that works. So it's good to have Dr. Hicks over here as the deputy secretary of defense. It's good for me to be back with CSIS. So thanks very much, Tom. And thanks for the introduction. Last time I spoke to you guys it was before COVID. There were no masks. We were actually over at CSIS and there was an audience to interact with. There's an audience to interact today, but it's via Zoom chat, which is kind of the way things are going right now.

I never thought I would spend the last year of my life spending basically two-thirds of my time on COVID. But that's the way it's been because as our secretary, Secretary Austin, has said, that is the – really the number-one priority for the country right now, to figure out how to get after that. And that is where we're spending our time. But I can – you know, I've told the docs that I work with every day I can't wait. One of the things that I look forward to in retirement is forgetting everything I've learned about COVID and just getting on with it.

But I appreciate the opportunity today to talk about a topic that's been important to me for pretty much my entire career. I was on the Strategic Defense Initiative program back in the 1980s, the first time I looked at missile defense from an engineering perspective before I got to be an operator. It's been important to me all the way through. I have a lot of things to talk about today. You ticked off about eight of them. I could spend an hour on each one of those eight topics and barely scratch the surface.

So what I'm going to do today is I'm going to try to just give a quick overview of a number of the issues that are out there to kind of set up the discussion, and then wherever you want to go in details or wherever the audience wants to go in questions I'll dive as deep as we can go in an unclassified forum.

But I think the – if you're talking about missile defense and missile defeat, you talk about integrated air missile defense, you have to start with the threat and it's important to look at China, Russia, North Korea, Iran, in particular, and look at why missile defense and defeat is so critical to the future of our nation, because those countries have been watching us for, really, the last 20, 25 years, developed strategies to deal with our strengths, and they've all decided that they will put significant investments in missiles.

That's ballistic missiles, hypersonic missiles, cruise missiles, air-delivered missiles, sea-based-delivered missiles, land-based-delivered. But the amount of investment that they have made in missiles clearly demonstrates

a priority that they have in challenging the United States and, therefore, it is our responsibility to figure out how to counter that.

If you look at it from just a missile defense perspective and you look at it from a traditional missile defense perspective, it's actually – the United States is not in a very good position because if you think about it from the traditional perspective we think about critical capabilities, maybe some of the most critical capabilities, in our country.

You think about GBIs in Alaska and California. You think about THAADs and Patriots deployed around the world, and they're critical, and I'll talk about those a little bit in a minute. But you're just talking about shooters. You actually have to look at the entire kill chain. You have to look at the sensors, the command and control, the intelligence, and, eventually, the systems that will defend or defeat those capabilities.

You have to look at all of those across the board. But at the same time, you need to look at the entire spectrum of capabilities. So when you look at missile defense and missile defeat, it's important to look at the entire kill chain, and instead of starting from the back end, where Patriot works in a point defense system, it's important to think about how you defeat and defend left of launch first.

And so the best – the best place to defeat a missile is before it launches and there's a number of ways to do that. There's a number of ways to do that. You can – you can think about a direct attack on that missile on the ground before it launches. But you can also think about denying the targeting system that that missile uses. because if somebody launches a missile and it doesn't go where it's supposed to, you've defeated the mission.

So thinking about left of launch and talking about left of launch in an unclassified session is a little bit tricky. But, you know, I think the audience can figure out there's a lot of things you can do left of launch and right up to launch that is probably the most effective way in defeating a missile.

Then, as soon as that missile launches, the ideal way to get a missile is the earliest in that missile trajectory you can. And the earliest phase that you can attack a missile is in the boost phase, so having a boost phase capability is hugely beneficial. It's hugely beneficial because, number one, it knocks out the missile before it can threaten the United States or our allies, but number two is if you can – if you can eliminate a missile in the boost phase, especially early in the boost phase and it drops back on the adversary that actually shot it, the adversary will think long and hard about before they pull the trigger on the next one, especially if there's something nasty on the top of that missile and it falls back on their own territory. And so there's a deterrent element in working that as well, and I'll come back to deterrence in a second.

Then you want to be able to attack it in the mid-course phase. And the GBI tends to work in the mid-course phase, attacking it while it's transiting space, if it's at intercontinental phase. And then you get into the area defense, which is THAAD. And then you get into the point defense, which is Patriot.

But the key for all of those – whether it's boost phase, mid-course, area, terminal, whatever the phase is – the key is the sensor capability that can track that missile. And you have to be able to track it whether it's ballistic, whether it's hypersonic, whether it's cruise, because if you can't track it you can't defeat it. If you can't see it, you can't shoot it. And the other piece of the puzzle is if you can't see it, you can't deter it either, because in order to have effective deterrence you have to be able to respond in a timely manner. And if you can't see it, you cede that advantage to a potential adversary.

So I've used the term "deterrence" now multiple times, so let's talk about the role of missile defense in deterrence just for a minute or two. So if you go back and you look at Schelling and Kahn and Kissinger and all of the theorists from the '60s and '70s that developed our deterrence theory – the strategic deterrence theory – the basic elements of that deterrence theory haven't changed in half a century. And the basic elements are the ability to impose cost on an adversary – and from the strategic deterrence side, that's our nuclear deterrent force: the bombers, the ICBMs, and the submarines. But it's also the ability to deny – to deny benefit to that adversary from the – from the action they're going to take, and that is missile defense. And then the third element is communicating that credibly to a potential adversary.

So if you think about it, it's offense, defense, and communications. That's what constitutes a deterrent capability. And when we look at our deterrent, by definition the missile defense is a key piece of that deterrent element. And our structure is such that by deploying missile defenses, we deter adversaries from employing weapons against us because they don't think that their weapon will be fully effective.

But then we have challenges. We have challenges on the terminal defense side, and it's important to remember that Patriot, from that point defense system, is a limited asset. And I can tell you, when we – when we look across the world and we deploy Patriots, there are never enough. If you – if you look at people buying air defense systems and missile defense systems across the world, they would really like to buy Patriot but we don't have Patriots to sell for the most part, beyond what we have already sold. We have a very low-density, high-demand asset that will always be critically important to defending. And when you do employ a Patriot around a site, it does deter your adversary from attacking you. THAAD is the same story. GBI is the same story. But they have to be effective and it has to be communicated credibly to the adversary to understand. And then you

combine that with the offensive capability, whether that's conventional or nuclear, and you create the overall deterrence posture.

Which is why, when I look at how we've done our posture reviews over the last two administrations – two administrations ago, I was involved in a Nuclear Posture Review, a Missile Defense Review, and a Space Posture Review. This last administration, I was involved in a Nuclear Posture Review and a Missile Defense Review. We looked at nuclear posture and missile defense separately. We look at space posture separately. We don't look at our strategic capabilities at an integrated whole. So I think as we go forward it's important for us to start looking this – looking at this as an integrated whole, and we should be doing a Strategic Deterrence Review and then understanding the rest of missile defense and defeat across the board as part of the overall force structure.

And so one of the things we're going to be doing inside the JROC [Joint Requirements Oversight Council] is we're going to be taking a hard look at integrated air and missile defense. We have that tasker from the Congress, but we've also tasked that inside the JROC to take a look at what our capabilities are across that entire portfolio.

One of the tasks that we have from the Congress, that actually dates back to the 1990s when the JROC was first formed, is to do a critical gap analysis and prioritization of capabilities. We've never really done that across the board. So we'll be doing that. We've already done it on our nuclear capabilities. We'll be doing that on integrated air and missile defense. We'll be doing it on tac air as part of that. We're going to look at a number of different portfolios, as well as the elements under the Joint Warfighting Concept that will drive joint capabilities.

And those elements are joint all domain command and control, contested logistics, global fires, and information advantage. And we will document our perception and provide that to our civilian leadership so the deputy secretary of defense and the DMAG and ultimately the secretary of defense can make informed decisions about where we make investments across this portfolio. We talked about Dr. Hicks, the deputy secretary of defense, earlier. And it's important – you know, I hope everybody paid attention to her confirmation hearing. I certainly did, because I was pretty confident that she was going to be confirmed and she would jump in right away.

And when she was asked about nuclear modernization she also talked about missile defense. And she said: One of the things we have to do is we have to assess ongoing efforts to improve national missile defense, with a particular focus on improving discrimination capabilities and sensors for detection of both ballistic and hypersonic missiles. And if we don't do that in a sensible way we're going to end up with so many demands and so many requirements that, you know, in the area that we're going into in the future we can't afford everything. So we have to figure out how to prioritize

what's important to us. And the JROC by law has a role in that. And we're going to step up and work those issues.

So when you think about missile defense and missile defeat, it's not just about an interceptor. It's not just about the – shooting the missile down once it's launched. It's about left of launch, at launch, through launch. And in order to do that you have to have sensors, the appropriate command and control, and the appropriate defeat technologies, which leads me to the last thing I want to talk about before we open it up for questions, and that's the technology side. Because when you're in a booster-on-booster technology, it is – it is a very difficult, cost-imposing strategy on us, because now how expensive is the interceptor that we're using to shoot down the missile incoming? And you can really quickly get into a cost-imposing strategy on yourself.

So there's new technologies that we have to continue to pursue, new sensor technologies that can make sure we can see things in every phase of flight – hypersonic cruise missiles as well as ballistic missiles. There's new defeat technologies. Directed energy is one that's of major interest of mine because I've worked that for a long time. And when you get into a directed energy response capability you tend to be in a better cost strategy than you are in a kinetic intercept. Nonetheless, we have adversaries that threaten us today. We have to make sure we can defend ourselves as part of our overall strategic deterrent.

We need to be able to respond if somebody shoots something at us. Our national missile defense capability is clearly focused on North Korea right now – not on China, Russia, and Iran. We're starting to look hard at Iran because Iran continues to build missiles in a significant way. And we have to be able to respond to that. There is a number – there are a number of issues across the board that we have to consider as we go through this. So, like I said, you asked about eight questions. I gave just a very broad brush of most of those issues. We can now dive down into whatever area you want to, and I really do appreciate the time. It is – it is good to focus on something I've spent a lot of time thinking about over the years. So thanks very much, Tom.

Tom Karako: Well, thank you, General Hyten. And thank you for the time.

I think I'll start with what you began with, and that's the threat. You know, as you kind of alluded to, it's not just about rogue state simple ballistic missiles anymore. And there's two pieces of that. One, you know, we're talking about different actors. And we're talking about China. And we're talking about Russia. And for some time – and this has kind of been one of those implicit versus explicit things, we have hesitated to put Russia and China in the same sentence as our active missile defenses. Would you say it's fair to say that that implicit versus explicit thing is gone, and that we're

thinking quite seriously about – at least on the regional side – the regional air and missile threats from anybody, no matter who they are?

John Hyten: Yeah. I think that last part you mentioned is the key piece of the puzzle. And I don't think we've really ever excluded Russia and China completely from the discussion. We just look at the practical problem of the Russian nuclear force and the capabilities that they have, and our ability to effectively respond to that with a missile defense.

Nonetheless, if you look at the regional capabilities of both China and Russia, and the investment that they have made in the case of China and are making in the case of Russia in intermediate-range missiles that can challenge us – both, again, cruise, hypersonic, as well as ballistic – you have to figure out a way to effectively operate in that environment, defend your self-environment, counter those threats so you can continue to hopefully deter the adversary – because the last thing we want is a war with Russia and China. But if there is a challenge, you have to be able to respond to it.

So when you look at the vast – China, for example – the vast number of intermediate-range missiles they have that can challenge our forces in the Western Pacific, you have to figure out how to respond to that. And Admiral Davidson has looked at that issue hard. We've looked at that hard inside the Pentagon. We have not gone as far in that response that – in that response capabilities as we should have, and we need to step our game up. Admiral Davidson has testified about that in front of Congress. His predecessor, Admiral Harris, testified in front of Congress when I was at STRATCOM. He and I talked about that a lot. Admiral Davidson and I talk about that a lot. It's important that we look holistically at the challenges that are provided by the competitors – the major peer competitors that we have, which is China and Russia.

And like I said when I started, when they have made a significant investment in these kind of missile technologies, it is absolutely mandatory that the United States and the military take a good hard look at the best way to counter that across the entire defense and defeat structure. And so we're doing that. So it's – we're not ignoring that problem.

Tom Karako: Well, I appreciate that.

Let me – let me focus on one piece of that, and that's the cruise missile challenge. You know, you alluded to two things. One, we've been focused more on ballistics than cruise missiles. You know, we're talking about hypersonic this, that, and the other thing, but frankly, the cruise missile challenge is also a big one right now. But – and again, you said it – if you can't see it, you can't kill it, and so it comes down to sensors. So what does the – what does the road map look like? Let's stay focused on cruise missiles for a moment. What does the road map look like to the cruise missile defense sensor architecture, whether it be for CONUS, whether it be

for Guam, or the fleet, or anywhere else? How do we get there? How do we build it? How do we afford it?

John Hyten: So the key thing about cruise missiles is that you have to look at that problem like I described earlier. You just don't look at it from the terminal phase. If you look at the cruise missile problem from the terminal phase, that basically means you have to build giant point defense radars or some kind of aerial defense radar, because even a low-Earth-orbit satellite has a difficult time seeing most cruise missiles. You have the ability to see some, and we should make sure we explore that and understand that piece. But to deal with the cruise missile threat, the first sensor – first critical sensor piece of the puzzle is the platform sensor because the cruise missile is launched from a platform.

So except for the novel concept that Vladimir Putin announced in March of 2018 for a nuclear-powered cruise missile, a cruise missile is launched off a platform that has to come forward, whether that's a submarine, a ship, an airplane. Whatever it is, that platform has to come forward carrying that, and we understand what those platforms are. So the key piece of that is to have a clear understanding of where the platforms are that could threaten the United States with cruise missiles. If you understand where the platforms are, again, you can effectively respond and effectively deter and message your adversary when you see a platform approach an area that is threatening the United States.

Then you have to take it a step further and you have to figure out, OK, what now do I need to defend. And that defense structure will be based on critical infrastructure: What are the critical elements that we have to defend? And that's where we have to put a point defense architecture around. But you can't put a point defense architecture around everything in the United States. It's impossible. So you have to decide exactly what you want to do there.

But the key piece of the puzzle is not to focus on that terminal phase; it's to focus on the platforms and make sure you understand where the platforms are, where you can threaten them, and make sure you have a capability to deny the platforms from threatening the United States.

Tom Karako: Great. All right.

Well, let me take a step a little higher for a moment and let's go back to kind of the big picture. I tend to think about it in terms of three legs to a stool: deterrence, active missile defense, and missile defeat. How do you think about those things fitting together? This kind of precedes the integrated deterrence review kind of question that I'll get to in a moment here. But big picture, how would you frame the problem?

John Hyten: So I just see it as two pieces. I don't see it as three pieces. The two pieces I see are the job of the United States military, simplified, is, number one, to deter adversaries from attacking the United States. To prevent war, that's our number-one job. And the number-two job is if we are attacked to defeat that adversary using any and all means possible. So it's deter and, if necessary, defeat. Those are the two missions that we have. In the defeat side you have active defenses, passive defenses. You have integrated sensor capabilities, command and control – all those pieces. But to me, that's part of the defense architecture.

But the deter side goes back to those three critical elements – impose costs, deny benefit, and communicate credibly. And we have to do that from a unified whole-of-government perspective. You can't just say: My nuclear capabilities exist. Therefore, I deter all aggressive activity against the United States somehow in the world. And I commanded STRATCOM for three years. And I take immense pride in knowing how safe, secure, and reliable our nuclear deterrent is. But all you have to do is watch the world today and know that our nuclear deterrent doesn't deter all conflict. It deters the major conflict, the mass conflict you saw in world wars in the early part and the mid part of the last century. But it doesn't deter all conflict.

So when the other conflict happens, you have to figure out how to structure it. And so there is a deterrent element that goes all the way to conventional deterrence all the way up to nuclear. And I used the words a while ago intentionally to say we need to have a strategic deterrence review, not an overall deterrence review. Because the overall deterrence review is basically the global posture review we're going through with the secretary of defense right now. That's going to be looked at across the board. But what we need is an understanding of how we do strategic deterrence in this nation, which is not all of missile defense and missile defeat but is a critical element of missile defense, integrated into our overall strategic deterrent posture.

So we have to look at that strategic deterrence piece. Then when you look at the other piece there's a spectrum of deter all the way to defeat. We're looking at those structures under the Joint Warfighting Concept right now. We hope to finish the Joint Warfighting Concept here in the next six weeks or two months. We have a new administration in, so we have a lot of socializing that we have to do to make sure we understand what that is. But we're pretty comfortable where we are right now. And it goes from that deter to defeat structure.

But I'll just tell you, it is focused more on the defeat side because what the chairman has clearly said – what General Milley has clearly said multiple times is: You know what? If you don't have the ability to defeat any adversary, your deterrence structure is kind of weak. So, you know, that goes back to making sure you have the capability, it is credibly

communicated and demonstrated, and that is where deterrence starts. So there's really two elements of that. But it all goes down to deter and defeat. There's a strategic element, but then there's the – kind of the rest of the conventional force as well. So a little bit rambling there, but that's a pretty broad question. Over.

Tom Karako: Well, perfect. This feeds directly into the question of the strategic deterrence review. You have, I think, been one of the voices that has been socializing that idea for over a year, for some time now, the idea of combining these several reviews into one. But you know, let me just push on that a little bit. As you kind of alluded to, it could fuzz up or get to be so generic that it kind of looks to be co-equal with a national military strategy, right, if it was too generic. And so it kind of comes down to what do you mean by strategic deterrence as opposed to other things? And you could have non-nuclear strategic attack, of course. But what do you mean by that?

And then it comes down to what are the attributes of the strategic deterrence, I mean, that would validate its success as opposed to failure in terms of the questions, who does it, all this sort of stuff? So how would you kind of assess that? And, yeah, keeping it separate from the National Military Strategy. But also, you know, keeping it sufficiently granular so that, you know, missile defense, missile defeat, they don't get lost, and nuclear weapons don't just suck all the oxygen out of the room?

Sir, I think you're muted.

John Hyten: Yep. So this gets at the art of how we do this. And so I'll just say, you can do it one of two ways, but the key piece is it has to be integrated. And I'll just air a little dirty laundry. And it's from, you know, two transitions – one Democratic transition, one Republican transition. We're going through a Democratic transition now. So this is nothing to do with one administration over the other administration. But I happened to be involved in the various reviews in the Obama administration and the various reviews in the Trump administration.

And the interesting thing is when we were done with those reviews – and if you go back and you look at the timing of when those reviews were published, they actually were not released at the same time. Ask yourself, why weren't they released at the same time? And the answer is, when they were done they didn't align. The one review was done from a missile defense only purview. The other review was done from a nuclear posture view only. And when they were done, they didn't align. And so we ended up usually publishing the nuclear posture review first, and then down the – in one case it was, like, two years later we published a missile defense review.

Why did it take that long to get it aligned? That's because we didn't think about it as a unified whole. So it doesn't matter whether you do a strategic deterrence review where you put everybody in the room to look at it both – and that would be only looking at the national missile defense element of strategic deterrence not at the whole thing. Or you do them separately, but they have to be aligned because from the point of view of anybody in the world, except the United States over the last little while, your deterrence comes from your offense and defense. And so you have to make sure that alignment is there.

Now, you can do that with a separate review, as long as you continue to have them come together and look and say: Does this make sense together? Does this make sense as we're going forward? That would be fine. But if you – if you end up doing them completely separately, completely stovepiped, it's almost guaranteed that when they finish you'll look at them and the senior leadership will go: Well, that actually doesn't align with that. How are we going to fix that? And then you have to go back and start things all over again.

The only – so the key point that I'm trying to make is as we start into this – and, oh by the way, we desperately need at a minimum the nuclear posture review and a missile defense review. We just have to make sure they're integrated. But that's why I'm saying a strategic deterrence review is an effective way to do that, to make sure they stay integrated as you go through.

Tom Karako: Great. Thank you.

One of the questions that's come in is from Tony Capaccio from Bloomberg, and it's about kind of your assessment of the North Korean threat, and whether it's changed since when General Selva said that their lack of testing might have been slowing them down just a little bit. I'd like to take that question and connect it with a program that you're very familiar with, and that's the Next Generation Interceptor – which is an approach to homeland missile defense going forward. What is it about the threat from the rogue state ballistic missile threat that makes it necessary to do something different with some – with the next-generation capability? Let me start there.

John Hyten: So the – I think – so there's a real simple answer. I'll start with that, and then I'll get a little more complicated. The simple answer is: Because there's a chance they would actually fire that at us, and therefore we want the ability to shoot it down. And, you know, I would – I would challenge anybody that lived through 2017 to look at that problem and not realize that that was a real possibility that Kim Jong-un and North Korea would actually use a ballistic missile, possibly with a nuclear warhead, in anger at the United States. And therefore, we better have a way to defeat that.

And we did. And we deployed, you know, the interceptors in Alaska, and four interceptors in California to augment that, to make sure we had the defensive capability against the United States. And that works. But without going into the classified details that I can't go into here, I'll just say – I'll ask Tony. Tony can go look at the video of the North Korea parade. And you'll just see different missiles coming through in that parade. So North Korea is continuing to move forward in their capabilities, which means on the defensive side we have to continue to move forward as well.

That's where our Next Generation Interceptor comes in. We have to make sure that as we go forward, we maintain the ability to deny the North Koreans the ability to effectively attack the United States with confidence. If the next-generation interceptor replaces the current interceptors that are out there at the right time, then the deterrence value of that against North Korea will be effective and they'll realize that the – whatever changes they made will no longer work, because we're staying ahead of them as we go through.

This is – this is the same problem you have with any adversary in the history of military conflict. One side makes a move, the other side makes a move, and the goal is to stay ahead of your adversary. That's really what the next-generation interceptor is. It's just the next step to make sure we stay ahead of our adversary.

And there's going to be some challenges as we go through that because the cost equation is difficult on that. So you have to make sure you're doing it in the right way, you're doing it in a way that defends the country, does it in an affordable way, and puts the pressure on the adversary, not the pressure on the United States.

So this is going to be a long-term issue as we look at the adversaries that we face and potentially could face in the future, and make sure we always have the capability holistically to stay ahead of them. Thanks.

Tom Karako: Well, let me – let me deal with the acquisition strategy piece of that same topic while we're here. And that is – you know, again, back to the big – the big picture – we're coming at this – you've expressed confidence in GMD and we're doing all the SLEP and this sort of stuff. But the long-term NGI development, how would you say – and this went through the JROC. You were a key piece of that in driving and shepherding it for a while now. How would you say that NGI fits, not merely with the missile defense mission but with the missile defeat mission? And would you say that its requirements have been tailored and kind of been put together in light of our larger missile defeat capabilities?

John Hyten: So I think it's important to go – because we certainly – we, the JROC – the JROC's not just me. It's me and the vice chiefs of the services. So we looked at that really close.

And the way the Missile Defense Agency is established in law, they have a different requirements challenge. But what we realized on the JROC is that we had not done our due diligence in stating what the military requirements would be for those kind of capabilities, and we had missed that. So we asked the NGI program to come into the JROC, explain what's going to go on, and allow us to add military advice into that concept, which is basically what we did. And when we did, we adjusted those requirements accordingly, holistically across the board.

We have to do two things as we go forward. We have to continue to look at those requirements. We have to look at those requirements from a capabilities perspective, but also from a feasibility perspective to make sure that they can be done. We have to make sure that the interceptor will operate in all threat environments that we have defined. And then we have to look at the cost and make sure that, when you look at the entire missile defense and defeat portfolio, that it fits in the overall architecture. Which comes back, then, to the integrated air and missile defense portfolio to make sure that it's just not looking at NGI alone, it's looking at all of air and missile defense and making sure we have an integrated approach from a requirements perspective. Because if you look at it stovepipe by stovepipe by stovepipe, you end up with probably an unaffordable architecture to deal effectively with the threat.

So where we are right now is that we've stated what our requirements are for the NGA – for the NGI, the Next Generation Interceptor. The acquisition community's going through that. There's some critical decisions here coming up in the near term as we decide where to go.

But I think it's important for me to give you a concern that's related to the subject, and my concern is the health of our industrial base because right now our industrial base is not healthy and COVID has not helped it. And it's not as much the primes as it is the critical sub-tier vendors that support our primes. And we saw huge vulnerabilities in the COVID supply chain. We then took a hard look at our overall supply chain that support our vendors. And I'll just say, without going into any classified detail, that the supply chain is weak, and we have to take a hard look at that. Because without that kind of supply chain we cannot move nimbly, quickly, we cannot stay ahead of the threats that will continue to morph, and we're going to have a hard time building affordable capabilities in order to do that.

So that's actually my biggest concern about this whole discussion, is the health of the industrial base. And I may be a little bit jaded because of looking so closely at our nation's supply chain in terms of where we were with COVID, and that's everything from – it's not just gloves and masks and gowns and that kind of stuff, but it's the materials that are needed for vaccines and the materials that are needed. And that translates directly into materials that we need for our weapons systems, materials that we

need for the development. And we just do not have a robust, resilient supply chain right now, and we have to take a hard look at that.

Tom Karako: Well, you just mentioned JROC a couple times and all of that. I'll stay with that for a moment. I've got several questions that have come in on this particular issue, and that is that, you know, bringing NGI to the JROC was a little bit of a new thing. How do you think about the acquisition authorities? You've been an apostle of going fast. How do you think about the acquisition authorities for MDA with respect to major acquisition programs going forward? Is this a push towards putting MDA under the JCIDS, this kind of thing, or how would you think about that?

John Hyten: No, so what I hope that we can work – and I know hope is not a course of action – but what we're working towards is a structure where, you know – it's interesting to me. I have a – I know it's a strange personality, but one of the things I do when I enter a new job is I actually read the law that tells me what my job's supposed to do. I read the regulations that tell me what my job's supposed to do. I read the policy. I read the instructions. And I was fascinated when I read the law for the – for the JROC because right there in the law it says the responsibility – one of the responsibilities of the JROC is to identify new joint capabilities based on emerging technologies and new concepts. That's almost a direct quote out of law. And I ask you, Tom, and I ask the audience out there to try to think of the last time the JROC did something like that: identify new joint programs based on new technologies and new concepts. So we – so we didn't.

So what I'm hoping to do is actually enable the services and MDA to actually go much faster by defining these joint requirements in joint terms that then allow the services and MDA to build capabilities to meet those joint requirements without having to come back over and over again to the JROC to ask for the validation of their service concept or their service program because the joint side – the JROC – has already approved that concept as part of an overall thing. So, you know, we're going to go through that with the four supporting concepts under the JWC that I talked about earlier. But that's why we're starting to take these portfolio reviews on our nuclear capabilities integrated air and missile defense, tac air. We're looking at it across the portfolio so we can weigh in and provide our structure to that.

And to be honest, I'm not sure the services – they didn't fully embrace it for quite a number of months. But then when they saw that if they actually embrace it and we figured out how to do this together – and all the services sit around the table with me at the JROC. If we can figure out how to do this, then they're actually unleashed to go faster. MDA will be the same way. Now, MDA doesn't have to come back to the JROC for those kind of structures, but it will do the same thing because they will have the overarching joint concept, joint structure that they have to fit into, and they can move quickly.

Now, the last thing I'll say on MDA is that I think the way MDA was structured when it was created – and I went through SDIO, BMDO, MDA. I've been through all the iterations. And the initial structure, if you think about it, I think was exactly right because MDA was supposed to – and SDIO and BMDO were supposed to – focus on the new thing, the research and development, the new technologies. And if you break out the MDA budget that came out on the '21 budget and you – and you add up all the money that's in the MDA, what you'll find is most of their money is in production and sustainment. That should be a normal process. What you really want MDA is to focus on this next-generation thing – a next-generation interceptor, a next-generation sensor, a next-generation architecture, a next-generation capability – and drive that piece there. But to be honest, they've been forced to focusing on the production and sustainment of all of these other capabilities, which make it very difficult for them to focus on the core mission.

So I think the structure of MDA is absolutely correct. We just have to make sure we align their capabilities with their charter correctly. So a lot in that answer, but back over to you.

Tom Karako: Well, let me just stay on that real quick, just a quick follow up. And that is, in terms of the requirements development process for missile defense, I mean, as you know well, the JFCC IMD has had a – has had an important role there. And there's also, of course the prospect of SPACECOM might also be a driver here. So, again, putting these pieces together, how do you see that fitting together with the JROC to drive those requirements?

John Hyten: So in the near term, I don't see any changes. In the midterm, I see changes starting. In the long term, I see significant changes. So what I see changing as we – so we took these four supporting concepts under the Joint Warfighting Concept as kind of the pathfinders because – actually, the term that was used for each of those four supporting concepts underneath the Joint Staff and underneath the JROC was the orphans because they were the capabilities that nobody had ever really written down the requirements for. Nobody had really written down what they are. Command and control. Where's the joint requirement for command and control?

You would think that the JROC would have weighed in on that some – at some point. But where's the joint requirement for command and control? Where's the joint requirement for contested logistics in a war fight? Where's the joint requirement for information advantage? So those are orphans. So nobody was really taking those on. And so by taking those on, we kind of demonstrate the ability to do that.

Then we're going to walk into the place where they're not orphans. They're fully supported, cared for by services, well taken care of, but there's no overarching joint requirement for how to do that. And two that jump to mind – well, I'll just say one. Integrated air and missile defense.

In the midterm, we're going to have to take on that. So you'll start that with a capability review of all the portfolio to look at what's in there, do a rack and stack of the prioritization scheme of that, and then we'll look at that and say, so what's missing from that. What's missing from that is the joint requirement of how we want to fight integrated air and missile defense from a joint force perspective and that is not down in the technical details of what a Patriot missile has to do. That's the Army's job. It's not a THAAD. That's MDA. It's not a GBI. That's MDA.

This is how everything fits together. That's what we're doing in the strategic directives that will come out of the JROC for these four orphans, but then we'll take it into- that'll be a midterm, and in the far term those will be established. And I really think there's an opportunity. It won't be me, but it'll be the folks that come after me and the vice chiefs that come after the current folks that have to figure out exactly how to do that.

But when you – and I got this a lot when I was – in my initial interactions with the Hill because the Hill has wanted the JROC to do this for a long time. But it's really hard and it's – because we haven't done it before. But that's why these four supporting concepts are great stalking horses to figure out what works and doesn't work.

And the last thing I'll say on that is that when we publish them, and we will publish them this spring, I know that they won't be perfectly right. But they have to be right enough that allows us to continue to morph and move along to empower the services to actually go build things and move forward, and if we can do that, all of a sudden at least the JROC now is an empowering speed in our processes, which is what I talked about the last time I was at CSIS.

Tom Karako: Let me – let me – that was a great answer, sir, and by the way, I'm delighted about the JROC process on IAMD that you mentioned earlier.

Let me take a piece of that, and that's global sensor management. Lots of sensors out there. Demands on them are high. So I guess the question is, you know, what's the – what's the roadmap for putting all that together? Maybe that's part of what you were just alluding to. That's the big question, and then the subsidiary question is space sensors. You know, HBTSS, both the H and the B are important there, the hypersonic and the ballistic piece as well. So big picture global sensor management and a roadmap for all these things and how they fit together and the commands and all that, and then second, the more specific space sensor piece.

John Hyten: So the quick answer to the question is I'm not all the way there yet on what the right answer is in that area in my head. You know, I'm probably wrong in everything I've just described to a certain extent, but at least I've thought through it and I have a structure.

In global sensor management, here's the – here's the dynamic that's going through my mind is that we have a new combatant command, the United States Space Command, who's been given the responsibility as the – basically, as the integrator for global sensor management.

Now, that's an operational requirement. That's not a future requirement. That's to integrate the various sensor capabilities, and we've never really done that so they're trying to figure out what that's going to be and we're walking into kind of a new structure there, and we don't know exactly how that's going to work.

But then you have to ask yourself the question, is there a service, then, like the United States Space Force, that should be the architect and provider for that global sensor structure? And does that fit in that, or does that really come back up to the JROC as a – as a joint structure first defined and then we divide it to the services, so the Space Force gets this piece, Air Force gets this piece, Army gets this piece? You could see how that structure works.

But the reason I haven't clarified that in my head is because the – is the more you consolidate things in the Pentagon, the slower things go. And so the more things you push out the field, the faster things go. So I – we've got to make sure as we go through that global sensor management structure we understand what that is.

But what I think we're going to enable – and this is the – this is the piece of the puzzle that may not be obvious to everybody in the audience right now – what I think we're going to be able to enable with the Joint Concept for Command and Control, which is the JADC2 document that will describe how we command and control, is the command-and-control function for all domains has to integrate all sensor capabilities. If you think about the key thing, if you're – if you're a ground-based sensor, an airborne sensor, a space-based sensor, in the Joint All-Domain Command-and-Control Concept, as documented in the Joint Concept for Command and Control, as you look at that structure, that means everything has to go into some kind of database, a cloud structure that whoever needs that data can reach into that cloud and pull that data out.

So when you think about global sensor management, if you actually define that correctly in the JADC-2 architecture and all the services build to that, you've basically solved the fundamental connection with global sensor management and now everybody understands what they have to fit into, and you just need the overarching architecture that a service like the Space Force or even a command like Space Command could build someday. So the key element for enabling that is making sure that all the data is interconnected, and that will be under both information advantage and all-domain command and control.

Tom Karako: Great.

I know you've alluded to both the Joint Warfighting Concept, you've alluded to Guam in some important ways, and Admiral Davidson, what he's been saying there. I want to ask about something that you've, I think, repeated on a number of occasions, kind of a vision for various service capabilities. You've said some version of each service – each service needs to have the ability to both defend itself and strike deep. And to that – to that end, you've got the Army, Navy, and Air Force developing various hypersonic strike programs.

I wonder if you might talk to some of the roles and missions issues at hand here. You know, there have been some folks out there, Air Force folks included, pushing back on the Army having a role to both defend itself and strike deep, as citing the 1948 Key West Agreement. That was a while ago. So, you know, in your vision, when you say that each service needs to have the ability to defend itself and strike deep, you know, don't we need to rethink some of those issues? Do ground forces have a role to play here for hypersonic strike and long-range strike? What's larger at issue here?

John Hyten: So I'd – so four years ago I thought, you know, and I advocated for a roles and missions discussion on those issues. As I came in and started working deep into the Joint Warfighting Concept, I realized that, number one, we actually don't have to do that, and you don't have to do that because of the way the nature of war is changing. But even if I'm wrong in that, the one thing I know is we don't have to make any changes today in order to move forward with this. There could be a structure sometime in the future you have to look at.

But here's why, because in the Joint Warfighting Concept the critical structure is basically expanded maneuver – maneuver in every domain, every structure, every command. That maneuver is now ubiquitous into everything that we do, and we have to do it faster than the adversary. Which means that our ground forces have to move faster than the adversary and they have to be able to defend themselves wherever they go and attack effectively with – inside the joint force construct. The same with the maritime forces. Same with air. Oh, by the way, same with space and cyber, too, in the cyber domain.

So as you – as you walk through that expanded-maneuver concept and you start thinking about what I have to do, this is kind of what I started talking about last year, which is, son of a gun, all the lines on the battlefield disappear. And what is the critical element is, can I effectively command and control the joint force as we go forward? And so there's nothing that we have to change now to enable that. So why fight over that now, when there's nothing that will come of that effectively because we actually don't know enough? What we have to figure out how to do is to fight in this expand and maneuver concept, fight on a battlefield with no lines, figure out

how all those pieces come, and then look at our structure and say: You know what? It works just fine. Or, you know what? It actually doesn't work. But until we actually do that you can't effectively have that argument. So trying to have that argument now is just a waste of oxygen. It doesn't do anybody any good.

When the problem is right there in front of us – the problem is making sure that everybody can operate together, can maneuver effectively in all domains seamlessly, we can see where everybody is, we can share that data seamlessly across the board – when we can do that, that's when we'll have the fruition of the Joint Warfighting Concept in the next decade. And then once we know how to do that and we've demonstrated that, we may not be organized correctly. We may not have the right roles and responsibilities. But why the heck would you stop and try to figure that out when you actually don't know the answer?

That's the only, you know, argument I have with my brothers that wear the same uniform I do, that – and sisters. There's a couple that are arguing pretty aggressively for a kind of a roles and missions look. But that's looking at the world from 1948. We got to look at the world from 2021. And you know, I very much respect, you know, my brothers and sisters in the Air Force. They're my friends. Many of them are a lot smarter than me. I understand that. But I'm a little bit stubborn and I really would like to know the answers before I engage in some kind of broad roles and missions discussion or organizational theory discussion.

Tom Karako: Well, let me just put one final thing on the table as we close out here. I want to be respectful of your time. And it's kind of a piece of the missile defense and missile defeat question as well. And that is: We're doing a lot – we're spending a lot on hypersonic strike, but the hypersonic defense, the active hypersonic defense, is lagging a little bit. So I would say from your perspective, both from an operational side of the house and from a research and development side, is it important – or, to what extent is it important that both the strike and defense side be done in tandem?

John Hyten: So that's critical. When you look at missiles – the missile threats – it's all missiles – hypersonics, cruise, ballistic. It's also – on the strategic side, it's maneuvering RVs as well. Maneuvering RVs changed the characteristics of a ballistic missile. And you have to understand that. But what is the common theme in a missile defense and defeat architecture for all of those missile threats in all of the structure – for the hypersonic piece? The common theme is: Can I see the threat? Can I see the platform? Can I see it move? Can I see it go into a threatening position? And then can I see the threat coming at me?

Which means the key piece is sensors. The key piece is not shooters. The key piece is sensors. Once I understand it from a sensor perspective. So we have to take a hard look across the board, from left of launch, through

launch, all the way to the terminal phase, and understand what our sensor architecture is, what we can see and what we can't see, and start building out a structure that allows us to effectively defend ourselves. So we like to talk about the interceptors. We just love to talk about the interceptors. And actually, they're required to shoot something down.

But new sensor technology can enable a lot of different technologies as well. To enable directed energy, the sensor technology is very robust. It can be harder in some cases than a kinetic interceptor technology, depending on how you build the sensor on the front end of the directed energy system. So that structure is critical. But the key piece of the whole puzzle is what is your sensor architecture to see the threat that you're facing. And we like to look at it in still fights. We don't like to look at it holistically. That's why I started from the – from the left of launch all the way to terminal phase. So I'll just ask, what's your sensor architecture? And right now, we don't have an integrated sensor architecture that knows how to do that.

Tom Karako: Well, thank you, sir. I think we're coming up on time. But I just wanted to see if there was anything else you thought we missed and you wanted to weigh on.

John Hyten: Well, I'll just say that – you know, in all the services – well, just think about right now. There's about 300 soldiers, and they're north of Fairbanks, Alaska. The weather in Fairbanks yesterday was 40 below zero. I don't know what it was at Greely, but it was colder than 40 degrees below zero. But you know what? When you get below 20 below zero, it doesn't really matter. It is just freaking cold. And those 300 soldiers have the job of defending America each and every day.

And so we've talked about all the stuff – all the sensors, all the shooters, all the capabilities. But you know, we are nothing without the soldiers, sailors, airmen, Marines that do that job. And as I saw the report that it was 40 below zero in Fairbanks, that's immediately who I went to, the folks up at Greely, because oh my gosh. They're on alert right now doing the job. And their system will work if it's called upon. And they're ready. They're absolutely ready. And that's the same way across the entire enterprise – whether you're in a Patriot battery somewhere in the Middle East, a THAAD battery in the Pacific. Wherever you are, those folks are doing their job, enabled by global sensor grid that is the envy of everybody in the world.

So you know, thanks for giving me the opportunity to thank the people that actually do the mission, because none of us actually do it. They do it each and every day. Thanks very much, Tom.

Tom Karako: Well, thank you, General Hyten. And thanks to everyone who put in the questions. We had a ton of them. And we look forward to welcoming you back sometime to CSIS later. So thanks for all you do.

John Hyten: You bet. Thanks very much, Tom. Good seeing you out here.

(END)