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HEARING
ON
NATIONAL DEFENSE AUTHORIZATION ACT
FOR FISCAL YEAR 2023
AND
OVERSIGHT OF PREVIOUSLY AUTHORIZED
PROGRAMS
BEFORE THE
COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES
ONE HUNDRED SEVENTEENTH CONGRESS
SECOND SESSION
SUBCOMMITTEE ON STRATEGIC FORCES HEARING
ON
FISCAL YEAR 2023
STRATEGIC FORCES POSTURE
HEARING HELD
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FISCAL YEAR 2023 STRATEGIC FORCES POSTURE

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE ON STRATEGIC FORCES,
Washington, DC, Tuesday, March 1, 2022.

The subcommittee met, pursuant to call, at 2:37 p.m., in room 2118, Rayburn House Office Building, Hon. Jim Cooper (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. JIM COOPER, A REPRESENTATIVE FROM TENNESSEE, CHAIRMAN, SUBCOMMITTEE ON STRATEGIC FORCES

Mr. COOPER. Good afternoon.

I would like to begin by welcoming our distinguished panel of witnesses who will be testifying in both open and closed session.

We have the Honorable Sasha Baker, Deputy Under Secretary of Defense for Policy; Admiral Charles Richard, Commander of U.S. Strategic Command, who joins us virtually from STRATCOM headquarters; General James Dickinson, Commander of U.S. Space Command; and General Glen VanHerck, Commander of U.S. Northern Command and North American Aerospace Defense Command.

The war in Ukraine is a tragic reminder of the importance of our work, which, as I have always said, is arguably the most important and technical of any committee in the House. Vladimir Putin's recent announcement that he was placing his nuclear forces on alert made clear to the world the risks of miscalculation.

The written testimony today is voluminous, but I will ask the witnesses to shorten their verbal remarks to 5 minutes to make time for questioning. And I am hopeful that we can keep the open session as brief as possible, so we will have more time in closed session.

We read much in the testimony about new concepts, test beds, labs, initial operating capability, and other jargon. But what America and the world needs right now is the capability to defend the free world.

That means not just keeping up with commercial industry advances, but getting the Pentagon to be years ahead of industry. We must have the capability to meet and beat any competitor.

Lord knows, our defense budgets are the envy of the world. We need to get our money's worth with capabilities that are also the envy of the world.

Although our witnesses today are not responsible for development of space systems, they are responsible for operating our de-

ployed capabilities and establishing requirements for what we will need in the future.

I am thankful that we are finally moving forward to a more resilient, diversified space architecture, rather than simply replacing the aging big juicy targets currently on orbit.

There is much more work to be done, however, and our strategic posture must remain the top priority for the Department of Defense.

I am thankful that the Biden administration has stressed continuity with past strategic policy and the urgency of maintaining our nuclear posture.

We will move immediately to closed session upon conclusion of the open hearing.

And I yield now to the ranking member, Mr. Lamborn.

[The prepared statement of Mr. Cooper can be found in the Appendix on page 31.]

STATEMENT OF HON. DOUG LAMBORN, A REPRESENTATIVE FROM COLORADO, RANKING MEMBER, SUBCOMMITTEE ON STRATEGIC FORCES

Mr. LAMBORN. Mr. Chairman, thank you for holding today's hearing.

The backdrop of this hearing, as we all know, is Russia's ongoing invasion of Ukraine, which will be on the top of our minds for all of us here today.

Thank you to our witnesses—Secretary Baker, Admiral Richard, General Dickinson, and General VanHerck—for taking the time to be before us today.

In this forum a year ago, we all lamented the degree to which the global security environment was deteriorating.

Admiral Richard, I recall that you went to great lengths giving your best military advice as to how we must deter two nuclear peer adversaries at the same time. It was a sobering hearing.

And just 10 months since that hearing, the global security environment has become exponentially worse. China and Russia are seeking to exploit our weaknesses, and we can't let our guard down.

As Russian forces massed on the Ukrainian border, Putin oversaw a strategic nuclear forces exercise designed to intimidate Europe and the United States. In his words, the intent was to threaten, quote, "consequences you have never faced in your history," unquote, "for anyone who tries to interfere with us," quote/unquote.

The next day, as Ukrainian troops valiantly repelled Russian advances, Putin directed the elevation in the readiness posture of his nuclear forces.

Russia is being run by a despot, detached from reality, with up to 2,000 nuclear warheads that are not accountable under the New START [Strategic Arms Reduction Treaty] treaty.

Russia may be willing to say, quote, "A nuclear war cannot be won, so it must never be fought," unquote, but I would remind my colleagues, Putin also said he had, quote, "no intention of invading Ukraine," unquote.

Since last year, the strategic threat posed by China has also metastasized. We all know that China intends to have at least 1,000

nuclear warheads by 2030; they conducted a hypersonic fractional orbital bombardment test that surprised the world; and they have constructed new ICBM [intercontinental ballistic missile] fields that are sprouting like weeds.

These new ICBM fields, along with new Chinese road-mobile systems and hypersonic delivery systems, significantly increase the number of targets STRATCOM must hold at risk, and they complicate the detection and warning problem for our missile defense capabilities.

And with everything else going on, North Korea launched a ballistic missile last week. It barely even made the news, but there is press reporting that the test had applications for a space-launched capability.

If true, this represents a significant threat to our homeland, and the Missile Defense Review, which is coming out soon, must continue the longstanding commitment to outpace the North Korean threat to the homeland and get the Next Generation Interceptor to initial operating capability as soon as possible.

And to complicate matters further, China and Russia have demonstrated ability and intent to weaponize and militarize space. Russia's recent anti-satellite weapon test generated debris that threatens human lives on orbit and shows that space is no longer free from threat and militarization.

China's demonstration of space warfare concepts is equally disturbing, as they recently demonstrated the capability to engage and remove satellites from their operational orbits.

The open demonstrations of these abilities are intended as a direct warning to the West.

Secretary Baker, given these dynamics, I can't see how the Nuclear Posture Review could recommend anything less than the current nuclear triad modernization plan.

If President Biden sheds or does away in any way with nuclear capabilities, as has been reported, I predict bipartisan opposition in the House and Senate that will override it and continue to fund these systems. This includes the sea-launched nuclear cruise missile, or SLCM-N, the B83 gravity bomb, [and] the W76-2 warhead.

Not doing so will cause allies to question our strategic deterrent. That cannot happen, especially now.

And lastly, any weakening or changes in the U.S. nuclear declaratory policy must be expressly taken off the table. Europe is embroiled in the largest war since World War II, and Ukraine faces an existential threat. We cannot risk dividing NATO [North Atlantic Treaty Organization] at this precarious time.

So I implore you, listen to our allies and maintain this current strong, American-led strategic deterrence posture. We can no longer attack our deterrence problems in isolation, and it is vital that we provide to this Nation the viable options needed to deter or defeat our adversaries across strategic domains.

Thank you again to all of our witnesses for joining us.

And I yield back, Mr. Chairman.

Mr. COOPER. Thank you, Mr. Lamborn.

The first witness is Secretary Baker.

STATEMENT OF HON. SASHA BAKER, DEPUTY UNDER SECRETARY OF DEFENSE FOR POLICY, OFFICE OF THE UNDER SECRETARY OF DEFENSE FOR POLICY, U.S. DEPARTMENT OF DEFENSE

Ms. BAKER. Thank you, Chairman Cooper, Ranking Member Lamborn, and distinguished members of this committee. I respectfully request that my written statement be taken for the record, and I will just do brief opening remarks.

Mr. COOPER. Without objection, so ordered.

Ms. BAKER. Thank you.

The Department acknowledges the challenging moment we are in as we witness the Russian invasion of Ukraine. Such actions highlight Russia as an acute threat, even as the Department continues to pace to the People's Republic of China.

Further, the United States faces a challenging security environment amid intensifying strategic competition, rapidly evolving domains of conflict, novel military capabilities, and the growing assertiveness of our competitors.

Deterrence is challenged by competitors' gray zone operations below the threshold of conflict, combined with increasingly complex escalation dynamics, which erode strategic stability.

We must diligently calibrate our strategic posture—which is underwritten by our nuclear, missile defense, space, and hypersonic-strike capabilities—to these developments.

The forthcoming 2022 National Defense Strategy will detail the Department's strategic approach. At the core of the NDS lies integrated deterrence, and this is a framework for working seamlessly across warfighting domains, theaters, the spectrum of conflict, in close collaboration with all instruments of national power, our allies, and our partners.

As such, the 2022 Nuclear Posture Review and the Missile Defense Review will be nested within the NDS.

We recognize that we face an urgent imperative to sustain and strengthen U.S. deterrence, and we must bring together all available tools of national power to do so.

Nuclear deterrence is the Department's highest priority mission. Our nuclear posture continues to be the backbone of our strategy to preserve peace and stability by deterring aggression against the United States, our allies, and our partners.

Potential U.S. adversaries are modernizing, diversifying, and expanding their strategic capabilities, resulting in growing risks.

The PRC's [People's Republic of China's] ongoing ambitious expansion of their nuclear forces is a growing factor in how we assess our nuclear posture. The PRC is investing in a triad, implementing a launch-on-warning posture with advanced command and control architecture, and increasing its stockpile.

Russia's modernization of its nuclear, missile, space, and hypersonic capabilities, coupled with its highly aggressive military behavior witnessed in its attack against Ukraine, also pose a distinct and pressing challenge.

North Korea remains a persistent threat and continues to develop nuclear weapons and associated delivery systems that threaten its region and increase risk to the U.S. homeland.

Iran's pursuit of nuclear activities continues to be of deep concern.

This year, the Department will release the 2022 Nuclear Posture Review. As directed by the President, the NPR has examined opportunities to reduce the role of nuclear weapons while maintaining a safe, secure, and effective nuclear deterrent and a credible extended deterrent.

In order to do so, we will continue to sustain and modernize U.S. nuclear capabilities, and as we develop and implement integrated deterrence, nuclear weapons will continue to serve a unique role in our defense strategy.

Missile defenses contribute to tailored U.S. deterrence strategies and extended deterrence to prevent attacks from states like North Korea on the U.S. homeland and to protect our allies, partners, and U.S. forces abroad.

We are seeking a layered and interoperable approach to address the growing number and type of missile threats, from the unmanned systems proliferated by Iran to the higher end hypersonic threats.

The MDR [Missile Defense Review] will provide a framework for U.S. missile defense priorities and a strategy for missile defense within integrated deterrence. It will also outline how the United States is integrating missile defense with its allies and partners in order to strengthen international cooperation against shared threats.

In space, the PRC remains our primary long-term competitor, seeking to exploit our reliance on space-based systems and challenge our position.

Russia remains a key U.S. competitor in the space domain as well, as it similarly seeks to undermine and exploit the U.S. in space.

Iran is continuing to pursue a space program which could shorten the pathway to long-range missile capability.

We are focused on ensuring the capabilities and the architecture to deter, deny, and, if necessary, defeat hostile actions in space, recognizing that assured access to space is critical for our approach across all domains.

The development of U.S. hypersonic strike weapon systems, all strictly non-nuclear, is a Department priority. The combination of their speed, maneuverability, and altitude provides clear and distinct operational advantages.

The Department is working to identify and invest in the optimal mix of high and low ammunitions for deterrence and to ensure we achieve our objectives in conflict.

We are also developing the concepts of operations to employ these systems that address and minimize destabilization risks.

Transparency and dialogue with Congress remain critical to the evolution of this capability. I would like to thank you for the support of the Department across all of these domains.

And with that, I will look forward to your questions.

[The prepared statement of Ms. Baker can be found in the Appendix on page 32.]

Mr. COOPER. Thank you, Secretary Baker.

Now Admiral Richard.

**STATEMENT OF ADM CHARLES A. RICHARD, USN,
COMMANDER, UNITED STATES STRATEGIC COMMAND**

Admiral RICHARD. Chairman Cooper, Ranking Member Lamborn, distinguished committee members, first I want to offer my appreciation for the flexibility to allow me to testify virtually with my fellow panelists.

Due to those unfolding events over the weekend, I felt it prudent for me to remain at my headquarters here in Omaha. And in particular, given the ongoing, historically significant crisis in Ukraine, I am going to defer all questions relative to Russia and a number related to our own forces to the closed session.

But before I begin, I want to thank Secretary Austin and Chairman Milley for their continued support to the strategic deterrence and strategic defense of the Nation, as well as their overall leadership under some very trying conditions.

And, ladies and gentlemen, right up front, what I want to assure you is, is that my command, as always, is ready to execute our strategic deterrence mission.

Chairman Milley rightly stated that we are experiencing one of the largest shifts in global geostrategic power the world has ever witnessed. Today, we face two nuclear-capable near peers who have the capability to unilaterally escalate a conflict to any level of violence, in any domain, worldwide, with any instrument of national power, and that is historically significant.

Last fall, I formally reported to the Secretary of Defense the PRC's strategic breakout. Their expansion and modernization in 2021 alone is breathtaking. And the concern I expressed in my testimony last April has now become a reality.

I have previously emphasized our need to be able to deter two adversaries at the same time. That need is now an imperative.

I have said this before, and I think it is worth repeating: Every operational plan in the Department of Defense, and every other capability we have, rests on an assumption that strategic deterrence, and in particular nuclear deterrence, is holding. And if strategic or nuclear deterrence fails, no other plan and no other capability in the Department of Defense will work as designed.

The Nation's nuclear forces underpin integrated deterrence and enable the U.S. and our allies [and] partners, to confront aggressive and coercive behavior.

The strategic security environment is now a three-party nuclear near-peer reality. Our existing nuclear forces are the minimum required to achieve our national strategy. We must modernize and recapitalize the Nation's nuclear triad, nuclear command and control, nuclear complex and supporting infrastructure, to meet Presidential objectives.

And while modernization must be the priority, please make no mistake, STRATCOM's forces are ready today.

Thank you, and I look forward to your questions.

[The prepared statement of Admiral Richard can be found in the Appendix on page 44.]

Mr. COOPER. Thank you, Admiral.

Now we will hear from General Dickinson.

**STATEMENT OF GEN JAMES H. DICKINSON, USA, COMMANDER,
UNITED STATES SPACE COMMAND**

General DICKINSON. Good afternoon, ladies and gentlemen. And thank you, Chairman Cooper, Ranking Member Lamborn, and members of the HAS [House Armed Services] Subcommittee on Strategic Forces.

As always, I am honored today to represent the approximately 18,000 men and women of the United States Space Command. We are a diverse team that values the honorable service of everyone within our ranks.

This month, we honor the contributions of the women on our team, as U.S. Space Command acknowledges and celebrates Women's History Month.

Today, we remain hard at work building the command toward full operational capability. We are steadily filling out our headquarters. Its composition reflects our joint combined and partnered approach to executing our critical mission.

As of this month, we have approximately a thousand members assigned to our headquarters, with 339 Active Duty from all services, 227 from the Department of the Air Force civilians, 323 contractors, 44 representatives from the interagency, and 39 Reserve Component personnel from the Guard and Reserve. We are glad to have them all on our team.

Responding to the threats that U.S. and allied interests in space demands the capabilities and expertise of every one of our team members. We are prepared to execute our Unified Command Plan missions and responsibilities, yet acknowledge that the challenges from our competitors in the domain are substantial and growing.

China remains our pacing challenge. PLA [People's Liberation Army] developments is directed to creating a joint, versatile, power-projecting, professional, and lethal force for the international stage, and the space layer is critical to their build-out.

In 2021, the PRC increased on-orbit assets by 27 percent. Their recent counterspace capability demonstrations include the DN-1 and the DN-2 direct ascent anti-satellite test and the hypersonic glide vehicle test.

In January, the recently launched SJ-21 space debris mitigation satellite docked with a defunct PRC satellite and moved it to an entirely different orbit. This activity demonstrated potential dual-use capability in SJ-21 interaction with other satellites.

U.S. Space Command is committed to deterring the use of these types of capabilities for nefarious purposes within the framework of the Department of Defense's integrated deterrence initiative, and, if called upon, we are capable of providing options to protect and defend against such threats.

Key to all of this is U.S. and allied space superiority, informed through space domain awareness, or SDA, capabilities. SDA helps us analyze, not just identify, what is occurring in space, which, when combined with information from our intelligence agencies, helps develop an understanding of why things are happening in space.

SDA remains my top mission priority for U.S. Space Command. SDA provides the backbone of U.S. Space Command's strategy for accomplishing our mission. That strategy sets the conditions to

deter, first, and, when called upon, to defend space capabilities and deliver combat power to the United States and its allies.

Our strategy has three main areas of focus. One is countering competitor influence; two, strengthening relationships and attracting new partners; and three, building and maintaining a cooperative advantage.

With continued support from Congress, U.S. Space Command will do all of that and more.

So on behalf of the most critical asset in our command, the soldiers, Marines, sailors, airmen, guardians, civilians, and families of U.S. Space Command, thank you, Chairman Cooper and Ranking Member Lamborn and the members of this committee, for your support of our mission to conduct operations in, from, and to space.

I am submitting my statement for the record, and I look forward to your questions.

[The prepared statement of General Dickinson can be found in the Appendix on page 76.]

Mr. COOPER. Thank you, General Dickinson. Without objection, your statement will be submitted in full for the record.

Now we will hear from General VanHerck.

**STATEMENT OF GEN GLEN D. VANHERCK, USAF, COMMANDER,
UNITED STATES NORTHERN COMMAND AND NORTH AMERICAN
AEROSPACE DEFENSE COMMAND**

General VANHERCK. Chairman Cooper, Ranking Member Lamborn, and distinguished members of the committee, thank you for the opportunity to appear today. It is my honor to represent the men and women of the United States Northern Command [NORTHCOM] and North American Aerospace Defense Command [NORAD] as we defend the United States and Canada in an increasingly complicated and dynamic environment.

I am also pleased to appear with Admiral Richard, General Dickinson, and Deputy Under Secretary of Defense for Policy Ms. Baker to discuss the vital importance of integrated deterrence, especially as it relates to the homeland defense mission.

NORTHCOM and NORAD face the most dynamic and strategically complex environment in their respective histories. Both commands face multiple simultaneous challenges from strategic competitors who have openly declared their intent to hold our homelands at risk in an effort to advance their own interests.

Today, strategic competitors, rogue nations, [and] nonstate actors possess the ability to strike institutions and critical infrastructure in the United States and Canada.

To put it bluntly, our country is already under attack every day in the information space and in the cyber domain. Our competitors, especially Russia and China, are spreading disinformation, actively sowing division and internal discord with the intent to undermine the foundation of our Nation, our democracy, and other democracies around the world. We are seeing this play out today with Russia's invasion in Ukraine.

Meanwhile, those same competitors have invested heavily in conventional precision-strike capabilities and advanced delivery platforms, which Russia is currently displaying to the world.

In pursuit of their regional objectives, Russia and China intend to hold targets in the homeland at risk below the nuclear threshold in order to limit decision space for our senior leaders by threatening national critical infrastructure and by undermining our will and disrupting and delaying our ability to project power forward in a crisis.

I want to be clear: I believe the strategic deterrent is the foundation of homeland defense. I also believe it is necessary for the United States to maintain a reliable and effective nuclear triad.

At the same time, I am concerned that our reliance on deterrence by cost imposition, is currently overweighted and does not adequately account for the conventional capabilities our competitors have already fielded. This overreliance increases the risk of miscalculation and escalation because it limits our national leaders' options in crisis and in conflict.

Our competitors' advanced conventional capabilities make it necessary to move forward to a model of integrated deterrence that employs all elements of national influence, leverages allies and partnerships, [and] provides leaders with a wide range of timely deterrence options.

We must continually demonstrate to our potential aggressors that they will not be successful in achieving their objectives by demonstrating homeland readiness, responsiveness, resiliency, and displaying a range of kinetic and non-kinetic capabilities to defend the homeland and respond to any potential threat or aggression.

USNORTHCOM's support of civil authorities and security cooperation relationships with allies and partners are critical to that effort, as is NORAD's mission to provide warning and defend the approaches to North America.

The reality is that this strategic environment is the new normal. North America is and will be continually challenged day to day and in crisis. Our operating model that assumed we could project power globally from a safe and secure homeland is eroding and has been eroding for more than a decade.

In order to provide national leaders with timely and informed options that they need to achieve favorable outcomes, we must improve our ability to detect and track potential threats anywhere in the world while delivering data to decision makers as rapidly as possible wherever they might be.

In pursuit of those goals, NORTHCOM and NORAD are focused on four strategic principles in our homeland defense design.

All-domain awareness. That is from undersea to on-orbit and everything in between, including cyber.

Information dominance. That is the use of advanced capabilities, such as machine learning and artificial intelligence, to analyze and process data much sooner and deliver that data, what I call decision superiority, to key decision makers in a timely manner.

And finally, global integration. No problem is regional anymore. They are all all-domain and global.

These principles are vital elements to integrated deterrence, and they are critical to our Nation's ability to deterring competition, de-escalate in crisis, and, if necessary, defeat in conflict.

I continue to work closely with my fellow commanders, including Admiral Richard and General Dickinson, the services, the Depart-

ment, and all of our interagency and international partners, to defend our Nation.

I would like to thank the committee and all that you have done to support our soldiers, sailors, airmen, Marines, and our guardians. The FY [fiscal year] 2022 National Defense Authorization continues to advance our national defense priorities and the mission of Northern Command and NORAD.

However, today's strategic environment calls for sustained, sufficient, and predictable funding in order to prevail, while persistently operating under a continuing resolution has accelerated the erosion of our Nation's competitive advantage over the last decade.

I join my fellow commanders, service chiefs, and the Secretary in expressing our concerns and need to arrest this degradation by passing the fiscal year 2022 omnibus and restoring normal order to the appropriations process as a matter of national security.

Again, thank you for the opportunity to appear today. I look forward to your questions.

[The prepared statement of General VanHerck can be found in the Appendix on page 99.]

Mr. COOPER. Thank you, General VanHerck. Let me just add an amen to what you just said.

I would ask all members to keep questions as brief as possible during open session so that we can rapidly move to closed session. I just have a few questions for Secretary Baker.

I think, Madam Secretary, you would agree that if a major nuclear power were to suddenly double the lethality of their nuclear component, that would be a significant development, right?

Ms. BAKER. Yes, Mr. Chairman, I agree.

Mr. COOPER. It might even be what Admiral Richard calls a strategic breakout. So it is a truly alarming development.

And I don't know what is in the Nuclear Posture Review that is coming up, but my guess is we are not going to advocate anything like doubling U.S. nuclear capability, right?

Ms. BAKER. Mr. Chairman, I apologize. Unfortunately, I am not at liberty to talk about the details of the NPR.

Mr. COOPER. I would be willing to bet that we are not going to advocate that. So that is fine.

But there was a Washington Post article that appeared last October that troubles me because it claims, citing a national lab director who is retired, that the United States has just doubled the lethality of its nuclear arsenal. And there has been no denial from the Pentagon.

Now, I checked into it to see if this claim was true or not, and it seems, by all authorities, to not be true. We have not doubled the lethality of our nuclear capabilities. So the continuing Pentagon silence troubles me.

And I know that some folks like to appear 10 feet tall even if they are not. But this doesn't seem to fit with clear and honest communications on nuclear matters.

So perhaps the Pentagon wants to discount The Post as a source. I can understand that. But the continuing silence, to me, is nearly deafening. And I would hate for a near-peer adversary to mistake the Post article for something approaching truth and using that as

an excuse to accelerate their nuclear development, when, in fact, we haven't done a thing, really.

So I just want to get this on the record so that we can have clearer communications with the world.

Ms. BAKER. Mr. Chairman, I am not familiar with the Post article that you referenced, but certainly we will dig into it. And I agree with you that when it comes to our nuclear posture and our nuclear capabilities we ought to be as transparent as we can be wherever we can be.

Mr. COOPER. Thank you.

Mr. Lamborn.

Mr. LAMBORN. Thank you, Mr. Chairman.

Admiral Richard, I will just jump right in for the sake of time.

I think it would be a mistake to discard any of our nuclear capabilities in light of our two near peers and the nuclear buildups and posturing that they are currently displaying.

If the United States were to just jettison any of these three following things—the nuclear Sea-Launched Cruise Missile, the B83 gravity bomb, or the W76–2 low-yield submarine-launched missile—in the upcoming Nuclear Posture Review, what kind of message would that send to our adversaries and our allies?

Admiral RICHARD. Ranking Member, if you would, given that that is a discussion of our own capabilities, I would like to defer my answer to that to the closed session, please, sir.

Mr. LAMBORN. Okay. Let me ask another question then.

Is it your best military advice that our missile defenses are matching the growing People's Republic—Democratic Republic of North Korea threat?

Admiral RICHARD. So, Ranking Member, my best military advice here is that that very question is at the core of the Missile Defense Review. It is a question of what is our national policy in terms of what we expect to do from our missile defenses.

My best military advice was applied inside the Missile Defense Review, and I think it would be best for that process to complete to give you the formal Department answer on that, sir.

Mr. LAMBORN. General Dickinson, reliable space-launch options are critical to the continued success of the National Security Space Launch program and for assured United States access to space.

Can you outline the strategic advantages that we have by having launch options on both coasts? And what are we doing to protect these national missions, given the fact that we have adversaries who are trying to challenge our ability to operate freely in space?

General DICKINSON. So, Ranking Member Lamborn, so if I understand your question correctly, it is about responsive launch as well as how we protect those types of capabilities.

Mr. LAMBORN. Yeah. And having east coast and west coast options.

General DICKINSON. Certainly. So, I think, from a perspective of—from a combatant commander's perspective, having many different options available to us is very important.

In other words, not just relying on one type of capability in this case, relying on the ability to rapidly or quickly respond to any events that we might have on orbit with the capability to put some-

thing else up in orbit to provide us resiliency and, quite frankly, redundancy.

Having them geographically separated obviously has some survivability benefits to that, so east coast, west coast. It also lets us—allows us to deploy in different orbital regimes and in different slots, if you will. And so from that perspective, I support that.

I think it is part of a layered resiliency type of concept where we rely on that, plus other things, to make sure that we have resiliency in space.

And it was mentioned, I believe by Chairman Cooper in his opening remarks, about a resilient space architecture, and that is very important, that we have that. That is part of it.

The other piece, in my mind, is having a constellation of satellites for different types of functions, whether it be communications or ISR [intelligence, surveillance, and reconnaissance] or missile warning, that provide us redundancy and resiliency through numbers of satellites as opposed to just a few.

Mr. LAMBORN. Thank you.

General VanHerck, can you elaborate as to how China is developing its hypersonic capabilities in this open context? And how does that compare with our own progress?

General VANHERCK. Ranking Member Lamborn, they are aggressively pursuing hypersonic capability tenfold to what we have done as far as testing within the last year or so, significantly outpacing us with their capabilities.

Ours, we are picking up in the Department. I am confident we will see, when the budget comes out, we will see additional resources applied into the hypersonic area, as well as in threat warning and attack assessment for those capabilities.

Thank you for the opportunity.

Mr. LAMBORN. Okay. Thank you.

And, Secretary Baker, I imagine that the Department is diligently consulting with our allies and partners these days as Russia invades Ukraine and is threatening veiled threats—or maybe not so veiled threats—on nuclear action.

In these conversations, have you found a single NATO ally that is advocating for us to change or weaken our nuclear declaratory policy?

Ms. BAKER. Congressman, yes, of course we are consulting closely with our partners and allies on a daily, if not more regular basis.

The substance of those conversations is largely about the current ongoing events in Ukraine. But, no, I can't say that I have found an ally who is urging us to reduce our nuclear deterrence.

Mr. LAMBORN. Or our declaratory policy—

Ms. BAKER. Yes, sir.

Mr. LAMBORN [continuing]. In particular.

Ms. BAKER. Yes, sir.

Mr. LAMBORN. Okay. Thank you so much.

Mr. Chairman, I yield back to you.

Mr. COOPER. Thank you.

Mr. Carbajal.

Mr. CARBAJAL. Thank you, Mr. Chair.

General Dickinson, U.S. space officials noted recently that Russia will employ counterspace capabilities, like jamming and spoofing of

the Global Positioning System, GPS, and communication satellites in support of its Ukraine invasion.

In addition, the NRO [National Reconnaissance Office] director urged military and commercial space operators to prepare for possible cyber attacks from Russia.

These warnings are deeply concerning to me as I represent Vandenberg Space Force Base, home to the U.S. Space Command's Combined Space Operations Center, CSpOC, which provides GPS navigation and space-based data that supports U.S. European Command and partners and critical to our command and control of space forces.

With this increased threat of cyber attacks and counterspace capabilities, how is USSPACECOM [U.S. Space Command] working to sustain GPS and critical communications networks that support coalition partners?

General DICKINSON. Thank you, Congressman, for that question.

So at U.S. Space Command we prepare for that every day. That is part of what we do throughout the command that you mentioned, the CSpOC at Vandenberg Space Force Base. Those guardians and warriors out there do that each and every day, ensuring that our global positioning satellites are state of the art and are operational, to include satellite communications that we provide, as well as missile warning.

And so we continue to do that each and every day. We take very active measures to make sure that we are protecting ourselves and defending ourselves from cyber attacks.

So, in my mind, we are in a position right now where I am very comfortable with our strategic posture for the space enterprise, in support of not only European Command, General Tod Wolters over there, but also the other combatant commands around the world.

So with our global mission, that is what we do each and every day.

Mr. CARBAJAL. Thank you.

To continue, General Dickinson, the space enterprise has increasingly become a contested domain, as Russia and China continue to develop and field space capabilities.

In this contested space environment, do you have enough resources to assure U.S. access and superiority in the space domain?

And two, how are you leveraging commercial capabilities to fill current and future capability gaps?

General DICKINSON. So our relationship with the commercial industry is advancing and developing and maturing very quickly. We have had a number of commercial companies, I think we are up over a hundred that we work with right now, what we call our Commercial Integration Cell, that is out at Vandenberg Space Force Base, so much so that we are developing a new framework for our integration with the commercial industry.

And we are doing that right now at U.S. Space Command, because we are finding that our commercial partners can bring a lot of capability very quickly to what we do each and every day.

And that starts with satellite communications. That has really been kind of our older relationship that we have had for many years. But now it is expanding into space domain awareness that gives us commercial type of products that we can use from the com-

mercial perspective. And that is actually out in Colorado Springs where the headquarters is right now, and I think we have had Ranking Member Lamborn there.

So, in other words, the integration of commercial capabilities within U.S. Space Command helps us with what we were just describing in terms of providing resiliency as well as redundancy in some of the things that we need and capabilities we provide.

Mr. CARBAJAL. Thank you.

And I will just remind us that to be able to achieve that commercial framework enhancement, we need to continue to invest in the infrastructure of those ranges, to be able to achieve these goals. So that is something I have been also advocating for.

Secretary Baker and Admiral Richard, we all saw President Putin's unwarranted escalation of the Ukrainian crisis by ordering Russian nuclear forces to be put on high alert.

What steps are you all taking within the coalition to manage this unprovoked escalation?

Ms. BAKER. Congressman, I would just say in this open session, we are assessing President Putin's directive.

At this time, as the Secretary said, I believe last night, we are comfortable with our strategic defensive posture. And I will turn to, maybe Admiral Richard if he wants to add anything to that.

Admiral RICHARD. Congressman, one, that is part of why I am in Omaha, is a part of our ability to assess and be satisfied in terms of our defensive posture.

I am satisfied with the posture of my forces. I have made no recommendations to make any changes. And part of that is because right now, all I will say in open session, is the Nation's nuclear command and control is in its most defended, most resilient lineup that it has ever been in, in its history.

And I will be happy to go into more detail as to why I say that, as well as more discussion of what we see and what we are doing about it, in closed session, sir.

Mr. CARBAJAL. Thank you.

I am out of time, Mr. Chair. I yield back.

Mr. COOPER. Thank you, Mr. Carbajal.

Mr. Brooks.

Mr. BROOKS. Thank you, Mr. Chairman.

Admiral Richard, always good to see someone from the Tennessee Valley up there.

As you mentioned in your opening statement, in September 2021 you stated China to be in a, quote, "strategic breakout," end quote.

In February 2021, you wrote in an essay titled "Forging 21st-Century Strategic Deterrence" that you expected China's nuclear weapons stockpile is expected to double, if not triple or quadruple, over the next decade.

We have all been paying close attention to the conflict in Eastern Europe and Russia's recent movement toward a more aggressive nuclear posture.

With what we know about these two adversarial powers, is it in the best interest of the United States national security to make changes to our nuclear declaratory policy?

Admiral RICHARD. Congressman, you know I have testified to that effect several times in the past, and it remains my best mili-

tary advice that changes would not have benefit to a strategic deterrent, but would have a negative effect, a significant negative effect on our assurance of our allies.

Mr. BROOKS. More specifically, how would a change away from strategic ambiguity affect our allies, and what message does it send to our adversaries?

Admiral RICHARD. Well, it certainly does not help and has a very negative effect on the assurance of those allies. And bottom line, in terms of any potential adversary, I don't think fundamentally they are going to believe one way or the other what our policy is any more than we do in some cases.

Again, that is my best military advice, and that is being addressed as a part of the Nuclear Posture Review. I know my place in the chain of command, and we are ready to execute whatever decisions are reached.

Over.

Mr. BROOKS. Thank you, Admiral Richard.

General Dickinson, good to see you again.

In your opening statement, you outlined China's intentions to obtain superiority in space. We know China has various abilities to conduct attacks on our satellites, including laser blinding, high-powered microwaves, radio frequency jammers, and ground-based missiles that can reach satellites in low Earth orbit.

Can you describe the problems we face and the challenges of responding to such attacks?

General DICKINSON. So thank you for the question, Congressman. Good to see you as well.

For U.S. Space Command, what we are working on right now is all those events that you just described, our ability to understand what those events are, and our awareness of those events.

So one of the priorities—or "the" priority within the U.S. Space Command right now—is building out the capability to do space domain awareness so that I am able to understand, interpret, and characterize what is happening on orbit. And we are doing that through a couple of means.

One is, we are looking at what our terrestrial-based radars can see in space. Some of those are the traditional ones that we have known about for many, many years and have used those. Others are ones that we hadn't used before in that role as doing space domain awareness. In other words, looking up and seeing what they can see.

So we, over the last 2 years, have done a lot of integration of those nontraditional space domain awareness sensors in order to understand better what is going on in the space domain. And that was highlighted for us when we had the Nudol test a couple of months ago where we were able to characterize for the National Command Authority what we saw in space.

So, in other words, battlespace awareness is key to what I am doing right now, to make sure that I can understand what is happening.

Mr. BROOKS. Thank you.

And this one will be for General VanHerck. Hopefully, I can get the question in quick enough for you to answer.

The Missile Defense Agency [MDA] launched the Next Generation Interceptor [NGI] program to protect the United States against potential ballistic missile threats stemming from North Korea and Iran.

How is NORTHCOM continuing to work with MDA to ensure the NGI program remains on schedule and will meet the need of the combatant command when it is delivered in the 2029 timeframe?

General VANHERCK. Congressman, thanks for the question.

I routinely meet and talk with Vice Admiral Jon Hill from MDA and stress the importance of staying on time with delivery in 2028, if not sooner. They have structured the competition to reward fielding quicker and faster to meet those demand signals.

I would like to reiterate, I am comfortable with where we are today in my capability to defend against the rogue actor that we are designed to defend against.

Capacity and capability going forward could be challenged, and that is why it is crucial that we keep the NGI on time or bring it forward even sooner than 2028.

Mr. BROOKS. Thank you.

Mr. Chairman, I yield back.

Mr. COOPER. Thank you, Mr. Brooks.

Mr. Garamendi.

Mr. GARAMENDI. Thank you, Mr. Chairman, for the meeting.

And, Admiral, Generals, thank you for being here.

My first question goes to Admiral Richard.

Ronald Reagan and Mikhail Gorbachev said a nuclear war cannot be won and must never be fought. Is that your view?

Admiral RICHARD. Congressman, absolutely.

Mr. GARAMENDI. Did your organization authorize and pay for, or authorize and then secondly pay for, a "Guide to Nuclear Deterrence in the Age of Great-Power Competition," a document written by Louisiana Tech Research Institute?

Admiral RICHARD. Sir, if you would like, I will take that question for the record. I don't know off the top of my head.

Mr. GARAMENDI. It was distributed—apparently this was distributed to all of your commanders in your force.

Admiral RICHARD. Certainly not under my direction, sir.

Mr. GARAMENDI. Then you have no knowledge of this?

Admiral RICHARD. No, not from memory. But I would be happy to go look into it for you, sir.

Mr. GARAMENDI. I would be happy for you to do that. And you believe that this was not distributed to the 30,000 people in the nuclear—

Admiral RICHARD. Congressman, I don't know the document you are referring to. So I regret that maybe I should have, but I don't know the document you are referring to. I would be happy to go look into it.

Mr. GARAMENDI. Well, I will await your prompt investigation of it. It is a fascinating document, and apparently it was distributed to most everybody in your organization, and it essentially says that we can win a nuclear war. Food for thought.

So do you believe we can win a limited nuclear war?

Admiral RICHARD. Actually, Congressman, I think my job is to deter limited use of nuclear weapons.

Mr. GARAMENDI. And you have no opinion upon the question I just asked you?

Admiral RICHARD. My job——

Mr. GARAMENDI. Can we win a nuclear——

Admiral RICHARD. My job is to deter limited nuclear use, and if deterrence fails, to restore that deterrence.

Mr. GARAMENDI. I think we probably ought to get to a classified. I yield back.

Mr. COOPER. Thank you, Mr. Garamendi.

Mr. DesJarlais.

Dr. DESJARLAIS. Thank you, Mr. Chairman.

Thank you all for being here today.

Admiral Richard, I know you have indicated that you would like to speak further about the B83 nuclear-capable hypersonic weapons and the W76-2 low-yield in a closed setting.

In light of the conversation, if you wouldn't care to share with the committee, can you explain how the W76-2 strengthens our nuclear deterrent and what gap in the U.S. deterrent does this capability fill?

Admiral RICHARD. Fundamentally, Congressman, what that enables us to do is to deter limited low-yield and/or combinations of that threats from our opponents. I will go into more detail in the classified session, sir.

Dr. DESJARLAIS. Okay. And both Russia and China have war-fighting plans that utilize low-yield weapons, correct?

Admiral RICHARD. Congressman, better if I answer that in a closed session.

Dr. DESJARLAIS. Okay. Well, I will move on.

General Dickinson, I know you're eager to get the permanent location for U.S. Space Command settled. Can you discuss briefly how this long, drawn-out process has affected your ability to reach full operational capability and what it would mean if you had to restart, for a third time, a search for a permanent location?

General DICKINSON. So thank you, Congressman.

When I look at declaring IOC [initial operating capability] about a year ago, last August 2021, that was a milestone within the command, as we were able to have enough of the experts that I need on the team to be able to generate those types of strategic effects that we saw when we were able to characterize the Nudol event a couple of months ago. So we are on our way to full operational capability.

Where I see it right now is, I am looking forward to the results and the conclusion of both the DOD [Department of Defense] IG [Inspector General] evaluation that has been done as well as the GAO [Government Accountability Office] audit that has been—that is ongoing.

Those two assessments, I am confident that they will be done soon, and I look forward to the final basing decision, whatever that might come out of that process.

And so for me, it is about the decision. I have got to have a decision. Once I have a decision, then I can do the appropriate planning to make sure that I have got the right types of people in the organization to bring me to where I am today, which is IOC, to full operational capability.

And really, just based on the challenges that we are articulating from the Chinese in the space domain, we need to do that sooner rather than later.

Dr. DESJARLAIS. All right. Thank you. I will look forward to continuing these discussions in closed setting.

I yield back.

Mr. COOPER. Thank you, Mr. DesJarlais.

Mr. Morelle.

Mr. MORELLE. Thank you, Mr. Chair.

And thank you to the panel for being here and for your service to the country.

I just want to talk briefly about the mission of the Stockpile Stewardship Program, which this committee has continued to support, and specifically its science efforts to ensure a safe and reliable nuclear deterrent.

These programs already make stockpile management and modernization successful. I am very proud that my district is home to the NNSA-funded [National Nuclear Security Administration] Laboratory for Laser Energetics at the University of Rochester, which plays a unique role of both conducting world-class stewardship science and training the next generation of scientists that support the readiness of your important, critical mission.

I am concerned, I remain concerned that NNSA does not request adequate resources for the Stockpile Stewardship Program considering our reliance, now and in the foreseeable future, on science to ensure the safety and readiness of our deterrent force.

So I wondered if any of you could comment on the importance of these science programs to the mission that you have before you.

Admiral RICHARD. Congressman, I am probably the most appropriate person to answer that question. I think you know I am required by law annually to do an assessment of the stockpile, and as recently as late last November certified the safety, security, and effectiveness of our Nation's nuclear weapons stockpile.

That Stockpile Stewardship Program that you talked about is a key element of the ability to make that certification, which, fundamentally, this is about confidence in the stockpile. That is fundamentally what it comes down to.

But that is not the only element that goes into this, right? In order to have that confidence, in addition to a Stockpile Stewardship Program, you have to have a flexible and responsive stockpile itself, which requires us to modernize those weapons, and you have to have a resilient and adaptive infrastructure, all of which require adequate funding to NNSA.

Of course, we are statutorily obligated, as a part of the Nuclear Weapons Council, to do an assessment on the budget as a whole, as well as some individual pieces. That process is ongoing. In fact, we are very close to our annual certification.

I would offer that the relationship between NNSA and DOD, or DOE [Department of Energy] and DOD writ large, [has] never been better. We are at a high water mark with regard to that, intend to keep it that way. And then you will see a formal answer from the Department as to the adequacy of NNSA's budget shortly.

Mr. MORELLE. Thank you. If I could, Admiral—thank you for the response—regarding the People's Republic of China, during last

year's posture hearing you stated that it is important to look at what they do, not what they say, and where they are going, and not where they are.

That is almost prophetic, considering last August the PRC successfully conducted a nuclear-capable hypersonic missile test that traveled around the world. And the PRC simply dismissed it as a routine spacecraft experiment, as I remember. This demonstrated intercontinental capability. It is obviously deeply concerning to all of us.

Do you believe that the U.S. current investments in the ongoing nuclear modernization programs will provide sufficient capabilities for the U.S. to remain a credible strategic deterrent to our enemies and to our allies?

Admiral RICHARD. Congressman, of course, I am awaiting to see what the budget looks like, just like everybody else is. I am confident that it will in the main.

But there is an important point here that you bring up about China, and it applies to others as well, which is, we don't know the end point of where China is going in terms of the capabilities it is developing and the capacities that it is developing.

And while I am very confident we are going to wind up with a very good strategy, I think it will need to be a question that we continue to ask ourselves.

As we see where China goes, as we see where others go, what are the overall capability and capacity that the United States requires in order to execute that strategy against a changing threat? And we are going to have to ask that question much more frequently than we have in the past.

Over.

Mr. MORELLE. Thank you, Admiral.

Mr. Chairman, I yield back my time.

Mr. COOPER. Thank you, Mr. Morelle.

Ms. Cheney. Ms. Cheney, are you still with us?

If not, who is next on the list?

Oh, she is coming? Okay, okay.

Ms. Cheney.

Ms. CHENEY. Thanks. Sorry, Mr. Chairman. I will reserve my questions for the classified session. Thank you.

Mr. COOPER. Thank you. I appreciate your consideration.

Mr. Langevin.

Mr. LANGEVIN. Thank you, Mr. Chairman. Can you hear me okay? Very good.

I want to thank our witnesses for their testimony today.

If I could, Ms. Baker, I will start with you.

Can you update us on the status of the testing infrastructure for hypersonic programs of record?

Ms. BAKER. Yes, Congressman. Thank you for the question.

I can assure you and assure the committee that we have made substantial investments in the test infrastructure, both air and ground, in order to accommodate hypersonic testing and other advanced technology testing that we anticipate will be coming down the road. Happy to get you more detail on that if that is of interest.

Mr. LANGEVIN. It is of interest. I am particularly interested in the wind tunnel. Is that part of the infrastructure upgrade you are talking about, or is that outside of your purview?

Ms. BAKER. Congressman, I would—just to make sure I get my facts straight, I will take that for the record and happy to get back to you with a little bit more detail.

[The information referred to can be found in the Appendix on page 127.]

Mr. LANGEVIN. Okay. Thank you.

Are there any additional investments required beyond those mentioned in the science and technology or testing and infrastructure MILCON [military construction] unfunded requirements submissions?

Ms. BAKER. Congressman, this is something that we have looked at over the course of the National Defense Strategy and NPR, MDR process, and we are working closely with our colleagues, other components of OSD [Office of the Secretary of Defense], to make sure that what is included in the budget request—the forthcoming budget request reflects that need.

Mr. LANGEVIN. Good. Well, you are going to have substantial support from the Hill to upgrade that infrastructure given the fact that we are behind right now on developing hypersonic weapons.

So, Admiral Richard, I will turn to you. Electromagnetic spectrum operations underpin nearly every aspect of U.S. military operations from command and control to electronic warfare to sensing and seeing. Certainly our adversaries, however, recognize the U.S. military's historical advantage and seek to deny the use of the electromagnetic spectrum. Russia, in particular, has invested heavily in this area, as we have seen leading up to the recent conflict in Ukraine.

The Department of Defense obviously absolutely must be structured to ensure dominance in this area. In fact, the 2021 NDAA [National Defense Authorization Act] required that STRATCOM transfer its responsibilities for electromagnetic spectrum operations to another entity within the Department of Defense.

Can you please provide an update on the status of these efforts and share your thoughts on where in the Department these critical functions should rest?

Admiral RICHARD. Congressman, one, I am pleased to see that my Department has finally understood the importance of us being able to operate in electromagnetic spectrum, and I was very pleased to see the Department release the electromagnetic spectrum superiority plan, which has a detailed implementation plan that we are executing.

One of my direct responsibilities inside that is to stand up a two-star, directly reporting to me, organization designed to be the operational proponent. And so, before those responsibilities—STRATCOM's responsibilities transfer anywhere, which is still an open question, I think it is my responsibility to get the operational house in order—basically fix it—and then have it in a position where we might consider transferring it to another combatant command.

Fundamentally, my job here is to be the operational proponent to make sure the standards are correct, to make sure certifications are correct, and then to make sure that the operational implica-

tions of the programmatic decisions we make are considered. I am going to fix it first, and then we will figure out if anybody else needs to have it.

Mr. LANGEVIN. Thank you. Thank you, Admiral. We look forward to the outcome of you fixing it and see where that lands, and then where it will go from there. So I will be following that closely, but thank you for your answer.

General Dickinson, I have long said that we will never fight another war without the involvement of cyber, and the same is true for space.

Can you discuss the cyber resilience of our space architecture?

General DICKINSON. Thank you, Congressman, for that question.

So the cyber resiliency, what is unique about the U.S. Space Command is, as we formed and organized ourselves, we started out by embedding cybersecurity right from the very beginning. So, when I look at the command right now, we just established our JCC, or our Joint Cyber Center, within the command, that is responsible for looking at the systems within the architecture that we need to defend. So that was starting point number one.

The second piece is our relationship with USCYBERCOM [U.S. Cyber Command] and General Nakasone and his team, which has embedded a small element within U.S. Space Command and vice versa. I have inserted or established a cadre within his command as well. And, when we look at the service componency across U.S. Space Command, two of my five service components are dual-hatted as both space as well as cyber.

So, given all of that synergy, if you will, with cyber, we are taking it—we have taken a very deliberate look at how do we protect our space architecture from cyber activity.

So I am confident right now that we are making great strides in that regards and that we are, in fact, as I believe as Admiral Richard said, at our highest posture at this point.

Mr. LANGEVIN. I am encouraged by that answer. Thank you, General.

And my time has expired. I yield back, Mr. Chairman.

Mr. COOPER. Thank you, Mr. Langevin.

Mr. Waltz.

Mr. WALTZ. Thank you, Mr. Chairman.

General Dickinson, good to see you, Ms. Baker.

Quick question for you on Space Guard. I don't think there is a full appreciation for how valuable the Guard is to the current mission. Just a couple of quick data points.

Alaska provides 80 percent of the 24/7 combat mission-ready space warfighters for the upgraded early warning radar; New York provides a surge capacity to the NRO's Ops Center; Ohio, direct support in the Combined Space Ops Center; Florida, a State that I am proud to come from, they provide a rapid mobility surge to war space electronic warfare capability.

My understanding is that the White House would like to move all of these missions into U.S. Space Force by 2025. I think you would—would you agree, General Dickinson, that the Guard brings a significant private-sector capability as kind of a bridging function? And obviously they are more cost effective, or at least they are less expensive than their Active Duty counterparts.

Would you agree with both of those assertions?

General DICKINSON. Congressman, thank you for that question.

I am a big proponent and fan of the Reserve Component in general, both the National Guard and the Reserves. What you just stated in terms of the talent and the expertise that they bring from the civilian sector is powerful.

And, as U.S. Space Command stood up 2 years ago, we actually had over 140 Reserve Component, Guard and Reserves, show up at the front door and say, I want to be part of U.S. Space Command. It has been that Reserve Component that was in the command at the beginning and exists today that gives us that combat capability that allows us to act quick.

Mr. WALTZ. That is great. And I know, in the case of Florida in particular, coming from the big space companies, putting on that uniform, serving, and then going back and forth to the private sector has certainly been valuable.

Would you support absorbing those missions in the Active Duty Space Guard and requesting the funding for that force structure?

General DICKINSON. As I said, Congressman, I think the Guard brings and the Reserves bring a lot of capability to us, and——

Mr. WALTZ. Just in the interest of time, General—sorry—Ms. Baker, any comments there?

Ms. BAKER. Congressman, I think the question of the Space Guard is a little bit out of my policy job jar, so I will defer to General Dickinson——

Mr. WALTZ. No worries. I think it is worth noting that the Guard Bureau has aligned the Space Guard forces under a National Guard Bureau space directorate for a relatively, in the big picture of things, de minimis cost. And my understanding is that directorate can be converted into Space National Guard, we established in the House version of the FY 2022 NDAA. Look forward to getting that across the finish line this Congress.

On tactically responsive launch, General, Congress has supported this effort. There was a successful demonstration. The ability to rapidly reconstitute degraded systems from our relatively limited launch sites, I think you would agree, was important. In fact, some have said it is key to deterring near-peer competitors.

But, despite this, neither the requirements nor funding for this important responsive space launch mission area have been identified by the Space Command or the Department.

Do you expect that to happen in the near future?

General DICKINSON. Congressman, that is part of the requirements and the concepts that we are looking at at U.S. Space Command now, in terms of how to build that resilient architecture in space.

Mr. WALTZ. Do you see this tactically responsive launch as a key component? Do you expect to request funding towards it?

General DICKINSON. I see that as a capability—a—one of the capabilities that we should have in order to do that rapid replenishment of capabilities on order, in addition to constellations that have many satellites in it that constitute the—make a constellation, if you will.

Mr. WALTZ. Couldn't agree more, and I think, as we move towards a resilient architecture, we have to be prepared if we start losing assets. How are we going to rapidly replace them?

Just in the limited time remaining in the public session—oh, I think we lost the Admiral. I didn't—wasn't expecting that, and I think I will reserve my time, then, for the——

Mr. COOPER. Thank you, Mr. Waltz.

Mr. Panetta.

Mr. WALTZ [continuing]. Classified session.

Mr. PANETTA. Thank you, Mr. Chairman.

Just briefly so we can get on to the classified session. I am aware that the Joint All-Domain Command and Control, JADC2, is key to integrating missile defense systems, as is harmonizing our efforts with allies and partners. But I am also aware of how challenging missile defense roles can be, especially if they are broken up under the unified command plan.

That being said, I was just wondering, General Dickinson or General VanHerck, can you just kind of give a description of how we are trying to improve interoperability among the combatant commands, as well as our allies and our communication networks in order to bolster our missile defense systems?

General VANHERCK. Congressman, I will take that question. This is General VanHerck.

There is multiple efforts ongoing to improve collaboration and coordination. I will talk about one that I am currently doing that we just finished and we are going to start again. A little information——

Mr. PANETTA. Hold on.

Mr. Chairman, can you tell Mr. DesJarlais to mute himself?

Mr. COOPER. Mr. DesJarlais, can you mute your microphone, please?

Mr. PANETTA. Thank you. Please continue, General.

General VANHERCK. Thank you. So the one that we are working on at our headquarters, it involves all 11 combatant commands. It is called Global Information Dominance Experiment. And it is about taking data and information from all domains, from global sensors around the world, to include allies and partners, to include the missile defense capabilities that you mentioned, and sharing them through a cloud and utilizing machine learning and artificial intelligence to process it in a real time.

And that gives you the ability to collaborate amongst the various functions, to include intelligence, operations, and logistics, to be able to develop a picture, develop options, and evaluate whether those options are realistic.

The Deputy Secretary has done an outstanding job by providing forces at each combatant command and funding to additionally work on integrating these capabilities across the combatant commands, her AIDA [Artificial Intelligence and Data Acceleration] effort.

And so we are proudly partnering with the Department and all the commands to get after what you are talking about.

Mr. PANETTA. Outstanding.

General Dickinson, do you have anything to add to that?

General DICKINSON. Thank you, Congressman.

I would just add that Glen has done a great job in terms of inclusiveness on some of these experiments that we have done that he just outlined. And it is equally as important that we are incorporated or integrated into those efforts in terms of missile warning as well as space domain awareness.

So, as we move forward, one of the priorities for U.S. Space Command is to make sure that we have digital superiority, and part of that is being able to integrate those very complex mission areas so that we have one common operating picture that we can all look at in order to make decisions and recommendations to the national-level leadership.

Mr. PANETTA. Great.

Gentlemen and ma'am, thank you very much for your service and your time today.

I yield back, Mr. Chairman.

Mr. COOPER. Thank you, Mr. Panetta.

Mr. Horsford.

Mr. HORSFORD. Thank you, Mr. Chairman.

General Dickinson, it is good to see you. I appreciated the opportunity yesterday to discuss the importance of a tactically responsive space launch capability with you. And, as the combatant commander responsible for the space domain, your perspective is invaluable as the joint force works to field this capability. I am glad to be working with Congressman Waltz, and I know we led a letter requesting the funding. So look forward to working with you on that.

I wanted to talk about the Nuclear Posture Review and test readiness, though. From 1951 to 1992, nearly 928 explosive nuclear tests were conducted at the Nevada National Security Site [NNSS], which is located in my congressional district. Since the test moratorium went into effect in 1992, NNSS has continued to play a vital role in maintaining the safety and reliability of the nuclear deterrent through NNSA's Stockpile Stewardship Programs.

Today, scientists at NNSS use advanced methods to conduct subcritical experiments that ensure the readiness of the nuclear stockpile. These experiments are safe to the public and the environment and provide decision makers the information and data needed to have no doubt in the readiness of our nuclear deterrent.

The fiscal year 2022 NDAA included \$135 million to further expand Stockpile Stewardship Programs through construction in an NNSS U1a complex providing high-skilled, high-paying jobs to the community and a highly advanced scientific capability to the NNSA.

Every expert and commander that I have discussed the issue with has agreed that the experiments conducted at NNSS and across the NNSA enterprise provide an extremely high degree of [confidence] in the nuclear stockpile.

However, I understand that NNSA still has a requirement to be able to conduct an explosive nuclear test within 12 months if ordered to do so by the President. I remain deeply concerned that any such test would not only be belligerent and unnecessary, but likely conducted at NNSS. Even the remote risk of such a test is unacceptable to my constituents.

The Trump administration's 2018 Nuclear Posture Review stated that the United States will not seek ratification of the Comprehensive Nuclear Test Ban Treaty and that we will not resume nuclear explosive testing, unless necessary, to ensure the safety and effectiveness of the U.S. nuclear arsenal.

So, Secretary Baker, do you agree that current methods of stockpile stewardship ensure the safety and effectiveness of the nuclear arsenal, and will the ongoing Nuclear Posture Review reverse the Trump administration's opposition to ratification of the Comprehensive Nuclear Test Ban Treaty?

Ms. BAKER. Congressman, thank you for the question.

Let me just say that I think the Stockpile Stewardship Program is one of the remarkable successes of our nuclear architecture over the last 30 years. The work that is done in terms of scientific analysis to allow Admiral Richard to have that assurance of our nuclear enterprise is absolutely essential.

It is the policy of this administration to support efforts to bring into force the Comprehensive Test Ban Treaty. It is also the policy of this administration that we will not change our unilateral moratorium on testing.

Mr. HORSFORD. Thank you.

Admiral Richard, as the combatant commander responsible for the nuclear deterrent, are you [confident] that NNSA's stockpile stewardship programs will continue to provide you certainty that the nuclear deterrent is safe and effective?

Admiral RICHARD. Congressman, as you know, I am required to formally report that assessment in writing. And, last fall, as a part of my overall stockpile assessment, I did, in writing, state that I saw no conditions necessitating consideration of a return to testing.

But what I would offer is that stockpile stewardship alone is not all that is necessary to make sure that we have confidence that we don't need to go do a test to restore that confidence.

It is not only stockpile stewardship. I have great confidence in that program. But you have to have a flexible and modernized inventory stockpile, which requires NNSA to hold to its requirements with the programs, and you have to have a flexible and responsive infrastructure, which is also necessary.

So, as long as NNSA continues to meet DOD requirements, then I will have that confidence. If not, it would require revisiting.

Over.

Mr. HORSFORD. Thank you, Mr. Chairman, and I yield back.

Mr. COOPER. Thank you, Mr. Horsford.

Mr. Moulton.

Mr. MOULTON. Mr. Chairman, I defer my questions for the classified session.

Mr. COOPER. Thank you. I appreciate the gentleman's consideration.

Mr. Khanna.

Mr. KHANNA. Mr. Chairman, I defer my questions.

Mr. COOPER. I also welcome your consideration.

Then we will move post haste to the classified session.

This portion of the hearing is adjourned.

[Whereupon, at 3:49 p.m., the subcommittee proceeded in closed session.]

A P P E N D I X

MARCH 1, 2022

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

MARCH 1, 2022

Opening Statement of Rep. Jim Cooper
Chairman, Subcommittee on Strategic Forces
Hearing on
“Fiscal Year 2023 Strategic Forces Posture”
March 1, 2022

I would like to begin by welcoming our distinguished panel of witnesses who will be testifying in both open and closed sessions:

- The Honorable Sasha Baker, Deputy Under Secretary of Defense for Policy,
- Admiral Charles Richard, Commander of U.S. Strategic Command, who joins us virtually from STRATCOM headquarters,
- General James Dickinson, Commander of U.S. Space Command; and
- General Glen VanHerck, Command of U.S. Northern Command and North American Aerospace Defense Command.

The war in Ukraine is a tragic reminder of the importance of our work, which, as I’ve always said, is arguably the most important and technical of any committee in the House. Vladimir Putin’s recent announcement that he was placing his nuclear forces on “high alert” made clear to the world the risk of escalation.

The written testimony today is voluminous, but I will ask the witnesses to shorten their verbal remarks to five minutes to make time for questioning. We read much in the testimony about new concepts, test beds, labs, initial operating capability, and other jargon, but what America and the world needs is the capability to defend the free world now. That means, not just keeping up with commercial industry, but getting the Pentagon to be years ahead of industry. We must have the capability to meet and beat any competitor. Lord knows, our defense budgets are the envy of the world; we need to get our money’s worth with capabilities that are also the envy of the world.

Although our witnesses today are not responsible for development of weapons systems, they are responsible for operating our deployed capabilities and establishing requirements for what we will need in the future. I am thankful that we are finally moving to a more resilient, diversified space architecture rather than simply replacing the aging “big juicy targets” currently on orbit. There is much work to be done, however, and our strategic posture must remain the top priority of the Department of Defense. I am thankful that the Biden administration has stressed continuity with past strategic policy and the urgency of maintaining our nuclear posture.

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Statement of Ms. Sasha Baker
Deputy Under Secretary of Defense for Policy
Before the
House Armed Services Committee Strategic Forces Subcommittee
On Fiscal Year 2023 Strategic Forces Posture:
Nuclear, Missile Defense, Space, and Hypersonic Strike
March 1, 2022

Introduction

Chairman Cooper, Ranking Member Lamborn, and distinguished Members of the Committee, thank you for inviting me to testify before you on the Department's nuclear, missile defense, space, and hypersonic strategy, posture, and capabilities. I am honored to appear alongside Admiral Richard, General Dickinson, and General VanHerck, and I look forward to answering your questions.

Today, the United States faces a challenging security environment amid intensifying strategic competition, rapidly evolving domains of conflict, novel and shifting military capabilities and balances of power, and the growing assertiveness of our competitors, accompanied by a growing risk of military confrontation. Deterrence is challenged by competitors' "gray zone" operations below the threshold of armed conflict, combined with increasingly complex escalation dynamics across multiple domains, as well as the development of new weapons systems, all of which erode strategic stability. Our competitors are developing capabilities to exploit U.S. reliance on space-based systems and challenge the United States' position in the space domain, and are intent on creating new global space norms suited to their purposes. Through the use of space and counterspace capabilities, they aspire to undercut U.S. global leadership.

Our competitors aim to create a future contested operating environment designed to deny our freedom to maneuver by holding our forces, ports, and airfields at risk and challenging our existing weapon capabilities. We must diligently calibrate our strategic posture -- which is underwritten by our nuclear, missile defense, space, and hypersonic strike capabilities -- to these developments.

The forthcoming 2022 National Defense Strategy (NDS) will detail the Department's strategic approach for advancing our defense priorities in support of the National Security Strategy. At the core of the NDS lies the concept of integrated deterrence, which provides a framework for working seamlessly to strengthen deterrence across warfighting domains, theaters, and the spectrum of conflict, in close collaboration with other instruments of U.S. national power, allies, and partners. This is backstopped by our nuclear deterrent, which is underwritten by a safe, secure, effective modernized triad. In keeping with this approach, the 2022 Nuclear Posture Review (NPR) and 2022 Missile Defense Review (MDR) are nested with the NDS, and both the NPR and MDR processes were tightly integrated into the development of the NDS, with a shared understanding of the security environment and Departmental priorities. The Department recognizes that we face an urgent imperative to sustain and strengthen U.S. deterrence, and we must bring all available tools of national power to bear in doing so. Applying integrated

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deterrence, and appropriately tailoring our nuclear, missile defense, space, and hypersonic postures, will be instrumental in advancing this goal.

Security Environment

Potential U.S. adversaries are modernizing, diversifying, and expanding their strategic weapons capabilities, and as they do so, the risks associated with military confrontation are growing. Under these conditions, there must be a sense of urgency in our efforts to sustain and strengthen U.S. deterrence.

As Secretary Austin has stated, the People's Republic of China (PRC) is the Department's pacing challenge. The PRC's ongoing ambitious expansion of its nuclear forces is a growing factor in how we assess our nuclear posture. As recently as 2020, DoD assessed that the PRC would at least double the size of its nuclear stockpile, then estimated in the low-200s, within the decade. Since then, the PRC has accelerated this growth, and may possess up to 700 deliverable nuclear warheads by 2027, and likely intends to have at least 1,000 warheads by 2030. The Chinese military is implementing a launch-on-warning posture for its nuclear forces with multiple manned command and control organs that, for the first time, will enable a counterstrike by the PRC before an incoming first strike can detonate. The PRC has commenced building at least three solid-fueled intercontinental ballistic missile (ICBM) silo fields, which will cumulatively contain hundreds of new ICBM silos. Such developments mark a departure from the PRC's previous minimum deterrence posture for its nuclear forces, and although the end state of the PRC's nuclear expansion is not certain, the trajectory of these efforts points to an extensive nuclear arsenal with a high degree of survivability, reliability, and effectiveness. While the PRC continues to declare that it will not use nuclear weapons first in a crisis or conflict, these expanded forces may provide the PRC with additional options for nuclear coercion. Additionally, the Department remains concerned about the PRC's development of conventional ballistic and hypersonic missile capabilities, in some aspects of which it has surpassed the United States.

The PRC will also remain our primary long-term competitor in space, seeking to exploit U.S. reliance on space-based systems and challenge the United States' position in the space domain. The PRC has developed, tested, and deployed an increasingly diverse array of counterspace weapons to hold U.S. space assets at risk, as well as those of our partners and allies. The PRC is developing new space systems to improve its military effectiveness and reduce its reliance on U.S. space systems such as Global Positioning System (GPS). The PRC has also created a separate space force and is integrating space scenarios into its military exercises. The PRC is working to meet or exceed U.S. space capabilities in pursuit of its goal of building a world-class military by the end of 2049. These efforts involve devoting significant economic and political resources to strengthen science and technology sectors to rapidly advance space and counterspace programs. They also include acquisition and development of a range of emerging technologies with application to the space domain, including artificial intelligence, autonomous

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systems, advanced computing, quantum information sciences, robotics, advanced materials and manufacturing, and space-based solar power.

Russia conducted its annual Strategic Forces nuclear exercise earlier this month coinciding with its final preparations for its premeditated, unprovoked, and unjustified attack operations against Ukraine. The exercise culminated with live fire missile tests overseen by President Putin and Belarusian President Lukashenko on February 19—an effort to brandish nuclear weapons to intimidate the United States and NATO. Let me be clear: we are not intimidated. Neither the United States nor NATO has any desire or intention for conflict with Russia. But our commitment to Article 5 remains ironclad, and we will continue to work with our allies to strengthen our nuclear deterrence posture in Europe. We are confident in U.S. strategic posture to defend the U.S. homeland and deter attacks against our allies and partners.

Russia's modernization of its nuclear, missile, space, and hypersonic capabilities, coupled with its highly aggressive military behavior witnessed in its attack against Ukraine, pose a distinct and pressing challenge. Russia will remain the largest and most capable weapons of mass destruction (WMD) challenge to the United States for the foreseeable future and is currently increasing the capabilities of both its strategic and nonstrategic nuclear weapons. Russia believes its nonstrategic nuclear weapons offer options to deter adversaries, control escalation, and counter U.S., allied, and partner forces that would challenge any regional Russian aggression. These systems pose a direct threat to our allies and partners, and their numbers and stationing are currently not limited by any U.S.-Russia arms control treaty. Russia is also developing and fielding a suite of advanced precision strike missiles that could be launched from multiple air-, sea-, and ground-based platforms, and feature many capabilities designed to defeat multiple missile defenses.

Russia will remain a key U.S. competitor in the space domain, and like the PRC, seeks to undermine the U.S. position in space and exploit our space-based systems. Russia will likely continue to integrate space services into its military forces and develop, test, and field new space- and ground-based kinetic and non-kinetic counterspace capabilities to target U.S. and allied and partner satellites. For example, in November 2021 Russia tested a direct-ascent anti-satellite missile that destroyed a defunct Russian satellite. This test generated more than 1,500 pieces of trackable orbital debris and likely generated hundreds of thousands of pieces of smaller orbital debris that cannot be tracked but nonetheless pose a threat to space assets and operations. This deliberate and irresponsible act demonstrated Russia's disregard for the security, safety, stability, and long-term sustainability of the space domain for all nations and highlights that Russia continues to develop counterspace weapons that undermine strategic stability.

The Democratic People's Republic of Korea (DPRK) remains a persistent threat, and has continued developing nuclear weapons and associated delivery systems that threaten U.S. allies and partners, and pose an increasing risk to the U.S. homeland and U.S. forces in theater. In 2017, the DPRK flight-tested two different types of road-mobile ICBMs, both of which can reach the U.S. homeland. In 2020, the DPRK displayed a new, larger ICBM during a military parade; however, this system is yet to be flight-tested. Additionally, since September 2021, the DPRK has conducted three flight tests of what it claims are hypersonic missiles.

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Meanwhile, Iran's pursuit of nuclear activities that were previously constrained by the Joint Comprehensive Plan of Action (JCPOA) continues to be of deep concern. Iran also maintains a large and growing regional missile capability. Its proliferation of missiles and uncrewed aerial systems pose a coercive threat to U.S. forces, allies, and partners in the Middle East and beyond, although they cannot currently reach the U.S. homeland. Iran also continues to pursue a space program, which could shorten the pathway to a long-range missile capability.

Non-state actors, including violent extremist organizations (VEOs), pose an increasing threat to U.S. regional interests, including allies and partners, particularly in Africa and the Middle East. Non-state actors, especially those supported by Iran, are fielding increasingly complex offensive uncrewed aircraft systems (UAS), rocket, and missile capabilities and continue to benefit from technology transfer by U.S. competitors. Global terrorist groups – including Al Qaeda, ISIS, and their affiliates – are degraded but some may be able to reconstitute in short order. Over the longer term, the United States and allies and partners are likely to face emerging VEOs seeking to exploit domestic extremist sentiments.

Nuclear

The Department of Defense continues to prioritize nuclear deterrence as a no-fail mission. Our nuclear posture has served a vital purpose in U.S. national security for more than 70 years, and continues to be the backbone of our strategy to preserve peace and stability by deterring aggression against the United States, our allies, and our partners. Our potential adversaries must understand that they may never employ nuclear weapons against the United States, our allies, or our partners under any circumstances, without risking devastating consequences. For as long as nuclear weapons exist, we will continue to maintain a safe, secure, and effective nuclear deterrent that is tailored to the challenges of the security environment, the threats we face, and our extended deterrence commitments. At the same time, the Department will support the President's goal of renewing our emphasis on arms control and risk reduction in order to strengthen strategic stability, avoid costly arms races, and reduce the risks of nuclear war. Taken together, these objectives reflect a balanced approach that views a safe, secure, and effective deterrent and the pursuit of arms control and risk reduction as complementary, mutually reinforcing components of U.S. nuclear policy.

This year, DoD will release the 2022 Nuclear Posture Review, which is nested alongside the 2022 Missile Defense Review under the 2022 National Defense Strategy, in keeping with the Department's integrated deterrence framework. While integrated deterrence offers opportunities to draw on emerging non-nuclear capabilities to achieve deterrence objectives and manage escalation risk, nuclear weapons will continue to provide unique deterrence effects that cannot be replaced by other elements of U.S. military power. Nuclear weapons are foundational to U.S. alliances and extended deterrence arrangements, which in turn are central to our broader defense strategy and nonproliferation strategy. As such, U.S. nuclear forces will continue to serve a vital role in our national security strategy.

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The Department is in the final stages of conducting the 2022 NPR, pursuant to Presidential guidance issued in July 2021. The NPR process has been an inclusive effort involving a large group of stakeholders, and the review has taken a deliberate and rigorous approach to ensure fully informed senior leader decision-making.

The NPR was structured in three phases, which began with a review of the security environment. This phase featured extensive examination of the capabilities and intent of U.S. competitors. These examinations directly informed the second phase, which assessed the roles of nuclear weapons, strategies for deterring adversaries, maintaining robust extended deterrence and assurance for U.S. allies and partners, and potential arms control and risk reduction strategies. The third phase focused on requirements and capabilities, including the nuclear forces, stockpile, and infrastructure required to support different policy and strategy options.

The NPR working group remained closely connected to the NDS development process, and the strategy and policy options it considered are aligned with the Department's integrated deterrence framework. NPR deliberations have also been closely integrated with DoD programmatic and budgetary processes. In particular, examination of some NPR topics was deliberately synchronized with the formulation of the President's forthcoming budget request for Fiscal Year (FY) 2023.

As directed by the President, and consistent with the 2021 Interim National Security Strategic Guidance, the NPR has examined opportunities to take steps to reduce the role of nuclear weapons while maintaining a safe, secure, and effective nuclear deterrent and upholding our extended deterrence commitments to our allies and partners. We will continue to examine opportunities to reduce our reliance on nuclear weapons, with analysis of new and emerging domains and technical capabilities. DoD, in partnership with other departments and agencies, will also support bilateral and multilateral nuclear arms control and risk reduction initiatives, with particular focus on addressing the PRC's nuclear weapons buildup, as well as Russian nonstrategic nuclear weapons.

In order to maintain a safe, secure, and effective nuclear deterrent in the face of evolving threats, we must continue to sustain and modernize U.S. nuclear capabilities. The President's FY 2022 budget request reflects a disciplined approach to nuclear modernization programs of record, covering all three legs of the triad. In addition, this request supports the long-overdue modernization of the U.S. nuclear command, control, and communications system, and its transition to an architecture that is suited for today's threat environment.

The President's upcoming FY 2023 budget request, which will be aligned with the 2022 NPR, will continue to address enduring efforts to sustain and modernize the nuclear triad. The Department's modernization efforts also rely on the important partnership with the Department of Energy/National Nuclear Security Administration (DOE/NNSA). DOE/NNSA programs, including stockpile and infrastructure modernization programs, are paramount to the DoD's ability to ensure a safe, secure, and effective nuclear deterrent that can continue to be certified without nuclear testing.

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Secretary Austin has stated that U.S. alliances and partnerships are vital to our national security, serving as “force multipliers” for our military, and he has testified that one of our nation’s greatest strengths lies in these relationships. U.S. extended nuclear deterrence remains a critical element of our alliances and partnerships. Nuclear deterrence has resided at the core of the NATO Alliance since its establishment in 1949, and as the North Atlantic Council reaffirmed in December 2020, as long as nuclear weapons exist, NATO will remain a nuclear alliance. For more than sixty years, through the 1958 U.S.-UK Mutual Defense Agreement, the United States has supported the United Kingdom’s independent continuous-at-sea deterrent. Our extended deterrence relationships with the Republic of Korea and Japan are instrumental to deterring threats in East Asia, including those emanating from the DPRK. We will continue to hold extended deterrence dialogues with Japan, the Republic of Korea, Australia, and NATO, and invigorate these vital alliances in support of U.S. national security.

DoD will take a balanced approach to nuclear posture and policy, sustaining a safe, secure, and effective nuclear deterrent while making a concerted effort to reduce nuclear risks. As the Department continues to develop and implement the integrated deterrence concept, nuclear weapons will continue to serve a unique role in our defense strategy, and we will continue to modernize U.S. nuclear forces to address the evolving security environment. The Department is deeply committed to supporting strong and credible U.S. extended nuclear deterrence commitments. At the same time, DoD will support complementary measures, including bilateral and multilateral arms control agreements, to improve strategic stability and minimize the risk of miscalculation leading to the use of a nuclear weapon. Above all, the Department will implement a nuclear posture and policy that will continue to undergird our national security, and global security, freedom, and prosperity.

Missile Defense

Our nation’s security interests at home and abroad are increasingly at risk from missile threats ranging from advanced offensive ballistic, cruise, and hypersonic weapons to lower-tier threats such as UAS. These missile-related threats have rapidly expanded in quantity, diversity, and sophistication in recent years and are a key driver for the on-going MDR.

The MDR will provide a framework for U.S. missile defense priorities and deterrence objectives and a strategy for missile defense within integrated deterrence. The MDR will also outline how the United States is integrating missile defense with its allies and partners to strengthen international cooperation against shared threats.

Missile defense capabilities undermine adversary confidence in missile use by introducing doubt and uncertainty into strike planning and execution, reducing the incentive to conduct coercive attacks, denying the probability of attack success, and raising the threshold of conflict. Missile defenses also reinforce U.S. diplomatic and security posture to reassure allies and partners that the United States will not be deterred from fulfilling its global security commitments. In the event of a crisis or conflict, missile defenses provide military options that may be less escalatory

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than employing offensive systems. This ability to control the escalation process and limit damage early in a conflict expands senior leader decision space.

While U.S. nuclear weapons continue to present a credible threat of a robust response and cost imposition, missile defenses provide deterrence by denial, and if deterrence fails, potentially limit the destructiveness of an attack. Missile defenses contribute directly to tailored U.S. deterrence strategies to prevent attacks on the United States from states like the DPRK, and extended deterrence to prevent attacks on the U.S. interests and forces abroad, as well as on allies and partners.

The Department's top priority is to defend the homeland and deter attacks against the United States. The United States continues to rely on nuclear deterrence to address nuclear capable threats from Russia and the PRC (e.g., ballistic missiles, maneuvering reentry vehicles, and hypersonic glide vehicles (HGVs)). For states like the DPRK, missile defenses and the U.S. nuclear arsenal are complementary and mutually reinforcing, as these capabilities work together to deter attacks against the United States and our allies and partners. Homeland missile defense systems, such as the Ground-based Midcourse Defense (GMD), offer a visible measure of protection for the U.S. population while reassuring allies and partners that the United States will not be coerced by threats to the homeland from states like the DPRK and potentially Iran.

As DPRK ballistic missiles threats to the U.S. homeland continue to evolve, the Department is committed to improving the capability and reliability of the GMD system. This includes development of the Next Generation Interceptor (NGI) to augment and potentially replace the existing Ground-Based Interceptors (GBIs).

We continue to pursue defenses for U.S. forces with allies and partners against all regional missile threats from any source. As part of an integrated, interoperable, and multi-layered approach to deterrence, U.S., allied, partner, and regional Integrated Air and Missile Defense (IAMD) capabilities are needed to maintain a credible level of defensive capability against expanding regional missile attacks and the threat of attack, while protecting and enabling U.S., allied, and partner maneuver forces to conduct offensive operations. We will also continue the development of active and passive defenses against regional hypersonic missile threats, and pursue a persistent and resilient sensor network to characterize and track all hypersonic threats, improve attribution, and enable engagement.

UAS are a growing challenge as they offer inexpensive, flexible, and plausibly deniable ways for adversaries to carry out tactical-level attacks below the expected threshold of major retaliation, making them an increasingly preferred capability for state and non-state actors alike. The homeland and forward-deployed forces require the fielding of technical and integrated Counter-UAS (C-UAS) solutions with cross-DoD and interagency synchronization to ensure the ability to meet the range of threats to U.S. forces and our partners and appropriately hedge against future advancements.

Working closely with allies and partners in Europe, the Indo-Pacific, the Middle East, and North America to enhance our collective IAMD efforts is an important priority for the Department. From a strategic standpoint, cooperation in this area strengthens our common protection,

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enhances deterrence, and provides assurances essential to the cohesion of our alliances and partnerships in the face of growing regional missile threats, coercion, and attacks. Operationally, IAMD-related coordination, including in the crucial areas of sensing and tracking threats, plays an important role in improving interoperability while mitigating adversary missile capabilities.

To pursue these objectives, the Department engages allies and partners in extensive bilateral and multilateral IAMD-focused security cooperation activities that: coordinate policy development and operational planning; conduct missile defense experimentation; share information on regional and global missile threats; exchange operational IAMD visions; strengthen and align information protection efforts; support modernization and future capability development; and advance new opportunities for joint research, training, and collaborative development and production.

As proven capabilities, active and passive missile defenses remain essential elements in the suite of solutions against advanced and changing threats to the United States and its allies and partners. It is a strategic imperative for the United States to continue investment and innovation in the development of the full spectrum of IAMD capabilities in order to maintain deterrence and offer protection while hedging against uncertainty.

Space

The United States Space Priorities Framework, issued in December 2021, underscores the criticality of space activities to our way of life -- to our national security, economic prosperity, and scientific achievement. Today, global space activities are rapidly accelerating and the strategic security environment is changing, providing both key opportunities and challenges to U.S. leadership in space and assured use of space in crisis and conflict. The Department of Defense, alongside our allies and partners, is leading the transformation of our space enterprise to ensure a secure, stable, sustainable, and accessible space domain for the benefit of all humanity.

Just as space activities are vital to our way of life, space-based capabilities are an integral component of U.S. military power and are critical to overall military effectiveness across all domains. Our space capabilities provide indications and warnings of emerging threats and attacks; deliver the positioning, navigation, and timing signals that support rapid and precise global power projection; generate intelligence on operationally relevant timelines; and allow national decision makers to anticipate risks, deescalate crises, and simultaneously command and control forces in multiple theaters around the globe.

Ensuring the availability of our space capabilities in the face of mounting threats is fundamental to maintaining military superiority across all domains, as is the availability of capabilities to deny hostile uses of space. Equally, ensuring the Department's ability to deter, and if necessary, defeat hostile actions in space, in an increasingly complex security environment, is integral to deterrence and defeat of aggression in any domain. Failure to deter attacks against our space systems creates deterrence challenges across all domains. As a result, an integrated approach

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that harnesses all tools of national power to effectively deter attacks in the space or other domains, is essential.

Equipped with legislation passed over the past few years, the Department of Defense continues to adapt our space enterprise to this evolving security environment. The U.S. Space Force is bringing unity, focus, and advocacy to organizing, training, and equipping U.S. space forces. The U.S. Space Command is providing the operational focus to deter threats and shape the security environment in space. And, the establishment of the Assistant Secretary of Defense for Space Policy will support the Secretary of Defense in overseeing the Department's policy for space warfighting. This office will serve as the overall lead for developing, coordinating, and monitoring the implementation of all defense policy and strategy related to space.

The Department also continues to address the legacy of outmoded space acquisition practices that cannot meet the timelines of the modern strategic environment as we evolve and implement the Adaptive Acquisition Framework with respect to space. This framework provides six management pathways with tailoring options to accelerate delivery of new capabilities to the warfighter, including by leveraging our dynamic and innovative commercial space sector. The incoming Assistant Secretary of the Air Force for Space Acquisition and Integration, on behalf of the Secretary of Air Force, will further unify the Department's space acquisition efforts into a more streamlined structure for better integration and speed of delivery of new capabilities at a lower cost. This new Assistant Secretary will lead the Space Acquisition Council and oversee, direct, and manage the acquisition and integration of programs of the Armed Forces to strengthen integration across the national security space enterprise.

Taken together, these changes in the DoD space enterprise are providing focus that provides the required priority and momentum to address current and future projected threats to our capabilities in space and threats stemming from potential adversaries' increasingly sophisticated uses of space.

The June 2020 Defense Space Strategy and the December 2020 National Space Policy also remain important elements of the policy framework for national security space activities. In this respect, the Department is working along four lines of effort to develop the defense space posture we require in this era of strategic competition:

- First, we are building a comprehensive military advantage in space, especially through the work of the U.S. Space Force.
- Second, we are integrating space into national, joint, and combined operations, notably through integrated planning work between the U.S. Space Command and other Combatant Commands.
- Third, through our operations and ally engagement, we are shaping the strategic environment in ways that enhance domain stability and reduce the potential for miscalculations.

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- Fourth, DoD continues to advance space cooperation with commercial entities and with our allies and other international partners, many of whose space capabilities are already integral to collective security.

Just like in other domains, space cooperation with allies and partners provides an important advantage for the United States and contributes to our ability to deter aggression by broadening the systems upon which we rely for space operations and expanding our options for diplomatic and military responses. In concert with the Department of State, with our allies and partners, and our commercial partners, we are shaping the strategic environment in ways that enhance space domain stability, such as through promotion of voluntary norms of responsible behavior in space. Our specific work in the development and sharing of norms of behavior in space, starting with the Department's Tenets of Responsible Behavior in Space, issued by the Secretary of Defense on July 7, 2021, provides a clear and transparent statement on how we will operate in space to promote domain stability and sustainability. Guided by these Tenets, the Department will continue to refine operational practices that exemplify professional and safe behavior in the domain while preserving our ability to defend U.S. national security interests in space. As a military organization and one of the world's most experienced and largest space operators, we understand the importance of articulating what we mean by responsible behavior and then reflecting those values in how we operate. Additionally, our efforts support continued dialogue with space operators around the world to develop shared understanding about responsible space operations in order to reduce the risks of misperception and miscalculation.

The Department will continue to bring to our activities in the space domain a culture of cooperation that allows us to leverage the benefits of alliances and partnerships as part of our collective security, just as we have traditionally done in other domains. We will also continue to pursue opportunities to work with the growing commercial space industry to leverage their entrepreneurial innovation and investments in space as we seek to develop and rapidly field advanced technologies and capabilities to counter threats to U.S., allied, and partner interests.

Hypersonic Strike

The Department continues to modernize the Joint Force to prepare for and deter strategic competitors in a high-end conflict. As part of that effort, hypersonic strike systems are an emerging and critical conventional weapon capability in our broader portfolio of strike options that remains among the highest priorities in the Department's modernization strategy.

The Department continues to prioritize the development of specific capabilities to address and mitigate the PRC's and Russia's aggressive development of hypersonic strike systems. The development of U.S. hypersonic strike weapons systems, all of which are strictly non-nuclear, is one of these priorities. The combination of hypersonic weapon systems' speed, maneuverability, and altitude provides clear and distinct operational advantages.

Hypersonic weapons, such as HGVs, travel at speeds five times faster than the speed of sound, enabling long-range flight at the upper reaches of the atmosphere. Conventional hypersonic

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weapon systems will enable us to hold high-value, time-sensitive targets at risk. Additionally, they provide a conventional strike option in situations where other methods are unavailable, denied access, or their employment is not preferred. Simply put, hypersonic weapons allow us the ability to destroy critical enemy infrastructure and anti-access systems anywhere in the world within hours, enhancing the U.S. capability to create strategic effects, without crossing the nuclear threshold.

Conventional hypersonic strike is critical to the modernization of the Joint Force. The Department is working to identify and invest in the optimal mix of high and low-end munitions to ensure we have the right capability mix to deter conflict or achieve our objectives in the event of conflict. Hypersonic weapons also require robust kill chains and command and control networks, as do many other Joint Force capabilities. The Department is pursuing hypersonic strike as part of the broader Joint Force modernization efforts, and informed by the emerging defense strategy and new warfighting concepts.

We are developing hypersonic capabilities across the Department. The Army's Long-Range Hypersonic Weapon (LRHW), the Navy's Conventional Prompt Strike (CPS), and the Air Force's Air Launched Rapid Response Weapon (ARRW) form a family of hypersonic weapons scheduled to deliver in the early to mid-2020s. The Air Force also has a program underway to develop the Hypersonic Air-launched Cruise Missile (HACM). Ultimately, the Joint Force's long-range strike portfolio will provide the ability to deliver hypersonic weapon systems by air, ground, or sea platforms. Geography, as well as strategic and operational demands, call for this cross-Service approach to fielding hypersonic strike. Each weapon system offers unique capabilities, such as survivability, flexibility, and persistence.

The Department's approach enables a flexible and robust suite of strike options, including hypersonic weapon systems, instead of seeking direct parity with adversaries. Congressional concerns that hypersonic strike systems may raise significant strategic stability and policy questions are taken very seriously and weigh heavily in all of our decisions. Unlike the PRC and Russia, the United States is pursuing only non-nuclear hypersonic strike systems. Additionally, the Department is developing the concepts of operations to employ such systems in a manner that addresses and minimizes any such risks. Transparency and dialogue with Congress remain critical to the evolution of this capability.

Conclusion

Mr. Chairman, I will conclude by emphasizing the ever-increasing importance of U.S. strategic capabilities—encompassing our nuclear, missile defense, space, and hypersonic strike systems—in deterring our competitors. Amidst the current security environment and in the face of rapidly evolving technologies, we must remain focused on sustaining and strengthening U.S. deterrence. This means taking a disciplined approach to modernizing our strategic capabilities, with attention to managing escalation risk and increasingly complex deterrence dynamics across domains. The Department will continue to apply and further develop the integrated deterrence framework to directly address these challenges, and will remain ever-vigilant of emerging and future threats. Thank you, and I look forward to your questions.

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Hon. Sasha Baker

The Honorable Sasha Baker was sworn in as the Deputy Under Secretary of Defense for Policy on February 14, 2022. In this role, she serves as the primary assistant to the Under Secretary of Defense for Policy in formulating, coordinating, and integrating national security policy and plans within the Department of Defense.

Ms. Baker was most recently Special Assistant to the President and Senior Director for Strategic Planning at the National Security Council. She previously served as national security advisor for Senator Elizabeth Warren of Massachusetts, and as Deputy Chief of Staff for Secretary of Defense Ashton Carter, for which she received the Department of Defense Distinguished Public Service Medal.

Ms. Baker joined the civil service as a Presidential Management Fellow at the Office of Management and Budget, where she served in the Homeland Security and National Security divisions and later as Special Assistant to the OMB Director. She began her public service career with the House Armed Services Oversight and Investigations Subcommittee, supporting bipartisan congressional reviews on a variety of national security topics.

Ms. Baker received her B.A. from Dartmouth College and earned a Master in Public Policy from the Harvard Kennedy School.

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HOUSE ARMED SERVICES COMMITTEE ON STRATEGIC FORCES

STATEMENT OF
CHARLES A. RICHARD
COMMANDER
UNITED STATES STRATEGIC COMMAND
BEFORE THE
HOUSE ARMED SERVICES COMMITTEE ON STRATEGIC FORCES
1 MARCH 2022

HOUSE ARMED SERVICES COMMITTEE ON STRATEGIC FORCES

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INTRODUCTION

United States Strategic Command (USSTRATCOM) is the global combatant command (CCMD) responsible for Strategic Deterrence, Nuclear Operations, Global Strike, Joint Electromagnetic Spectrum Operations, Analysis and Targeting, and Missile Threat Assessment. In addition, the January 2021 Unified Campaign Plan (UCP) designated the Commander, USSTRATCOM (CDRUSSTRATCOM) as the Nuclear Command, Control, and Communications (NC3) Enterprise Operations lead. It takes a team of dedicated individuals to execute our mission set, and I am honored and privileged to lead the 150,000 Soldiers, Sailors, Airmen, Marines, Guardians, and Civilians dedicated to the DoD's highest priority mission.

I want to thank Secretary Austin and Chairman Milley for their leadership and continued support to the strategic defense of this Nation. USSTRATCOM is committed to Secretary Austin's integrated deterrence initiative and remains dedicated to his priorities of defending the Nation, taking care of our people, and succeeding through teamwork. I also want to thank Congress for your continued support to ensure USSTRATCOM is equipped with the resources necessary to maintain strategic deterrence on behalf of the Nation, our Allies, and our partners.

Since my last testimony, there should be no doubt we are contending with a rapidly changing and dynamic strategic security environment where potential adversary actions challenge us in ways we have not experienced in over 30 years. ***In September 2021, I formally declared the strategic breakout of the People's Republic of China (PRC) to the Secretary of Defense. A strategic breakout denotes the rapid qualitative and quantitative expansion of military capabilities that enables a shift in strategy and requires the DoD to make immediate and significant planning and/or capability shifts.*** The PRC continues the breathtaking expansion of its strategic and nuclear forces with opaque intentions as to their use. The recent test of an intercontinental ballistic missile (ICBM)-launched hypersonic glide vehicle (HGV)

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with fractional orbital bombardment (FOB) is just one example of these growing capabilities. Meanwhile, Russia conducted the invasion of Ukraine backing its actions with the coercive potential of the world's largest nuclear arsenal. *The strategic security environment is now a three-party nuclear-peer reality, where the PRC and Russia are stressing and undermining international law, rules-based order, and norms in every domain. Never before has this Nation simultaneously faced two nuclear-capable near-peers, who must be deterred differently.*

I applaud Secretary Austin for his vision of integrated deterrence across the Joint Force, our Allies and partners as the foundation of the National Defense Strategy. *Every operational plan in the DoD, and every other capability we have, rests on the assumption that strategic deterrence, and in particular nuclear deterrence, will hold. If strategic or nuclear deterrence fails, integrated deterrence and no other plan or capability in the DoD will work as designed. The Nation's nuclear forces underpin integrated deterrence and enable the U.S., our Allies and partners to prevent and, if necessary, confront aggression around the globe using all instruments of national power.*

Our operational requirements exist to execute Presidential directives and decisions we make today will have lasting strategic impacts on our ability to do so. Maintaining and strengthening deterrence for the long-term requires a modern infrastructure and industrial base able to develop credible capabilities necessary for a more challenging security environment. While the command is ready to execute its mission today, we must make threat-informed decisions regarding our nuclear capabilities to provide strategic deterrence well into the future.

STRATEGIC THREAT ENVIRONMENT

Chairman Milley rightly stated that we are experiencing one of the largest shifts in global geostrategic power the world has ever witnessed. *Today, both the PRC and Russia have the*

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capability to unilaterally escalate a conflict to any level of violence, in any domain, worldwide, with any instrument of national power, and at any time. USSTRATCOM measures the risk of strategic deterrence failure every day considering this reality. The DoD can no longer have the luxury of assuming the risk is always low, particularly during a crisis. Potential adversaries, as they have for years, have the capability to threaten to inflict catastrophic effects on the U.S. homeland, and on our Allies and partners to achieve their national objectives.

Our potential adversaries continue to rapidly advance the capability to conduct these attacks. Their growing capabilities will pose a danger to U.S. They will continue to expand and diversify their nuclear forces over the next decade and the PRC, in particular, will increase the role of nuclear weapons in its defense strategies. The range of their new systems complement growing nuclear stockpiles, and includes the development and modernization of survivable nuclear triads, counter-intervention, and power projection capabilities intended to deter and deny our regional influence.

The Nation faces significant risk as our potential adversaries develop and deploy emerging technologies, such as anti-satellite, hypersonic, and FOB capabilities. They are also pursuing leadership in key technologies with significant military potential including, artificial intelligence (AI), autonomous systems, advanced computing, quantum information sciences, biotechnology, and advanced materials and manufacturing. USSTRATCOM supports Secretary Austin's call for measures to protect critical U.S. capabilities, technologies, and operations as the Nation also faces risks from the threat of foreign theft of U.S. technology, penetration of U.S. information and weapons systems, supply chain disruptions, and cyberespionage campaigns designed to erase U.S. advantages. Cyber threats from the PRC, Russia, and the Democratic People's Republic of Korea (DPRK) are determined and unrelenting. Even now, Russia threatens cyberattacks against the U.S. as tensions over Ukraine increase. To that end,

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USSTRATCOM implemented a new construct to operationally harden NC3 systems against cyber threats to improve force readiness during competition and crisis. We must mitigate these threats for future programs to field new uncompromised capabilities.

People's Republic of China

We should carefully consider the PRC's actions rather than their rhetoric. The breathtaking expansion of land-, sea-, and air-based nuclear delivery platforms, command and control survivability, novel and asymmetric weapons, and supporting infrastructure is inconsistent with a minimum deterrent posture. When I testified last year, I warned that the PRC was capable of executing any plausible nuclear strategy. ***I am fully convinced the recent strategic breakout points towards an emboldened PRC that possesses the capability to employ any coercive nuclear strategy today.***

Just three months after my April 2021 testimony, commercial satellite imagery revealed three new nuclear missile fields in western China, each with approximately 120 missile silos. With this discovery, it is clear the People's Liberation Army Rocket Force (PLARF) will soon achieve a robust ICBM capability. The new silos can be equipped with the solid-fueled, road-mobile CSS-10 Mod 2 capable of reaching the continental United States (CONUS). This is in addition to the fixed ICBM arsenal of CSS-4 Mod 2 and multiple independently targetable reentry vehicle (MIRV) equipped CSS-4 Mod 3 ICBMs. While only a developmental concept in 2019, the PRC has already fielded the road-mobile, MIRV-capable, CSS-20 with launch options including silo or rail-mobile basing. Counting both conventional and nuclear-armed missiles, the PLARF employs over 900 theater-range intermediate and medium-range ballistic missiles (IRBM / MRBM), some of which are capable of doing catastrophic damage to United States, Allied, and partner forces in the region. Combined, this formidable arsenal is cause for concern.

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Further advancements in the last year include ground-based, large phased array radars and at least one geostationary satellite capable of detecting ballistic missile launches. These capabilities, plus a rapidly expanding silo-based ICBM force, indicate the PRC increased the peacetime readiness of its nuclear forces and seeking a Launch-on-Warning posture, all while the PLARF now rotates its nuclear and conventional brigades to “high alert duty” posture for unspecified periods. Enhancing the survivability of its sea-based deterrent, the third generation JL-3 submarine launched ballistic missiles (SLBM) allows the People’s Liberation Army Navy’s (PLAN) now six JIN-class ballistic missile submarines (SSBN) to target CONUS from a protected bastion within the South China Sea.

The PRC’s pursuit of an ICBM delivered HGV with FOB capability is a technological achievement with serious implications for strategic stability. On 27 July 2021, the PRC’s first HGV FOB test resulted in 40,000 kilometers distance flown and over 100 minutes of flight time—the greatest distance and longest flight time of any land attack weapon system of any nation to date. The PRC is investing heavily in HGV and directed energy weapons technology for global strike and defeat of missile-defense systems, anti-satellite, anti-missile, and anti-unmanned aircraft system capabilities.

The PRC is increasing its capacity to produce and enrich plutonium by constructing fast breeder reactors and reprocessing facilities, which may be used to support a growth in China’s nuclear weapons stockpile. While the PRC may use a portion of this infrastructure for civilian nuclear technology programs, it is highly likely some infrastructure will support their expanding nuclear weapons program. This accelerated nuclear expansion may enable the People’s Liberation Army (PLA) to field over 700 nuclear warheads by 2027. The PRC likely intends to have at least 1,000 warheads by 2030, greatly exceeding previous DoD estimates. Unlike the U.S., The growth of the PRC’s nuclear arsenal is not constrained by any treaty limits.

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Finally, the PLA continues to develop and field precision strike nuclear delivery systems. The dual-capable DF-26 IRBM can range critically important ports, airfields and bases in the western Pacific with conventional and nuclear payloads. Survivable road-mobile transporter erector launchers can deliver the DF-31A ICBM at ranges in excess of 11,000 kilometers. The PLA's H-6N air-to-air refueling-capable bomber, which can carry the nuclear air-launched ballistic missile (ALBM), is entering its second year of operational service. The 2020 Annual Report to Congress, released in November 2021, surmises that the PRC may be building a new conventional- and nuclear-capable stealth strategic bomber with global reach in addition to medium and long-range stealth bombers. These nuclear-related advancements are additive to the PRC's ongoing conventional modernization and expansion efforts, where they already have a substantive overmatch in regional- and theater-class weapons and capabilities.

Russia

Russia is in its second decade of investing substantial resources to expand their strategic and non-strategic nuclear capabilities. In a recent statement, President Vladimir Putin recounted that in 2000 Russian nuclear deterrent forces were only 12% modernized. By late 2020, President Putin stated that 86% of Russia's nuclear forces had been modernized, including components from all legs of their strategic nuclear triad, and promised to increase modernization to 89% by the end of 2021. Nuclear weapons are an integral part of Russia's national security strategy and Moscow appears to utilize them to demonstrate political stake, deter outside actors, and support resolutions acceptable to Russia. In June 2020, Russia publicly revealed its official nuclear deterrence strategy for the first time, describing threats and conditions for the use of nuclear weapons. Within this strategy, Russia acknowledges it could use nuclear weapons first, including in response to conventional attacks that threaten the "existence of the state."

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Russia made extensive efforts to update their ICBM force with single and multiple warhead missiles, including the developmental silo-based SS-X-29 Sarmat heavy ICBM with the capacity to carry ten or more warheads on each missile; the deployed, more capable silo-based variant of the SS-27; and the silo-based or road-mobile "KEDR" ICBM to be fielded by 2030. To support the expansion and modernization of the sea-leg of its triad, Russia plans to complete the production of ten DOLGORUKIY-class SSBNs and deploy them equally across the Northern and Pacific Fleets by 2028. These SSBNs will carry the new SS-N-32 Bulava SLBM, enhancing Russia's strategic reach while retiring the older Delta IV SSBNs.

Russia also continues to invest in strategic air capabilities, fitting its heavy bombers with a new advanced nuclear cruise missile. On 12 January 2021, Russia accepted delivery of the first of ten brand-new Tu-160M strategic bombers with updated NV-70M radar and NK-32-02 engines. An accomplishment not seen since the Cold War, restarting the Tu-160M production line required cooperative efforts between the Kremlin and the Russian industrial base. The opening of new manufacturing and production lines further illustrates Russia's ability to rapidly increase its industrial production capacity to support its strategic forces.

In my last testimony, I highlighted Russia's novel and advanced weapon delivery systems, many of which are capable of hypersonic speeds and flight path adjustments designed to avoid U.S. missile defense systems. They pursue these capabilities despite the United States clearly relying on its strategic nuclear forces to deter any large attack by Russian nuclear weapons. The Avangard HGV, Tsirkon hypersonic anti-ship and land-attack missile, and Kinzhal ALBM are operationally fielded now. Meanwhile work continues on the Skyfall nuclear-powered intercontinental cruise missile and the nuclear-armed Poseidon autonomous underwater vehicle. All provide Russia with an even more diverse and flexible nuclear force while posing a challenge for us. Defense Minister Sergei Shoigu asserted that hypersonic

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weapons will make up the core of Russia's non-nuclear deterrence capability in the future.

Russia is not limiting itself to these new systems and claims to have already completed serious research and technological groundwork on pieces of equipment that have no counterpart in the world. They continue to develop additional strategic systems with new hypersonic warheads to expand the range of threats against the U.S., our Allies and partners.

Russia's stockpile of approximately 1,000 to 2,000 non-treaty accountable nuclear weapons is anticipated to grow. These weapons fall entirely outside of the U.S.-Russia New Strategic Arms Reduction Treaty (START) and provide Russia with a diverse stockpile of theater and tactical weapons systems employable by naval, air, and ground forces. In a conventional conflict, if Russia perceives an irreparable imbalance of forces, it may escalate to non-treaty accountable nuclear weapons use.

In October 2019, Russia conducted their largest strategic nuclear exercise since the collapse of the Soviet Union. The exercise was notable for the size and scope of the nuclear forces involved and strategic messaging. President Putin participates in these exercises, indicating a high-level of readiness across Russia's strategic nuclear forces and intending to serve as a visible message to the U.S. and NATO. These major strategic exercises include command and control operations with participation of the entire nuclear triad; an ICBM combat training launch; and long-range aviation cruise missile launches. More importantly, Russia rescheduled and completed the strategic exercise to coincide with the invasion of Ukraine in February 2022.

DPRK

The DPRK remains a strategic security challenge as it continues to conduct activities that threaten regional stability and defy international norms. The DPRK previously tested ICBM-class missiles designed to reach the U.S., and they have a large arsenal of theater-class missiles.

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The recent missile launches demonstrate their ongoing desire to develop a credible missile threat. USSTRATCOM supports the Department's efforts with regional partners to reduce military tensions and encourages diplomatic efforts to pursue the DPRK's denuclearization. At the same time, USSTRATCOM will continue to contribute to the extended deterrence commitments of the Republic of Korea and Japan.

INTEGRATED DETERRENCE

While deterrence is not a new concept, the emerging security environment necessitates integrated deterrence to leverage all elements of national power, while enabling the Joint Force to synchronize actions across domains and time on an unprecedented scope and scale. *Yet, the foundation of the Nation's strategic deterrent is unchanged: a powerful and ready nuclear force, a survivable NC3 system, and a responsive nuclear weapons infrastructure. Absent this foundation, the credibility of integrated deterrence will not work.*

Sustaining and strengthening our Nation's deterrence is imperative. Our potential adversaries employ coercion or threat of force as a means to challenge U.S. security commitments and undermine the existing international order. To confront aggressive and coercive behaviors of nuclear-capable near-peers, the Nation must leverage all elements of national power with our nuclear enterprise at its foundation. Integrated deterrence orients the DoD toward stability and cooperation, and clearly communicates the folly and cost of aggression and that diplomacy is always the best option.

Alliances and partnerships remain our greatest strength and are enabled by our credible extended assurance and deterrence. Our policies and postures must enable our Allies to contribute to collective defenses even in the face of adversary nuclear coercion. We share with our Allies and partners a collective of like-minded states who believe a free and open world should be the foundation of the international order. *Our alliances are only as strong as the*

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guarantee of extended deterrence and assurance backed by credible U.S. nuclear forces, which are essential to integrated deterrence.

WHAT WE NEED TO DO OUR MISSION

Fundamentally, strategic deterrence relies on credible capabilities backed by a safe, secure, reliable, and effective nuclear enterprise. We no longer face a singular operational problem set but must consider two nuclear-capable near-peers simultaneously. The attributes provided by all three legs of the triad, forward-deployed regional capabilities, a robust NC3, and a weapons complex able to adapt to future threats offers the President flexible options and enhances the credibility of deterrence. Our strategic capability and capacity must evolve with the threat to achieve our National strategy. USSTRATCOM encourages Congress, the Department, and the Services to continue their decades-long support for these vital national security capabilities.

LAND-BASED TRIAD COMPONENT

The Minuteman III (MM III) ICBM force has stood on continuous alert every hour of every day for the past 50 years, ready to deliver a responsive and highly reliable strategic deterrent capability—and our potential adversaries know it. MM III represents half of the Nation's day-to-day available deterrent and its geographic dispersion presents an intractable targeting challenge. I previously testified that without the Nation's ICBMs the PRC becomes a strategic nuclear peer. *The discovery of three new ICBM missile fields in the last year demonstrates the value the PRC places on land-based forces. If we choose not to continue investing in the land-based leg of our triad, the PRC will soon have a superior, modernized nuclear force with elevated day-to-day readiness.*

UNCLASSIFIED**Requirement for MM III Sustainment**

The MM III is well beyond its intended 10-year design life, yet still provides a high availability rate, testifying to its robust design, past modernization efforts, and the dedication of the Airmen of the U.S. Air Force. Exhaustive Air Force analysis decisively demonstrated that another MM III life extension is more costly than recapitalization, and the debate has moved well beyond funding. We cannot continue to rely on an aging ICBM force with end-of-life challenges and the inability to pace the threat. We must complete Ground Based Strategic Deterrent (GBSD) recapitalization on time and avoid the “sunset mentality” prevalent when replacing old systems.

Requirement for Ground Based Strategic Deterrent

GBSD is the program of record to recapitalize the ICBM force and is critical for maintaining a strong deterrent posture. GBSD will be able to pace the threat and is integral to our strategy to navigate the three-party nuclear-capable peer reality. Its development, procurement, and deployment are the best approach to ensure the land-based leg of the triad remains effective and affordable. GBSD preserves the MM III’s key attributes while improving operational effectiveness against a rapidly developing threat. USSTRATCOM encourages continued Congressional support for the Air Force’s ongoing GBSD strategy – pursue mature, low-risk technologies; design modularity; advanced cyber security; open system architecture; and state-of-the-art model-based systems engineering.

SEA-BASED TRIAD COMPONENT

The Navy’s OHIO-class SSBN fleet, paired with the Trident II D5 Strategic Weapon System (SWS), combines a highly effective, survivable, worldwide launch capability with continuous and virtually undetectable strategic deterrent patrols. Since their first deployment,

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early in the Cold War, we have relied on our SSBN fleet for a resilient, reliable, and survivable deterrent.

Requirement for Trident Sustainment and Modernization

No single Navy submarine has served longer than 37 years, yet the entire OHIO-class SSBN fleet has been life extended to an unprecedented 42 years. USSTRATCOM requires OHIO-class sustainment and modernization until completely replaced in 2042 by the COLUMBIA-class SSBN. OHIO-class sustainment is critical to ensure operational availability of the submarine force to minimize significant transition risk throughout the COLUMBIA-class deployment timeline. The COLUMBIA-class SSBN remains a high priority strategic deterrent program for USSTRATCOM. The program of record delivers twelve SSBNs, the absolute minimum required to meet at-sea requirements, especially during triad recapitalization and future intensive fleet maintenance periods. Continued Congressional support for the COLUMBIA program is vital to strategic deterrence. It must deliver on time to avoid a triad capability gap.

To guarantee uninterrupted SSBN capability, we must continue investing in our SSBN SWS programs. The Navy previously life extended the Trident II D5 weapon system (D5LE) to outfit the OHIO-class through retirement and deployment of the first eight COLUMBIA-class SSBNs. A second D5 life extension (D5LE2) is required to ensure a viable SSBN deterrent through the 2080s. D5LE2 will continue reliable, high performing D5LE design elements and components in order to mitigate cost and technical risk. Additionally, D5LE2 meets current D5 demonstrated performance while offering added flexibility to support future missions and payloads in response to advancing threat environments.

Anti-Submarine Warfare

Anti-submarine warfare threats continue to evolve rapidly as potential adversaries continuously look for new and innovative ways to gain an advantage in the undersea domain.

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The Navy's Integrated Undersea Surveillance System (IUSS) provides vital information concerning submarine and surface ship operations, and acoustic characteristics of interest. It allows U.S. forces to maintain favorable tactical and strategic positions while supporting deterrent patrol operations. Surveillance performed by IUSS directly contributes to the theater anti-submarine warfare commander's maritime defense of the homeland. Advances in Russian submarine stealth and detectability makes IUSS recapitalization a national imperative.

While our submarines are formidable weapon systems, we must address potential adversary's undersea security advances to ensure our current and future SSBN fleet remains effective and viable well into the future. Evolving submarine quieting, acoustic arrays, and processing capabilities challenge our acoustic superiority and subsequently, SSBN survivability. Advanced modifications of large vertical arrays, advanced materials science and coatings, and other efforts within the Acoustic Superiority Program are vital. Funding for these emerging passive long-range detection/wide area search programs secure our SSBN fleet advantages through the OHIO to COLUMBIA transition.

AIR-BASED TRIAD COMPONENT

The bomber fleet is our most flexible and visible leg of the triad. We are the only nation with the capability to provide bombers in support of our Allies and partners, enabling the U.S. to signal our resolve while providing a flexible option to de-escalate a conflict or crisis. Bombers support both strategic deterrent and conventional employment options, and execute global strike, nuclear, and conventional deterrent mission sets around the globe to achieve National objectives. USSTRATCOM executed 127 Bomber Task Force (BTF) missions over the past year. BTFs remain the iconic example of dynamic force employment across the entire Joint Force and potential adversaries watch these missions closely. We strongly encourage continued Congressional support for full funding of the bomber fleet.

UNCLASSIFIED**B-52H Sustainment**

The B-52H is a 60-year-old platform with plans to remain in service for another 30 years. Achieving this unparalleled milestone carries maintenance and operational challenges, which require dedicated technical and funding resources. Critical B-52 modernization upgrades include the Commercial Engine Replacement Program (CERP), Radar Modernization Plan (RMP), and survivable NC3. These improvements are necessary to keep the B-52 flying and able to pace the evolving threat. The Air Force recently selected Rolls-Royce to execute CERP to replace the B-52's 1960s-era TF-33 engines, enabling longer unrefueled range with lower emissions while solving supply chain issues afflicting the current engines. The B-52's very low frequency (VLF) and extremely high frequency (EHF) modernization programs will provide mission critical, beyond-line-of-sight strategic connectivity, and must field on time to meet USSTRATCOM's operational requirements.

B-2 Sustainment

The B-2 fleet remains the world's only low-observable bomber, able to penetrate denied environments while employing a wide variety of munitions against high-value strategic targets. The DoD must protect this unique operational advantage as the Air Force transitions from the B-2 to the B-21. The Air Force can only achieve a successful transition with full funding for the B-2 sustainment and modernization programs until the B-21 completes development and certification, both conventional and nuclear missions. A carefully synchronized transition is necessary to mitigate operational risk associated with executing the triad-wide multi-platform recapitalization.

Requirement for B-21

The B-21 Raider will support the nuclear triad with a visible deterrent capability and provide strategic and operational flexibility across a wide range of military objectives. The

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program is on track to meet USSTRATCOM operational requirements, with five test aircraft currently in development and the first operational aircraft scheduled for delivery in the mid-2020s. USSTRATCOM supports fully funding the Air Force's B-21 strategy to prevent operational shortfalls in the bomber force.

Air-Delivered Weapons / Long Range Standoff

The air-delivered weapons portfolio consists of the Air Launched Cruise Missile (ALCM), the B83 gravity bomb, and the B61 family of weapons providing the right mix of standoff and direct attack munitions to meet near-term operational requirements. The long range standoff (LRSO) weapon will replace the ALCM as our Nation's only air-delivered standoff nuclear capability. It will provide the President with flexible and scalable options, and is capable of penetrating and surviving against advanced air defenses – a key attribute and critical component in all USSTRATCOM operational plans. Without LRSO, B-2 and B-21 bombers will have no option but to fly directly over targets to drop gravity-delivered weapons unnecessarily increasing risk to the mission and the lives of Air Force bomber aircrews.

The LRSO complements the ICBM and SSBN programs as they transition from legacy to modernized weapon systems. The LRSO on-time delivery is important to sustaining strategic stability, as potential adversaries will exploit gaps resulting from technical problems or production delays. Finally, fielding LRSO is cost-effective. Using gravity weapons to deliver similar effects would require ten-times the current bomber allocation and four times the current tanker allocation, with more gravity weapons, or employment of additional triad elements. LRSO full funding is absolutely imperative to reduce operational risks we face during triad recapitalization.

UNCLASSIFIED**Tanker Support**

A robust tanker fleet is essential to sustaining global reach for all USSTRATCOM mission sets. While the KC-135 and KC-10 force has done the yeoman's work for decades, the Air Force's effort to revitalize the tanker fleet is timely. The likelihood of future concurrent mission sets between strategic, theater, and homeland defense is high, requiring continued tanker modernization and expansion efforts. USSTRATCOM fully endorses and supports the Air Force's effort to modernize and sustain the tanker fleet.

NUCLEAR COMMAND, CONTROL, AND COMMUNICATIONS

NC3 provides the critical assured communications link between the President and our nuclear forces. On-going NC3 Enterprise Center (NEC) modernization efforts bridge the gap between legacy and future systems to ensure this critical link does not fail. While aging capabilities provide the nuclear triad with sufficient viable assured strategic communications; today, sustainment issues increasingly compromise the reliability of these stalwart systems. Modernizing our NC3 systems is key to ensuring the nuclear capability of the Nation remains fully positioned to provide an assured response if called upon. Our NEC Next Generation capabilities must pace adversary emerging and future technological developments.

NC3 Next Generation / Modernization

Potential adversaries continue to rapidly research, develop, and field emerging technologies and weapon systems. We are at a point where end-of-life limitations and the cumulative effects of underinvestment in our nuclear deterrent and supporting infrastructure leave us with no operational margin. The Nation simply cannot attempt to indefinitely life-extend leftover Cold War weapon systems and successfully support our National strategy. Pacing the threat requires dedicated and sustained funding for the entire nuclear enterprise and NC3 Next Generation modernization must be a priority.

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The DoD operates, maintains, and defends the current NC3 enterprise every single day from cyber threats. In coordination with the Services, USSTRATCOM led an enterprise-wide approach to harden the current architecture until complete fielding of the NC3 Next Generation. As an example, the Air Force is leading the effort to modernize the NC3 data pathways for the Strategic Automated Command and Control System (SACCS), replacing legacy telephony to sustainable and secure modern technology with upgraded at-risk cryptographic devices.

The NEC and DoD stakeholders fielded the NC3 Next Generation Increment 1 capabilities, including the Family of Advanced Beyond Line of Sight Terminals (FAB-T) to replace antiquated survivable satellite communications equipment. The NEC, the National Security Agency (NSA), and the Services also began replacing outdated encryption equipment with newer, upgraded capabilities. The NC3 Enterprise continues segment upgrades to legacy telecommunications capability from analog to digital working closely with the Defense Information Systems Agency. This conversion is the first step to standardize our enterprise-wide terrestrial communications highway. Additionally, the NEC collaborated with U.S. Cyber Command (USCYBERCOM) to execute a cybersecurity pilot program to provide real-time, persistent monitoring across various NC3 networks to detect, characterize, and mitigate adversary network actions.

The NEC, Navy, and Air Force completed the first step in a digital high frequency (HF) demonstration to enable advanced beyond line-of-sight communication between our command centers and operational forces. USSTRATCOM developed, installed, and deployed a mobile communications suite providing an alternative communications capability supporting continuity of operations and force direction. This new capability will enable USSTRATCOM to rapidly create requirements and field systems in the future.

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The NEC is undertaking several efforts to more rapidly develop and deliver NC3 enterprise capabilities. The NEC established a digital modeling and engineering environment (DMEE), a collaborative platform in the standard development of and test engineering specifications for the NC3 enterprise. The NEC and the University of Nebraska-Lincoln, through a Partnership Intermediary Agreement (PIA), established the Nebraska Defense Research Corporation (NDRC). The PIA fosters collaboration between commercial entities, defense industry, academia, Federally Funded Research and Development Centers (FFRDCs), and other government agencies. The NDRC is already prototyping of future NC3 Next Generation Incremental capabilities. All of these efforts are currently ongoing and will posture delivery of NC3 Next Generation Increments and provide increased operational margin within our NC3 Enterprise.

NC3 Cybersecurity, Technological Improvements, and AI / Machine Learning (ML)

USSTRATCOM continues to realize the benefits from the investment in our world class Command and Control Facility, the DoD's newest NC3 command center. Confidence in our ability to protect, defend, and execute the nuclear deterrent mission in the face of advanced cyber threats remain high. The relative isolation and the redundancies of the systems comprising the Nuclear Command and Control System (NCCS), combined with ongoing cybersecurity enhancements, ensure our ability to respond under adverse cyber conditions. To preserve our critical information and command and control advantages, USSTRATCOM is investing in cybersecurity protections that exceeds the DoD baseline standard while looking for opportunities to improve that posture.

Near-term efforts to enhance cybersecurity of the NC3 enterprise include: the establishment of quarterly cybersecurity reporting for all NC3 information technology (IT) systems; ongoing efforts with USSTRATCOM system program managers to correct

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cybersecurity shortfalls; piloting of a persistent cyber sensing and monitoring capability for NC3 IT systems; and the development and execution of Defensive Cyber Operations (DCO) Internal Defensive Measures (IDM) to harden and defend the NC3 cyber terrain. As the threat evolves; however, the DoD must continue to fund and rapidly implement required cybersecurity capabilities. CyberSecurity Service Provider (persistent cyber defense); persistent sensing and monitoring across the NC3 enterprise; and cryptographic modernization will ensure the confidentiality of our information and decision making capabilities. A responsive cyber Command and Control construct will enable the rapid dissemination of defensive cyber operations orders, facilitate action, and enable follow-up reporting. These efforts will ensure continued readiness of the nuclear deterrent mission and set conditions for the success of our conventional forces.

Deep learning and advanced data management concepts are also fueling new demands for infrastructure that can scale to capacity on demand. Acting on the guidance of the Deputy Secretary of Defense and recommendations from the National Security Commission on AI, USSTRATCOM implemented the Command Data and AI Center (CDAI) to solve the command's most intractable problems through the application of advanced AI/ML methods. The command is recruiting a highly skilled workforce to build and maintain a resilient and scalable cloud and on-premise infrastructure to provide the capabilities to maintain information advantage over our potential adversaries.

We will do this in ways consistent with the DoD Ethical Principles for Artificial Intelligence, while continuing to lead in developing best practices for the development and application of AI and ML technologies to ensure their use is safe, secure, reliable, and consistent with our values. In an effort to "go faster," USSTRATCOM completed a 90-day pilot to assess opportunities to leverage commercial industry and use of non-traditional unclassified data

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sources to solve some of our most challenging problems. I strongly endorse Deputy Secretary of Defense Hicks's AI and ML initiatives in this critical focus area.

USSTRATCOM continues to collaborate with USCYBERCOM, the Services, and agencies to leverage technologies in development, security, and operations (DevSecOps), code delivery, cloud computing, and data analytics to accelerate the development and delivery of new capabilities. Initiatives in these areas will jumpstart development of frameworks and governance necessary to pace the threat. Likewise, these new areas require stable, consistent, and on-time funding.

NUCLEAR WEAPONS AND SUPPORTING INFRASTRUCTURE

The Nation faces a confluence where triad delivery platforms, weapons, and infrastructure must modernize simultaneously. As with DoD programs, the Department of Energy (DoE) and the National Nuclear Security Administration (NNSA) fill a vital role providing the weapons and components required to maintain the Nation's strategic deterrent mission. The NNSA's programs of record must be prioritized and executed on schedule to ensure the DoD retains a credible and modern triad. The NNSA's ability to sustain the Nation's nuclear weapons stockpile is underpinned by a resilient and responsive production infrastructure and robust science and technology programs. All of these elements are critical to maintaining a safe, secure, and effective deterrent force. The objective is to restore the weapons complex to a resilient, responsive and modern condition; capable of sustaining the health of the Nation's stockpile and keeping pace with the evolving threat environment.

Nuclear Weapons and Stockpile Challenges

While today's stockpile is safe, secure and militarily effective, I am increasingly concerned with reliability and performance degradations in the majority of our systems. We must execute stockpile modernization programs on time to reverse this trend. In compliance

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with national policy, the NNSA has done an excellent job reducing the weapons stockpile. As we shift focus beyond life extension to modernizing our remaining weapons, we must overcome obstacles that delay program execution. Failure to do so results in accumulation of operational risk from continued deferral of necessary modernization programs and aging weapons in the stockpile decades longer than intended. For example, both the B61 life extension and W88 alteration programs were delayed 24-months and are now late-to-need. The W80-4 program is a just-in-time modernization for airborne standoff capability, and any program delay incurs operational impacts.

Stockpile modernization programs take 10-15 years to execute. Without a concerted effort to reduce these timelines, today's issues will continue to manifest as the Nation undertakes more complex ballistic missile modernization programs. Specifically, W87-1 is the "pathfinder" weapons program for modernizing our land- and sea-based ballistic missile systems and will develop the infrastructure and technology processes needed in the future. Any W87-1 program delays will cascade through each follow-on program, beginning with the W93/Mk7. W93/Mk7 must deploy on time to reduce our over-reliance on a single SSBN warhead type, avoid future simultaneous SLBM modernization and support the United Kingdom's modernization to its deterrent force.

Weapons Complex Infrastructure

The DoE, NNSA, and DoD work closely to ensure the nuclear weapons infrastructure complex is postured to ensure the stockpile remains safe, secure, and militarily effective. However, today's Manhattan Project-era infrastructure is in poor condition, challenging NNSA's ability to successfully meet basic sustainment needs. Long-term deferred infrastructure investments have significant impacts, and there are heightened concerns with every major site providing critical stockpile capabilities to include uranium, tritium, high explosives, lithium,

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radiation-hardened electronics, testing, experimentation, and weapon assembly/disassembly. Infrastructure modernization must be accomplished to prevent delays in fielding required capabilities. Prioritizing crucial NNSA infrastructure modernization programs is the best and only option to pace projected threats and sustain strategic deterrence.

In 2021, it became clear the production complex would not meet the Nation's plutonium pit production requirements, necessitating pursuit of less optimal approaches to meet stockpile modernization programs in the 2030s. Pit production shortfall is a leading indicator of how our current infrastructure is unable to execute the needed and planned stockpile modernization strategy. The atrophied condition of the infrastructure, coupled with delays in fielding necessary state of the art capabilities, significantly increases operational risk in sustaining a safe, secure, and effective nuclear deterrent.

Science, Technology, and Engineering Base

The science, technology and engineering (ST&E) base is essential for nuclear weapon and production complex modernization. Our ability to attract and retain the best and brightest scientists, engineers, program managers and technicians to work in the strategic deterrence mission set rests on ST&E efforts. In 2021, ST&E programs continued to advance our understanding of nuclear weapons. For example, the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory (LLNL) made a major technological advance, to expand the range of experiments directly relevant to stockpile modernization. This achievement will enable high fidelity testing to address challenging nuclear survivability requirements in the future.

The ability of NNSA to backstop an aging stockpile and infrastructure with advanced science and technology programs has enabled the Nation to sustain the deterrent well beyond projected lifetimes. As our potential adversaries rapidly advance their nuclear programs;

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however, this edge in science and technology is beginning to erode. The Nation must aggressively sustain and advance these critical resources to improve our understanding of nuclear weapons performance and mature technologies to allow us to confidently move forward with stockpile and production modernization programs. I have formally reported this to the Secretary of Defense.

NUCLEAR WEAPONS SECURITY / FORCE PROTECTION

Nuclear weapons security remains a top USSTRATCOM priority and I am encouraged by the Department's continuing efforts to enhance and improve our security posture and capabilities. The security systems that protect our nuclear weapons must evolve as potential adversaries seek to exploit vulnerabilities. We must remain committed to protecting the investments in and fielding of the capabilities required to maintain the high security standards this mission demands and continue to adapt as the threat evolves.

MH-139A Grey Wolf Replacement Helicopter

The Air Force continues to make progress toward replacing the aging UH-1N helicopter fleet with the MH-139A Grey Wolf. The Grey Wolf will close our UH-1N limitations in speed, range, endurance, payload and survivability, and provide a rapid lethal response to address security vulnerabilities. We look forward to the Air Force completing Grey Wolf FAA certifications and getting aircraft "on the ramp" as we move toward full operational capability across all three ICBM wings in FY28.

Countering Small Unmanned Aircraft Systems

USSTRATCOM requires an effective integrated set of Countering Small Unmanned Aircraft Systems (C-sUAS) capabilities to defend strategic locations and assets across the threat spectrum in a rapidly advancing and technically challenging environment. As technology advances, so must our access and authorization to use both kinetic and non-kinetic capabilities in

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C-sUAS engagements to protect our nuclear assets. I strongly support the Services' efforts to develop and field effective protection systems and encourage continuing Congressional support as we deploy C-sUAS capabilities to reduce the threat.

Countering Underwater Unmanned Vehicles

USSTRATCOM requires an integrated Counter-Unmanned Underwater Vehicle (C-UUV) capability for protection of strategic naval assets. The underwater environment has become an uncontested entry point for UUV systems, threatening our strategic assets. The effectiveness of traditional undersea detection and protection methods must be enhanced and new capabilities developed to ensure we retain strategic advantage in response to this emerging threat. It is imperative we seek and employ non-traditional layered protection measures to maintain the safety and security of our waterfronts and strategic assets.

Weapons Generation Facilities

The future Weapons Generation Facilities (WGF) are a DoD program priority and will consolidate weapon maintenance and storage functions to support ICBM and bomber missions. These functions reside in 1960s and 1970s era Weapons Storage Areas (WSA) that exceed their intended service lives. Emerging threats expose WSA vulnerabilities, driving the need for a cost effective approach to restore weapon security and storage; however, the uncertainty of consistent stable funding, supply chain concerns, and pandemic repercussions affect overall confidence in construction schedules.

CONVENTIONAL HYPERSONIC WEAPONS

Hypersonic weapons development remains a top USSTRATCOM priority. Hypersonic weapons will provide a highly responsive, non-nuclear global strike capability against distant, defended, and/or time-critical threats when other forces are unavailable, denied access, or not preferred. Conventional hypersonic weapons will enhance our overall strategic deterrence

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posture by providing the President additional strike options to rapidly project power and hold high-value targets at risk without crossing the nuclear threshold. USSTRATCOM will be ready to command and control hypersonic weapons the day they are fielded, as these weapons directly contribute to the Command's Strategic Deterrence and Global Strike missions. We appreciate and encourage continued Congressional funding as we quickly develop, procure, and field this enhancement to our strategic deterrence portfolio.

JOINT ELECTROMAGNETIC SPECTRUM OPERATIONS (JEMSO)

USSTRATCOM and the Joint Force are critically dependent on the EMS. Across the competition continuum, the Electromagnetic Spectrum (EMS) will be congested, contested, and constrained. Potential adversaries are pursuing technology to deny our ability to use the EMS successfully across our range of missions and operations, to include targeting critical NC3 architecture. To ensure freedom of maneuver in the EMS, we must continue to develop and integrate EMSO across the DoD and with select allies.

USSTRATCOM is implementing operational aspects of the DoD EMS Superiority Strategy (EMSSS) I-Plan Goal 5, Establishing Effective EMS Governance, in coordination with DoD Chief Information Officer (CIO), OUSD, Joint Staff, Combat Support Agencies, CCMDs, and Services. To support this goal, USSTRATCOM will establish a 2-Star Direct Report Organization called the Joint EMS Operations Center (JEC). The JEC will enable execution of proposed amended UCP responsibilities for JEMSO operational lead reporting directly to CDRUSSTRATCOM and we intend to achieve IOC this year.

USSTRATCOM is leading the development of JEMSO Cells (JEMSOC) across the Joint Force to support joint planning, coordination, and control of the EMS. The USSTRATCOM JEMSO staff in lockstep with DoD CIO, is driving the requirements for a JEMSOC Electromagnetic Battle Management (EMBM) system to achieve EMS superiority.

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USSTRATCOM's Joint Electromagnetic Warfare Center (JEWEC) established the first-ever Joint EMS Information Analysis and Fusion capability to provide spectrum-specific data for electromagnetic battle management and CCMD JEMSO cells. Our task is to raise the aggregate readiness of the Joint Force to prevail in a complex EMS that has become key terrain in nearly every military action we undertake.

MISSILE DEFENSE

Missile defense (MD) remains an essential element of our strategic deterrence approach, raising the stakes of rogue actors and regional adversaries and denying the benefit of attack against our protected assets as part of an integrated deterrence framework, both for the homeland and for the regional CCMDs. The active missile defense mission begins with launch detection, attribution, warning, and tracking, all of which face significant challenges as potential adversaries develop and deploy hypersonic systems, increase ballistic, cruise missile availability, and lethality. Technology developments continue at an unrelenting pace and employment techniques - operating at lower altitudes, higher speeds, and with greater maneuverability - continue to challenge our missile defense systems. We must develop and deploy additional missile defense systems with advanced capabilities into the existing architecture to address the rapidly changing threat environment. USSTRATCOM is engaging with CCMDs, the Services, and agencies to advocate for and deliver global integrated missile defense capabilities and capacity in an operationally relevant timeframe.

As we move beyond legacy interceptor-based "hit-to-kill" technologies, we must expand our approach to active defenses and appreciate the funding of such critical sensors as the Hypersonic and Ballistic Missile Space Tracking Sensor (HBTSS) and the Space Development Agency's Tranche 1 MD Tracking Layer. As the Department develops capabilities that complement our existing Ground-Based Interceptor (GBI) systems and regionally-focused

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systems such as, Aegis, Terminal High Altitude Area Defense (THAAD), and Patriot, we must examine novel, cost effective options to adapt and overcome emerging threats. Finally, we should consider modifications to existing systems to defend against emerging threats, while remaining fiscally responsible – for example, fully integrating existing space- and terrestrial-based sensors in an attempt to identify and track ballistic, maneuvering, hypersonic, and cruise missile threats, as well as unmanned aerial systems.

USSTRATCOM continues to work with our Allies and partners to further integrate our capabilities to meet common threats. Led by the Joint Force Component Command-Integrated Missile Defense, the 24-nation missile defense policy campaign, NIMBLE TITAN 20, culminated with a senior leader event in Amsterdam in November 2021 and was successfully completed despite the limitations of the on-going pandemic. We have begun planning our next campaign, NIMBLE TITAN 23, to deepen the exchange of MD policy views and insights and collectively explore operational concepts in this challenging environment.

OUR PEOPLE & PARTNERSHIPS

It has been thirty years since this Nation has had to seriously consider the implications of competition through crisis and possible conflict with a nuclear-armed opponent let alone two nuclear-capable near-peers. USSTRATCOM holds the bulk of the last remaining strategic and operational deterrence expertise in the DoD. Thus, our people and partnerships are a vital element to the national strategic deterrence mission. Even against the challenges of the continuing pandemic, the personnel of USSTRATCOM remain operationally resilient. Because of our people, we continued the mission during this unforeseen crisis.

People

The Command remains committed to improving our workforce and our competitive advantage. We are growing our intellectual and deterrence theory capital through industry and

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academic partnerships such as USSTRATCOM's Strategic Fellows and Deterrence Education Programs. We continue to pursue Diversity, Equity, and Inclusion in line with DoD guidance through Human Capital initiatives. The Command emphasizes and distributes Service and agency focused resources to provide greater visibility to individuals within the Command. We offer opportunities for our military and civilian workforce to pursue additional diversity leadership training and certificates, opportunities to participate in Heritage Councils to help celebrate DoD-recognized special observances, and Directorate-level diversity councils to promote healthy culture and provide direct feedback on workforce and personnel guidance and processes. Additionally, we provide and monitor active feedback mechanisms to report on health and culture within the Command and provide tools to address diversity issues.

Academic Endeavors

This Nation faces an intellectual challenge, requiring us to leverage the intellectual capacity of the U.S., our Allies and partners. USSTRATCOM is making a concerted effort to reinvigorate research in strategic deterrence. Since the establishment of the Academic Alliance in 2014, over 70 academic institutions and industry partners have focused on USSTRATCOM's challenging mission set while building the next generation of national security professionals. Although the Alliance is currently developing the deterrence-focused curricula, it is only a fraction of what is needed to reinvigorate research and analysis for deterrence concepts. In August 2021, I further challenged the Academic Alliance, FFRDCs, and think tanks to provide new ideas on strategic deterrence in the 21st century by establishing USSTRATCOM's first ever analytic agenda. The response from these institutions is so promising that I am integrating some of the concepts and ideas into USSTRATCOM plans and operations.

While this is a good start to understanding deterrence in the 21st century, good will, and the Academic Alliance will only take the Department and our Nation's capacity to think through

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deterrence challenges so far. USSTRATCOM collaborates with the National Strategic Research Institute (NSRI) and the University of Nebraska to research key topics in my analytic agenda. This initiative only scratches the surface to truly understand the implications of strategic deterrence in the 21st century and requires additional engagement with our academic partners.

Wargames

Exercises, wargames, tabletop exercises (TTX), and rehearsals of concept continue to refine how we demonstrate joint capacity, capability, and interoperability across the globe. Last year, USSTRATCOM conducted over 360 nuclear command, control, and communications-focused exercises and wargame events focused on coordination with other CCMDs and the interagency, integrating advanced weapons, and improving processes and procedures to leverage every advantage from our nuclear enterprise.

CONCLUSION

Potential adversary actions are challenging us in ways we have not experienced in over 30 years. USSTRATCOM will continue to deter strategic attack and employ forces as directed by the President to guarantee the security of the Nation, our Allies, and our partners. We must remember deterrence is not a static concept – it evolves – and the current evolution of the world’s strategic security environment will result in three nuclear-capable near-peers. ***The PRC and Russia actively seek to change the international rules-based order, while the U.S., with our Allies and partners, seek to defend it.*** Our military can contribute to an integrated whole-of-government approach only if we make clear-eyed and threat-informed decisions regarding the capabilities needed to protect and defend the Nation. The Nation’s nuclear force is the backstop of integrated deterrence. Today, we stand ready to execute our assigned missions. Failure to pace the threat from potential adversary technological advances today may inhibit our ability to do so in the future. To execute a National strategy resistant to adversarial coercion, we need

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modern, effective, and reliable capabilities. *Above all else, USSTRATCOM will continue to provide strategic deterrence, underwriting every U.S. military operation around the world and deterring great power conflict. Peace is our Profession...*

Admiral Charles A. Richard
Commander, USSTRATCOM

Admiral Chas Richard is a native of Decatur, Alabama and graduated with honors from the University of Alabama in 1982. He earned master's degrees with honors from the Catholic University of America and the Naval War College.

His most recent assignment was Commander, Submarine Forces in Norfolk, Virginia. Other flag assignments include Deputy Commander, U.S. Strategic Command, Director of Undersea Warfare (OPNAV N97) at the Pentagon, Deputy Commander of Joint Functional Component Command for Global Strike at U.S. Strategic Command, and command of Submarine Group 10 in Kings Bay, Georgia.

His operational assignments include command of USS Parche (SSN 683) as well as Submarine NR-1, then the U.S. Navy's only nuclear-powered, deep-submergence submarine. He also served aboard USS Portsmouth (SSN 707), USS Asheville (SSN 758) and USS Scranton (SSN 756).

Admiral Richard's staff assignments include service as the executive assistant and naval aide to the Under Secretary of the Navy; chief of staff, Submarine Force Atlantic; and command of Submarine Squadron (SUBRON) 17 in Bangor, Washington. Other staff assignments include director of resources on the staff of the Under Secretary of Defense (Policy); squadron engineer on the staff of SUBRON-8 and duty on the Deputy Chief of Naval Operations (Submarine Warfare) staff. He has also served as a member of Chief of Naval Operations' Strategic Studies Group XXVIII, studying the integration of unmanned systems into naval force structure.

Admiral Richard assumed his current duties in November 2019. As Commander, U.S. Strategic Command, he is responsible for one of 11 Unified Commands under the Department of Defense. USSTRATCOM is responsible for the global command and control of U.S. strategic forces to meet decisive national security objectives, providing a broad range of strategic capabilities and options for the President and Secretary of Defense.

(Current as of November 2019)

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UNITED STATES SPACE COMMAND

PRESENTATION TO THE
SUBCOMMITTEE ON STRATEGIC FORCES
HOUSE ARMED SERVICES COMMITTEE
U.S. HOUSE OF REPRESENTATIVES

Subject: Fiscal Year 2023 Priorities and Posture of United States Space Command

STATEMENT OF: General James H. Dickinson
Commander, United States Space Command

March 1, 2022

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Introduction

Space is vital to our modern way of life and our people remain our most critical asset. China and Russia are developing new space and counterspace capabilities to achieve national goals and deny the United States, our allies and our partners the advantages from space. United States Space Command (USSPACECOM) is focused on providing support to warfighters from space as well as defending the space domain as a necessary part of our national security, especially in light of the rapid evolution of the threats we face, and the importance of deterring potential adversaries from challenging or attacking U.S., allies', and partners' space systems.

In August 2021, I informed the Secretary of Defense and publicly announced that USSPACECOM had reached Initial Operational Capability (IOC). My IOC declaration represents a measured assessment that USSPACECOM is able to execute key Unified Command Plan-assigned tasks, including normalizing USSPACECOM's command and control of Operation Olympic Defender; successfully demonstrating at Combatant Command-level exercises our warfighting acumen; and adding to the Command's space data sharing agreements that now total more than 100. Today we are capable of delivering strategic effects, providing the National Command Authority with space domain options for achieving national objectives. We are ready to address threats and take advantage of opportunities across the spectrum from competition to conflict.

However, there is much more work to be done to build capacity as USSPACECOM continues driving toward Full Operational Capability (FOC). We are increasing our capacity within the framework of the President's Interim National Security Strategic Guidance and the U.S. Space Priorities Framework. In line with this guidance, the Unified Command Plan, and the Secretary of Defense's approach to Integrated Deterrence, we are implementing USSPACECOM's strategy. Our strategy sets the conditions to deter, and to win when compelled

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to fight. It does this in three ways: (1) Countering Competitor Influence; (2) Strengthening Relationships and Attracting New Partners; and (3) Building and Maintaining a Competitive Advantage. My focus on these three efforts within our strategy will achieve our desired end state: a team of professionals, active, guard, reserve, civilians and contractors, who outthink and outmaneuver our adversaries, operate with our allies and partners, and when necessary, win through space combat power.

Countering Competitor Influence

The challenges to maintaining a safe, secure and sustainable space domain are increasing. On November 15, 2021, Russia tested a ground-based Direct Ascent Anti-Satellite (DA-ASAT) missile and successfully intercepted and destroyed one of its own defunct satellites. While Russian aggression remains visible on the global stage, we must also keep our eye on the pacing challenge – the People’s Republic of China (PRC). Both the PRC and Russia continue to develop and test sophisticated anti-satellite weapons to hold U.S. and allied and partner space assets at risk. In 2007 the PRC, similarly, conducted their own destructive ASAT test. These debris-creating events threatened the lives of those onboard the International Space Station (ISS), and other commercial and space-faring nations’ satellites in low Earth orbit. Additionally, the PRC conducted the first fractional orbital launch of an ICBM with a hypersonic glide vehicle from China on July 27, 2021. This demonstrated the greatest distance flown (~24,850 miles) and longest flight time (~100+ minutes) of any PRC land attack weapons system to date.

These events demonstrate how the PRC and Russia have tested counterspace weapons across multiple domains as a way to blunt U.S. influence, deter, and counter a possible U.S. response during conflict or crisis, and across the board reduce U.S. and allied military effectiveness in the future. Our competitors are also developing and proliferating satellites and

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satellite attack capabilities to hold our space and strategic capabilities at risk. These counterspace capabilities include cyber, electronic warfare (EW), directed-energy weapons, anti-satellite missiles, and space-based weapons, which enables our competitors to achieve a range of effects. These effects range from degrading space services temporarily to damaging or destroying satellites permanently in and through space that jeopardize our capabilities in other domains.

To negate the growing EW and cyber threat, we are partnering with the U.S. Intelligence Community to explore a testbed to assess new jam and spoof resistant waveforms for all satellite telemetry, tracking, and command. The PRC has operational ground-based missiles in their fielded forces intended to destroy spacecraft in low-Earth orbit, and ground-based lasers likely created to blind or damage sensitive space-based optical sensors on satellites in low Earth orbit. Our competitors have counterspace capabilities and operational military doctrines that extend warfighting to space. They are continuing to modernize their space attack capabilities. Today, space is a warfighting domain because our competitors have made it so.

Consequently, the number one need for the Command is to enhance our understanding of the congested and complex space operational environment, to include what is occurring and when, and the intent behind those engaged in such actions. This critical task requires a deep understanding of space objects and capabilities regardless of their national origin. This is why my priority request to Congress is to authorize and fund Space Domain Awareness (SDA) programs that enable us to monitor the domain effectively and provide combat-relevant indicators and warning of potential threats to U.S. government, allied, and partner space systems. SDA encompasses identifying, characterizing and understanding objects to enable real-time assessments of potentially threatening activities in space and developing appropriate options for

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a response. Through SDA, USSPACECOM can better protect and defend our vital space assets when there may be only minutes to respond.

Our SDA capabilities will be part of a broader, resilient space architecture that enables command and control and provides the tools to sustain freedom of action in the space domain. Within this broader, resilient space architecture, SDA remains my top priority. Our space posture must not be predicated on a static defense. Domain awareness enables us to observe, orient, decide, and act. SDA is foundational to effective and proactive maneuver; this is essential to ensuring proliferated architectures are resilient architectures. This Command depends on the SDA capabilities fielded by all of the military Services as well as the commercial sector.

The Pacing Challenge—The People's Republic of China

The PRC poses a major security challenge and remains a long-term strategic competitor to the U.S. Its government views the international environment and the PRC's relationship with the U.S. as increasingly contentious. The PRC continues its decades-long military modernization campaign in order to build what it terms a "world-class military" by the end of 2049. Chinese Communist Party (CCP) leaders characterize their long-term military modernization program as essential to achieving great-power status. In 2020, the CCP's People's Liberation Army (PLA) added a new 2027 milestone to accelerate the integrated development of "mechanized," "informatized," and "intelligentized" armed forces to provide CCP leadership more credible military options. The PLA believes the fundamental precepts for modern "informationized" and future "intelligentized" warfare—including their use and advancement of machine learning and artificial intelligence (ML/AI)—include space superiority, the ability to control the information sphere, and denying adversaries the same.

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In the next 5-10 years the PLA's Strategic Support Force (SSF) will field a range of counterspace weapons with a mature space and counterspace infrastructure to directly challenge United States' space superiority and threaten the United States in all orbital regimes. PLA modernization focuses on improvements in long-range precision strike, cyberspace, electronic warfare, counterspace, and a modern, effective nuclear deterrent that collectively make the PLA a combat-capable global joint force. To enable this transformation, the PRC's Central Military Commission established the SSF in 2015 to integrate cyberspace, space, information operations, psychological warfare, and EW capabilities into joint military operations. The SSF's space activities focus primarily on satellite launches and operations to support PLA intelligence, surveillance, and reconnaissance (ISR); navigation; and communication requirements. An increasingly capable and lethal PLA joint force will almost certainly be able to hold U.S. and allied forces at greater risk.

The PRC's rapidly growing space program is second only to the United States in the number of operational satellites it maintains. The PRC completed 55 launches throughout the year, surpassing the United States' 51 launches. At the end of 2021 the PRC had 508 assets on-orbit, an increase of 27% from the end of 2020. In the last five years the PRC has placed over 350 satellites into orbit.

The PLA owns and operates about half of the PRC's ISR systems, which support monitoring and tracking of U.S. and allied forces worldwide, especially throughout the Indo-Pacific region. Moreover, the PLA is making improvements to existing systems, including space launch vehicles and satellite navigation constellations. To that end, China's Beidou navigation system is now globally operational. Operated collectively, these capabilities provide their

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military the ability to command and control their forces globally, enhance their situational awareness, and monitor and track force movements.

The PRC has developed robust and capable space services, including space-based ISR. Today, the PRC's ISR satellites are capable of providing electro-optical and synthetic aperture radar imagery, as well as electronic intelligence and signals intelligence data. From September 2020 to September 2021, China placed 26 Yaogan-series Earth observation satellites into orbit, bringing the number of orbiting Yaogan-series satellites to 84. Beijing claims the Yaogan-series satellites are for remote sensing and electromagnetic environment detection services; however, these satellites could also be used for reconnaissance.

The PRC actively seeks space superiority through space attack systems and is developing a broad complement of jamming and cyberspace capabilities, directed energy weapons, on-orbit capabilities, and DA-ASAT missiles that can achieve a range of effects. PLA analysis of U.S. and allied military operations states that "destroying or capturing satellites and other sensors" would make it difficult for the PRC's opponent to use precision guided weapons. Moreover, PLA writings on doctrine and strategy suggest that reconnaissance, communications, navigation, and early warning satellites could be among the targets to attack, a strategy designed to "blind and deafen the enemy." Notable PRC counterspace programs include their DA-ASAT. In 2021, the PRC continued development and testing activities to advance the DN-1 and DN-2 DA-ASAT weapons to further refine their space attack capabilities. Other potential counterspace capabilities include Shijian-17 and Shijian-21, which are satellites with robotic arm technology. Space-based robotic arm technology could be used in a future system for grappling and disabling other satellites. The PRC also has multiple ground-based laser systems of varying power levels that could blind or irreversibly damage satellites. On July 16, 2021, the PRC conducted a suborbital

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test of a reusable space vehicle that can land in a similar fashion as an airplane. The PRC's space plane could carry a payload designed to disable or capture a satellite while in orbit. In October 2021, the PRC launched the SJ-21, which the PRC Ministry of Defense described as a space debris mitigation technology, but its dual-use capability could have military applications.

Russia seeks to degrade U.S. space capabilities in order to prevail in future conflicts

Russia is an advanced and persistent threat to the United States, and its military is designed to maintain Russia's influence over the states within its sphere of theater and strategic influence. In 2021, Russia conducted a kinetic, DA-ASAT weapons test, exhibiting unsafe and irresponsible behavior in space. Further emphasizing our need for adequate space domain awareness capabilities, the November 15, 2021 Russian DA-ASAT missile demonstration created nearly 1500 additional pieces of trackable space debris we must now monitor to ensure the safe operation of satellites and the ISS in that orbital regime. In partnership with the other Combatant Commands, their assigned Component Commands, the services (U.S. Army, U.S. Navy), and the Missile Defense Agency, USSPACECOM was able to rapidly characterize the nature and extent of the Russian DA-ASAT weapon and notify civil and commercial partners via standing reporting agreements for the safety of human life and satellites in low earth orbit. After admitting to the test, Russia received condemnation from the United States and our allies and partners in the United Kingdom, Australia, Canada, France, Germany, the Republic of Korea, Japan, the North Atlantic Council, the European Union, and the European Space Agency.

Russia believes space is integral to winning modern wars, and it consequently reorganized the Russian 15th Aero Force in 2015 to incorporate space operations and counterspace capabilities. This new force is the Russian military command that conducts space launches and operates the ballistic missile early warning system, the satellite control network,

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and the space surveillance network. Russia's defense minister stated that the change was prompted "by a shift in the center of gravity...toward aerospace sphere" and to counter the U.S. Conventional Prompt Strike doctrine. Moscow concluded that gaining and maintaining space superiority has a decisive effect on the outcome of future conflicts and is developing space attack systems to hold U.S. and allied space assets at risk.

Russia considers the U.S.'s dependency on space that enables our military and economic power as an exploitable vulnerability. As a result, Moscow has developed a suite of counterspace capabilities including electronic warfare and directed energy weapons that can deny, degrade, and disrupt communications, navigation, and space-based ISR. These counterspace capabilities enable Russia to deny, damage, and defeat U.S. space-based systems in order to reduce U.S. military effectiveness and control conflict escalation if deterrence fails. Russia has several ground-based, low-power lasers designed to blind U.S. missile warning and imagery satellites temporarily, as well as high-power lasers developed to damage other U.S. satellites permanently.

PRC-Russia Space Cooperation

The PRC and Russia rapidly increased their space cooperation throughout 2021. In March, the PRC and Russia signed a memorandum of understanding to coordinate their moon exploration programs within the framework of a future PRC-Russian-led International Lunar Research Station. According to the China National Space Administration, the facility is intended for "multi-discipline and multipurpose scientific research activities, including exploration and use of the moon, moon-based observation, fundamental research experiments, and technology verification with the capability of long-term, unmanned operation with the prospect of subsequent human presence."

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Russia possesses valuable experience from previous space program missions and operations. However, shortfalls in funding, qualified personnel, and other resource inadequacies have hampered continued Russian progress. Meanwhile, Beijing has a space program with ample financial and personnel resources, but lacks Russia's decades of operational space experience. Beijing and Moscow might try to combine their respective strengths on joint projects in some areas, especially as their relations with Western space partners wane and their common aversion of the United States drives them together. Consequently, while the PRC and Russia cooperate, the U.S. must continue to work with our allies and partners to protect our collective interests in space throughout all phases of strategic competition.

Building and Maintaining Competitive Advantage

Improving the Ability to Provide Domain Safety, Security, and Sustainability

The PRC and Russia recognize the advantages afforded by our space systems and seek to change the dynamic by developing or refining their own space and counterspace capabilities. USSPACECOM is entrusted to protect and defend our nation's most critical space assets. The UCP assigns me the responsibility to "protect and defend U.S. and, as directed, allied, partner, and critical commercial space operational capabilities." Executing this responsibility requires acknowledging the space operating environment changed and that we cannot operate as in the past. Thus, in partnership with the Missile Defense Agency and the other Combatant Commands and Services, USSPACECOM is actively integrating non-traditional sensors such as the Army-Navy Transportable Radar Surveillance - 2, Sea-Based X-Band Radar, and Aegis radar platforms under our Global Sensor Management umbrella to provide improved domain awareness. With respect to a potential conflict in space, the strongest tool for deterrence is our competitors' knowledge that the U.S. possesses both the means and resolve to protect and defend its space

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systems. A key component of reaching FOC for USSPACECOM is maturing Combined and Joint force solutions and appropriately posturing scalable combat capabilities to detect, attribute and respond to threats to U.S., allied, and partner space systems. This further enables a credible deterrence posture to preserve the full-range of options for the President and guarantee U.S. and allied freedom to operate in space.

Non-kinetic, reversible solutions—to include space electronic warfare and cyberspace capabilities are critical in achieving space superiority and controlling conflict escalations. They directly affect our ability to deter malign behavior, and to complicate our competitors' ability to threaten our space assets. Of particular importance, non-kinetic engagements do not create debris. Layered, non-kinetic effects are a critical force multiplier that directly affect the success of joint and allied forces.

Scalable joint warfighting options—and the underlying policies that allow for the strategic messaging of these capabilities—are inherent across the competition spectrum. USSPACECOM in collaboration with our mission partners, continues to pursue increased resources and capabilities to provide space domain awareness for warning, assessment, and attribution; to provide space domain environmental monitoring, missile warning and tracking; and to protect and defend U.S., allied, partnered, and commercial space capabilities. In full compliance with our international legal obligations and commitments, the U.S. needs to develop and field resilient capabilities necessary to shape the strategic environment and advance our ability to protect and defend our nation. Such capabilities are essential to accomplishing the full range of my UCP responsibilities effectively, from deterring conflict to winning that conflict if necessary.

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Maintenance and Hardening of Critical Infrastructure

Our Area of Responsibility (AoR) begins 100km above the surface of the earth, and extends outward from the planet indefinitely. Our operating domain, however, extends around the globe itself, and encompasses all three elements of our space systems: the on-orbit asset, the link, and the ground segment. Of particular concern is our ground segment. Our satellites cannot fly and provide mission critical information to our joint forces without fully-operational mission control and relay stations on the ground. Similarly, our Missile Warning mission relies heavily on ground-based radar systems. None of these missions would be possible without the talent our people bring along with proper facilities and infrastructure.

The facilities and infrastructure supporting USSPACECOM assets were not built when the command stood up; they were inherited, with many of the facilities and infrastructure reaching ages well beyond 60 years. It is becoming increasingly difficult to maintain the necessary power, heating, and cooling for our assets, let alone the resiliency, redundancy, survivability, and endurance required for our critical space missions. I am thankful for Congress's continued support to ensure these facilities can evolve to support USSPACECOM's no-fail missions.

Commercial space systems are an essential component of U.S. critical infrastructure and vital to our national security. USSPACECOM, through the Department of Defense, will work with interagency partners and commercial space system stakeholders through the Critical Infrastructure Partnership Advisory Council framework to improve the security, resilience, and cybersecurity of commercial space systems.

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Cyber Integration

Digital superiority ensures that USSPACECOM and its subordinate components have resilient, reliable, and secure systems to command and control its forces worldwide, throughout all phases of conflict and in all domains. Countries like the PRC and Russia continually advance their agendas by launching persistent cyberspace attacks against both government resources and our defense industrial base. There is no space operation that does not rely on cyberspace. These two domains are inseparably linked – a failure with cybersecurity will almost certainly result in a failure in space. Therefore, current and future cybersecurity efforts must have the ability to secure and defend both our intellectual property and the products of those advancements—namely space mission systems. As a result, cybersecurity funding is critical to maintaining dominance, not only in the space domain, but all domains.

We must maintain laser focus on implementing “zero trust architecture,” to shift toward a more comprehensive IT security model allowing us to restrict access controls to networks, applications, and environments without sacrificing mission capability and performance. It will also allow us to capitalize on industry advancements in ML/AI to cyber-harden current and future systems. This hardening will improve our cyberspace – secure and defend posture – which will increase our decision-making speed against time-sensitive asymmetric threats across all domains. Moreover, our close coordination with, and the coherence, speed, and agility of National Security Agency/U.S. Cyber Command integration is critical to our ability to operate freely in space. To facilitate this, I embedded a Joint Integrated Space Team (JIST) at U.S. Cyber Command to help synchronize our planning efforts. Future years will require a steadfast resourcing approach to accomplish these objectives in order to ensure the U.S. can compete and mitigate evolving and expanding cybersecurity threats posed by our competitors.

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Maintaining digital superiority is an enormous part of our ability to outthink and outmaneuver our adversaries, and if necessary, prevail through sustained & comprehensive military space power. To this end, we optimized the command to leverage our architecture, data streams, and ML/AI applications fully. We aligned our information-related capabilities, with our Joint Cyber Center to more efficiently and effectively provide the command with information assurance while also enabling our efforts to achieve and sustain information advantage throughout the continuum of competition. As part of our internal realignment, we established a Data Council that synchronizes the Command's data enterprise to focus our requirements, prioritize data as a strategic asset, in order for the Command to achieve decision advantage. By harnessing current and emerging technologies, leveraging commercial innovations, and applying interoperable and secure data, we created an integrated platform for success. Continuous innovation for competitive advantage and investing in game-changing technologies enables both digital and space superiority.

Cyber Resources

USSPACECOM is pursuing a number of initiatives centered on integrative platforms that maximize artificial intelligence, modeling, and simulation to inform space domain awareness, planning development and assessments, requirements development and leadership support. In short, this entails achieving decision dominance for digital superiority and establishing a campaign analysis capability to inform operations, planning, and requirements. Specifically, through this modeling and simulation initiative, the Command will develop a cutting-edge lab environment to identify, analyze, and assess capabilities and requirements informing key warfighting processes and decisions through digital engineering tools. These tools will include visualization, analysis model management, model interoperability, workflow, collaboration, and

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customization of modeling techniques to help execute the Command's unified command plan responsibilities. To help reach FOC for this capability, USSPACECOM needs an integrated platform with fully trained modeling, simulation, and analysis personnel, with in-place hardware and software tools, with resources required to provide high performance computing across all classification levels. This lab will help USSPACECOM perform unbiased and timely assessments.

Exercises

USSPACECOM has successfully demonstrated our capabilities and processes through coalition-integrated global exercises such as GLOBAL LIGHTNING 21 and PACIFIC SENTRY 21. We do this through a multi-service, multi-domain, and globally integrated approach to national security objectives, nested within the Chairman of the Joint Chiefs of Staff's Joint All-Domain operations directive.

In 2022 and 2023, we will move from baselining the Joint Force's understanding of space capabilities to achieving a credible, globally-integrated deterrence posture for joint and combined space operations appropriate to contend with space threats that are growing in both scope and lethality. In particular, USSPACECOM will conduct exercises that integrate with coalition partners, multiple combatant commands, and the Joint force. Examples of these exercises include SPACE THUNDER 22, SPACE LIGHTNING 22 and SPACE CHALLENGE 22. In these exercises we will train with our Joint force, allies, and partners to protect and defend our space assets while providing effects in, from, and to space. Additionally in these exercises, USSPACECOM and its components will continue to develop and test capabilities to protect and defend on-orbit assets and provide support to terrestrial forces. In future exercises,

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USSPACECOM will continue to integrate holistically across regions and domains to protect and defend U.S. and allied space interests globally.

Personnel

USSPACECOM is a joint organization comprised of representatives from all military branches, Active and Reserve, the National Guard, Government civilians, and contractors. Currently, we have 45 percent of our authorized end strength in place, augmented by 50 Reserve and Guard personnel, and a 300-person contractor force to fill in the skill and capacity gaps.

Facilities

As our workforce grows, so too do our requirements for dedicated facilities capable of hosting our command and control suites while providing the required level of physical and cyber security to protect our personnel and mission. I am proud to tell you that over the past year we have made significant progress thanks to strong Congressional support. Specifically, Combined Force Space Component Command moved into their new headquarters at Vandenberg Space Force Base. We will break ground on the new Combined Space Operations Facility at Schriever Space Force Base which will house the Joint Task Force Space Defense and the National Space Defense Center. Numerous other efforts to renovate and provide modernized facilities to the women and men of US Space Command have also been accomplished. I look forward to your continued steadfast support as progress continues on the Combined Space Operations Facility over the coming years.

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Strengthen Relationships and Attract New Partners**USSPACECOM's Role in Developing Tenets of Responsible Behavior in Space**

Interim National Security Strategy guidance calls for the U.S. to lead “in promoting shared norms and forge new agreements on ... space.” As the United States Space Priorities Framework states, “As space activities evolve, the norms, rules, and principles that guide outer space activities also must evolve. The United States will lead in the responsible, peaceful, and sustainable exploration and use of outer space.”

In this regard, U.S. national security space operations will continue to comply with applicable international law and demonstrate leadership in both the responsible use of space and stewardship of the space environment. To accomplish this, USSPACECOM is also working with key stakeholders across the Department of Defense to develop specific DoD behaviors that further define the Secretary of Defense's five Tenets of Responsible Behavior in Space. The intent of these behaviors is that all Department of Defense space operators will follow them under normal circumstances and throughout competition in order to enhance the security, safety, stability, and long-term sustainability of the space domain and reduce the risk of miscalculation and escalation.

USSPACECOM's efforts will enable Department leadership to inform broader U.S. positions regarding specific actions in space for upcoming interagency, commercial, and international engagements. As the Secretary of Defense has stated, “it is incumbent on the Department of Defense to continue space leadership through demonstrating and acknowledging responsible behavior in space.”

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USSPACECOM is strengthening alliances and attracting new partners, while improving coalition capabilities and space domain awareness

Mutually beneficial alliances and partnerships provide a critical asymmetric advantage that our adversaries cannot match, contributing to our collective space security. Our partners bolster U.S. operational reach and increase our strategic flexibility in all domains.

USSPACECOM's alliances and partnerships are a key strategic edge in the competitive environment of space. Strengthening and expanding our relationships into mature space defense partnerships allows for burden-sharing that can decrease costs, accelerate coalition development, increase information sharing, and leverage partner capabilities to maintain a safe, secure, and sustainable space environment. To this end, we continue to expand our network of partner nations, international organizations, and commercial entities that bring situational awareness, mutual support, and technological innovation to the space enterprise. In the past year alone, we welcomed a General Officer from the United Kingdom as our Deputy Director of Strategy, Plans, and Policy, and added liaison officers from both France and the United Kingdom, and we have plans for more from several allied nations. Moreover, our allies and partners continue to prioritize the space domain, exemplified by both Germany and the United Kingdom establishing their own Space Commands in 2021.

Throughout 2021, USSPACECOM expanded space related data sharing agreements, including new partnerships with Colombia, Greece, and Ukraine. To date, USSPACECOM has agreements with 30 nations and two intergovernmental organizations. Last year, I also met with the Indian Chief of Defense and Chief of Defense Staff to discuss our relationship on space operations, exercises, and information sharing. Additionally, USSPACECOM established a security cooperation program that assists partner nations in developing space capabilities and capacities. Coordination between USSOUTHCOM and USSPACECOM delivered tangible

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growth and development of the Brazilian, Chilean, Colombian, and Peruvian military space capabilities and produced strategic opportunities for the United States to counter problematic PRC influence and access in Latin America. USSPACECOM also reinforced and expanded partnerships through direct cooperation with more than 20 international partners through the Global Sentinel campaign series. Global Sentinel improves multinational collaboration in the domain to support shared space domain awareness, and posture core international space operations expertise for future combined missions.

Lastly, through the Command's Defense Personnel Exchange Program, we expanded agreements to support exchange and liaison personnel assignments with Australia, Canada, France, Germany, Japan and United Kingdom.

Global Integration with other Combatant Commands

USSPACECOM continues to advance space integration with the other combatant commands and establish normalized relationships to coordinate, integrate, and synchronize operations extending beyond earthbound geographic areas of responsibility. To facilitate cooperation, interoperability, and unity of effort, USSPACECOM created Joint Integrated Space Teams (JIST) comprised of space professionals and intelligence planners working within every combatant command headquarters. These teams have evolved from a plans-focused effort to include operational integration, intelligence collaboration, and exercise support. These multi-functional JISTs provide space expertise to each Combatant Command's campaign plan and operation plans development, bolster security cooperation with space engagement activities, and integrate space capabilities to strengthen exercise planning activities. Additionally, JISTs coordinate, integrate, and de-conflict global space operations in direct support of each Combatant

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Commander. To solidify this integration further, we also engaged in Warfighter Talks with United States Cyber Command and United States Space Force in 2021.

Integrating Commercial Interagency, and Academic Organizations

USSPACECOM continues to support NASA's Commercial Crew Program for contingency rescue operations for crewed flights to and from the International Space Station as part of our Human Space Flight Support role. USSPACECOM is committed to assuring the safe exploration of space and is supporting NASA's planned lunar missions by providing crew and spacecraft recovery for the upcoming Artemis program and associated training events. To that end, USSPACECOM's space domain awareness capabilities also help support NASA's planetary defense mission to ensure we maintain space as a source of American innovation and opportunity.

USSPACECOM also has partnerships with four academic institutions and over 100 commercial satellite owners, operators, and service providers. By providing advanced information and services to space-faring partners, we display American leadership in the space domain, promote transparency in the responsible and professional use of space, and support the eventual transition of civil and commercial spaceflight safety services to the Department of Commerce.

To address new challenges for space traffic coordination, from proliferated low earth orbit mega-constellations to intentional debris-causing events, we fully support the Department of Commerce's immediate establishment of a space traffic management capability. This includes space situational awareness – understanding the proximity of space objects to other satellites, and warning of potential conjunctions. This partnership with Commerce will allow USSPACECOM

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to focus on the inherently military functions of our space domain awareness mission, especially characterizing objects and actions on orbit to identify potential threats.

Additionally, the Command must improve its ability to tap into research and development, both through our government resources and our FFRDC partners in particular. Ongoing efforts within the Office of the Secretary of Defense Research and Engineering modernization strategies as well as work within the service laboratories, the Space Development Agency, Missile Defense Agency, Strategic Capability Office, Rapid Capability Offices, NASA, National Laboratories, and many others are absolutely essential to meet our critical challenges in maintaining our technological lead. We need to increase collaboration with the domestic and international commercial space industry in order to leverage their technological advancements, entrepreneurial innovation and investments to enable new and emerging capabilities at a decreased cost and an accelerated pace to counter threats to U.S., ally, and partner capabilities. We also need to improve our ability to develop rapid commercial space launch capabilities from multiple locations and integrate commercial space capabilities that provide both near and far-term advantages.

Conclusion

USSPACECOM preserves U.S. freedom of action and provides the National Command Authority strategic options in the increasingly competitive space domain. The Command strives to attain FOC as soon as possible and continues to accelerate the pace of its operations to deter aggression; defeat adversaries; deliver space power; and defend U.S., allied, and partner interests. To do so, we must begin with the first task of increasing our space domain awareness, and request Congress's support to ensure we have the best possible capabilities to sense and evaluate the critical and increasingly complicated space environment. The Command achieved

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IOC last year, and has developed our roadmap and strategies for getting to FOC, deepening our relationships, and continuing to provide the most advanced space capabilities in the world. On behalf of the most critical asset in our command, the Soldiers, Marines, Sailors, Airmen, Guardians, civilians, and families of USSPACECOM, thank you for your support in our mission to conduct operations in, from, and to space in order to ensure there is ***never a day without space.***

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GEN James H. Dickinson
Commander, U.S. Space Command

U.S. Army General James H. Dickinson assumed duties as the Commander, U.S. Space Command, on Aug. 20, 2020, after most recently serving as the first Deputy Commander of U.S. Space Command, the 11th and most recently established unified combatant command.

He is a native of Estes Park, Colorado, and a graduate of Colorado State University. He holds a Bachelor of Science in Mechanical Engineering and a Master of Science in Operations Research and Systems Analysis from the Colorado School of Mines. He later earned a master's degree in Strategic Studies from the United States Army War College.

Gen. Dickinson's command assignments include Commanding General of the Space and Missile Defense Command/Army Forces Strategic Command and Joint Functional Component Command for Integrated Missile Defense; Commanding General of the 32nd Army Air and Missile Defense Command; Commanding General of the 94th Army Air and Missile Defense Command; Brigade Commander of the 35th Air Defense Artillery Brigade, Eighth U.S. Army, Republic of Korea; and Battalion Commander of 1st Battalion, 7th Air Defense Artillery, which deployed in support of Operations Enduring Freedom and Iraqi Freedom.

His key staff assignments include Chief of Staff, U.S. Strategic Command; Director for Test at the Missile Defense Agency; Deputy to The Inspector General, Office of the Secretary of the Army; Deputy Director for Operations, National Military Command Center, J-3, Joint Staff; Chief, Commander's Initiatives Group, United Nations Command/Combined Forces Command, Republic of Korea; Assistant Chief of Staff, G-3, 32nd Army Air and Missile Defense Command; Senior Emergency Actions Officer and Senior Operations Officer, National Military Command Center, J-3, Joint Staff; Operations Officer, 11th Air Defense Artillery Brigade; Operations Officer, 5th Battalion, 52nd Air Defense Artillery, 11th Air Defense Artillery Brigade supporting Operation Southern Watch.

Gen. Dickinson is the senior Air Defense Artillery Officer in the U.S. Army. His awards and decorations include the Defense Distinguished Service Medal, two Distinguished Service Medals, three Defense Superior Service Medals, three Legion of Merits, Bronze Star Medal, Defense Meritorious Service Medal, three Meritorious Service Medals, three Army Commendation Medals, Joint Service Achievement Medal, four Army Achievement Medals, Parachutist Badge, Master Space Badge and Joint and Army Staff Identification Badges.

August 2020

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STATEMENT OF
GENERAL GLEN D. VANHERCK, UNITED STATES AIR FORCE
COMMANDER
UNITED STATES NORTHERN COMMAND
AND
NORTH AMERICAN AEROSPACE DEFENSE COMMAND



BEFORE THE HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON STRATEGIC FORCES

1 MARCH 2022

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Chairman Cooper, Ranking Member Lamborn, and members of the Subcommittee: thank you for the opportunity to testify today. I am proud to lead the men and women of United States Northern Command (USNORTHCOM) and North American Aerospace Defense Command (NORAD) as we defend the United States and Canada in an increasingly complicated and dynamic strategic environment. Our commands continue to face multiple simultaneous challenges from capable, highly advanced competitors who have openly declared their intent to hold our homelands at risk in an effort to advance their own strategic interests.

Today, strategic competitors, rogue nations, and non-state actors possess the capability to strike institutions and critical infrastructure in the United States and Canada. These threats, along with the realities of modern global competition, drive USNORTHCOM and NORAD to think globally and seek innovative capabilities that increase senior leader decision space and help to expand the range of available options for deterring in competition, de-escalating in crisis, and—if necessary—defeating in conflict.

As the U.S. combatant command responsible for homeland defense, for providing defense support of civil authorities, and security cooperation with allies and partners in our area of responsibility, USNORTHCOM is facing the most dynamic and strategically complex set of challenges in the history of the command. Together with NORAD, the distinct, complementary U.S.-Canada bi-national command responsible for aerospace warning, aerospace control, and maritime warning for the United States and Canada, our commands are taking decisive institutional and operational measures to defend our homelands.

DEFENDING THE HOMELANDS

In my testimony before the Committee last year, I described a rapidly evolving geostrategic environment in which our competitors were continuing to take increasingly

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aggressive steps to gain the upper hand in the military, intelligence, economic, and diplomatic arenas. For decades, the United States has been accustomed to choosing when and where the nation will employ the military lever of influence and project power around the globe from a homeland that was assumed to be secure. Our competitors have studied this operating model for the last 30 years and have developed strategies and capabilities intended to offset our military advantage and disrupt our force flows.

Quite bluntly, my ability to conduct the missions assigned to USNORTHCOM and NORAD has eroded and continues to erode. Our country is under attack every day in the information space and cyber domain. Competitors are spreading disinformation, actively sowing division and fanning the flames of internal discord with the intent to undermine the foundation of our nation, our democracy, and democracies around the world. These competitors are also constantly seeking to exploit security vulnerabilities and policy gaps, especially in the cyber domain. They are preparing for potential crisis or conflict with the intent to limit decision space for our senior leaders by holding national critical infrastructure at risk, disrupting and delaying our ability to project power from the homeland, and undermining our will to intervene in a regional crisis.

The threat to North America is complex. Over the last year, our competitors have accelerated their fielding of kinetic and non-kinetic capabilities specifically designed to threaten our homeland. Of equal or greater concern is their relentless, coordinated effort to weaken the institutions and alliances at the core of our strength and influence while expanding their own influence internationally. Today, our competitors hold our homeland at risk in multiple domains and are working constantly to exploit perceived vulnerabilities.

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Russia and China continue to aggressively pursue and field advanced offensive cyber and space capabilities, cruise missiles, hypersonic weapons, and delivery platforms designed to evade detection and strike targets in our homeland from multiple vectors of attack and in all domains. USNORTHCOM and NORAD's ability to defend against modern threats requires improved all-domain awareness, updated capabilities, and policies and strategies that reflect the current strategic environment and the advanced capabilities of our competitors. Meanwhile, I require access to ready and trained forces to operate throughout the USNORTHCOM area of responsibility, including the Arctic, to respond in crisis and quickly execute homeland defense campaign plans.

My mission to provide timely and accurate threat warning and attack assessment requires increased domain awareness and breaking down information stovepipes that restrict the flow of needed information to decision makers in the United States and Canada. The ability to detect a threat, whether from a cyber-actor or a cruise missile, is a prerequisite to defeating the threat. Timely and accurate detection, tracking, and assessment of potential threats provides critical decision space and time to national leaders, while an inability to do so limits available response options.

Lack of domain awareness contributes to increased risk of miscalculation, unnecessary escalation, and potential for strategic deterrence failure. Maintaining our strategic advantage begins with improving domain awareness globally, including in the approaches to North America. Incorporating artificial intelligence and machine learning into existing capabilities will allow users to pull needed information from existing data sets and share that data with leaders at all levels to expand their decision space and options necessary to achieve desirable outcomes.

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To ensure our ability to compete in the current strategic environment, DoD plans, force structure, and logistics must evolve beyond 9/11-era threats and outdated assumptions regarding competitor capabilities, strategies, and ambitions. In order to deter modern competitors, we must make clear that we have the capability to fight in and from the homeland. Further, policy determinations are needed regarding what key infrastructure is to be defended, and from what threats, in order to develop realistic assessments and plans for the defense of critical infrastructure that fully account for advancing competitor capabilities and strategies.

In order to defend the homeland in this complex strategic environment, USNORTHCOM and NORAD have shifted our efforts to left-of-conflict strategies, emphasizing integrated deterrence in competition, and dramatically improving our ability to provide leaders with needed decision space on a day-to-day basis. To be successful in competition, DoD must develop and implement globally integrated plans, strategies, operations, and exercises that incorporate all levers of influence, to include the essential contributions of our international allies and partners.

COMPETITORS AND THREATS

Russia

Russia is the primary military threat to the homeland, and their focus on targeting the homeland has provided the model other competitors are beginning to follow. First, Russia has invested significant resources to modernize all three legs of its nuclear triad in an effort to ensure its ability to deliver unacceptable damage on our homeland during a conflict. In December 2019, Russia fielded the world's first intercontinental ballistic missiles (ICBMs) equipped with a hypersonic glide vehicle (HGV) payload. These weapons are designed to glide at extremely high speeds and maneuver at low altitudes in order to complicate our ability to detect and track. In the next few years, Russia seeks to field a new heavy-lift ICBM that President Putin claims will

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be able to deliver nuclear warheads to North America from both northern and southern trajectories. Weapons such as these are designed to circumvent the ground-based radars utilized by USNORTHCOM and NORAD to detect and characterize an inbound threat, and challenge my ability to provide threat warning and attack assessment. The impact is the loss of critical decision space for national-level decision makers regarding continuity of government and the preservation of retaliatory capabilities, resulting in an increase in the potential for strategic deterrence failure.

Over the last 15 years, Russia has also executed a systematic program to develop offensive capabilities below the nuclear threshold that Russian leaders believe will constrain U.S. options in an escalating crisis. Their capabilities include very capable cyber capabilities like those demonstrated by Russia-based actors during last year's ransomware attack on the Colonial Pipeline. Russia has also invested in counter-space capabilities like the direct-ascent anti-satellite weapon that Russia recklessly tested in November 2021.

To augment these non-lethal capabilities, Russia has fielded a new family of advanced air-, sea-, and ground-based cruise missiles to threaten critical civilian and military infrastructure. The AS-23a air-launched cruise missile, for instance, features an extended range that enables Russian bombers flying well outside NORAD radar coverage—and in some cases from inside Russian airspace—to threaten targets throughout North America. This capability challenges my ability to detect an attack and mount an effective defense. In the maritime domain, Russia has fielded the first two of their nine planned Severodvinsk-class guided missile submarines, which are designed to deploy undetected within cruise missile range of our coastlines to threaten critical infrastructure during an escalating crisis. This challenge will be compounded in the next few years as the Russian Navy adds the Tsirkon hypersonic cruise

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missile to the Severodvinsk's arsenal. All of the Russian cruise missile capabilities present a significant domain awareness challenge. Additionally, these advanced cruise missiles and their supporting platforms will limit national leadership decision space and my ability to provide threat warning and attack assessment, which directly influences my ability to support continuity of government operations and provide support to USSTRATCOM missions. Again, the potential consequence is an increased risk of strategic deterrence failure.

China

China is our pacing threat and a long-term geostrategic challenge. China is increasingly exerting its economic and military clout around the globe as its leaders pursue a national goal of supplanting the rules-based international order with an approach that is more aligned with China's national interests. Like Russia, China has begun to develop new capabilities to hold our homeland at risk in multiple domains in an attempt to complicate our decision making and to disrupt, delay, and degrade force flow in crisis and destroy our will in conflict.

China has maintained the ability to strike our homeland with strategic nuclear weapons since the early 1980s, but today its nuclear capabilities are growing rapidly in quantity and sophistication. China's Fractional Orbital Bombardment System test in July 2021 delivered a hypersonic glide vehicle (HGV) and demonstrated the weapon's ability to survive reentry and perform high-speed and maneuvering glide after orbiting around the globe—a feat Russia never attempted before fielding their own HGV-equipped ICBMs two years ago. When fielded, China's ICBM-class HGV will be able to evade current ground and space-based early warning capabilities due to its low-altitude approach and ability to maneuver midcourse, which compounds the detection and warning challenges I already face from Russia's Avangard HGV and advanced cruise missiles.

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In the coming years China will augment its homeland-threatening cyber capabilities with a growing long-range conventional strike capability of its own. In October 2019, China unveiled its first bomber capable of air-to-air refueling, the H-6N, which will be able to threaten targets in Alaska with air-launched ballistic or cruise missiles. Later this decade, China seeks to field its Type 095 guided missile submarine, which will feature improved quieting technologies and a probable land-attack cruise missile capability. While China's intent for employing its long-range conventional strike capabilities is not fully known, these weapons will offer Beijing the option of deploying strike platforms within range of our critical infrastructure during a conflict, adding a new layer of complication to our leaders' crisis decision-making.

North Korea and Iran

North Korea's successful flight testing of an ICBM capable of reaching the continental United States and detonation of a thermonuclear weapon underscores its leaders' determination to develop capabilities to threaten our homeland and constrain our options in crisis and conflict. In October 2020, North Korea unveiled a new ICBM that is probably even more capable than the weapons it last tested in 2017. Moreover, North Korea's launch last October of a submarine-based ballistic missile suggests Kim Jong Un may soon resume flight testing his most capable weapon systems, including a new ICBM design.

Iran maintains asymmetric capabilities to threaten our homeland in the cyber domain. In 2022, Iranian officials have threatened to carry out terror operations inside the United States and elsewhere around the world, in addition to its persistent support of threats by terrorist organizations like Lebanese Hezbollah. While Iran has announced a self-imposed range limit of 2,000 kilometers on its fielded ballistic missile force, its persistent advancement of ballistic missile technologies probably could increase its missile range outside of the region.

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Violent Extremist Organizations

While the strategic capabilities of our peer competitors are the most pressing concern for USNORTHCOM and NORAD, violent extremist organizations such as ISIS and al-Qa'ida remain committed to attacking the United States and our allies. The Taliban's takeover in Afghanistan will likely provide new opportunities for groups like al-Qa'ida to plot against the West, while homegrown violent extremists (HVEs) challenge our law enforcement partners by using simple attack methods that continue to present the most likely international terrorist threat to the homeland. Violent extremist groups continue to hone their tactics in response to a shifting operational environment and have maintained their focus on attacking civil aviation and U.S. military personnel and installations.

Transnational Criminal Organizations

Transnational Criminal Organizations (TCOs) continue to inflict enormous damage and create instability through corruption, violence, and illicit trafficking. International criminal syndicates have flooded the United States with illegal drugs that contributed to the deaths of over 100,000 U.S. citizens in the 12-month period from April 2020 to April 2021, while harming people and weakening institutions throughout the Western Hemisphere. As TCOs battle over territory and brazenly undermine the rule of law, they create obvious opportunities for exploitation by strategic competitors seeking to broaden their global coercive strategies and increase influence and presence in the Western Hemisphere.

Mitigating the harm done by TCOs is a national security imperative for the United States and our international partners that requires an overarching whole-of-government policy and plan for interagency action that takes into consideration the vast resources and widespread influence wielded by the TCOs and their international criminal confederates. USNORTHCOM's ability to

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counter malign influence in our region is complicated by the destabilizing influence of TCOs in our area of responsibility, and national policy and DoD planning must take that reality into account.

INTEGRATED DETERRENCE

Strategic deterrence remains the foundation of homeland defense, and I believe it is absolutely necessary to maintain a reliable and effective nuclear triad. However, reliance on deterrence by cost imposition is currently over-weighted and significantly increases the risk of miscalculation by limiting our national leaders' options following an attack. Given our competitors' advanced conventional capabilities, it is vitally important to move toward a model of integrated deterrence that employs all elements of national influence, leverages alliances and partnerships, and provides leaders with a wide range of timely deterrence options.

Integrated deterrence fuses traditional deterrence by cost imposition—in which an adversary is deterred by fear of costs that outweigh the benefit of an attack—with deterrence by denial, which causes a potential adversary to doubt the likelihood of a successful attack. Imposing costs on an aggressor that outweigh the potential benefits of an attack, demonstrating resiliency, and displaying a range of kinetic and non-kinetic response capabilities are all elements of deterrence by denial. This approach dramatically expands the military, diplomatic, and economic options available to national leaders in competition, crisis, and conflict and helps to avoid miscalculation and unnecessary escalation.

Integrated deterrence also involves competing in the information space under a strategic framework, while working with allies and partners to counter competitors' malign influence in the USNORTHCOM area of responsibility and beyond. Building the capacity to compete in the

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information environment reduces the risk of instability and strategic miscalculation that can stem from disinformation and other influence operations.

Demonstrations of resiliency, hardening, and the ability to recover from damage to communities and infrastructure also generate a deterrent effect. USNORTHCOM's defense support of civil authorities (DSCA) mission in the aftermath of wildfires, hurricanes, floods, and other contingencies in communities across the United States routinely showcases the ability of USNORTHCOM and the interagency community to respond quickly and effectively to natural and manmade disasters.

USNORTHCOM's track record of supporting coordinated responses and rapid recovery is the direct result of ongoing interagency planning, coordination, and exercises that ensures our readiness to support our partners at a moment's notice. To be clear, DSCA is a homeland defense mission, and USNORTHCOM's visible support to civil authorities remains a critical focus for the command, especially as environmental change contributes to more frequent and intense fires and damaging storms.

Finally, we must continue to foster the partnerships and alliances that provide the United States and our international partners with what is perhaps our most distinct asymmetric advantage. NORAD is an obvious example of the enormous benefit to shared security and regional stability generated by international cooperation. In addition, it must be noted that our relationships with NATO, the FIVE EYES community, and our regional defense and security cooperation partners in Canada, Mexico, and The Bahamas have a profound deterrent effect for the common benefit of all. USNORTHCOM and NORAD continue to foster these valuable alliances and partnerships.

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HOMELAND DEFENSE DESIGN

Homeland defense starts well outside the USNORTHCOM area of responsibility and necessarily involves our fellow combatant commands as well as our international allies and partners. Deterring and defending against advanced competitors that have the capability to hold the homeland at persistent risk requires an approach that emphasizes increased decision space and leverages all elements of national power over cost-prohibitive and narrowly focused kinetic defenses. DoD's ability to deter and defend against advanced global threats requires a shift from regional approaches to a global perspective that accounts for the realities of the modern strategic environment.

I believe it is necessary to accept near-term risk in order to compete against advanced, globally focused peers well into the future. Leaders must make difficult choices today in order to avoid impossible dilemmas tomorrow—to include divesting legacy systems and capabilities that consume significant personnel and fiscal resources and are of little to no use in today's strategic environment.

Therefore, a homeland defense enterprise that is capable of deterring and defeating threats is essential to a globally integrated forward fight and supporting broader national strategic objectives. The ability of the United States to deter in competition, de-escalate in crisis, and defeat in conflict is dependent on our collective ability to detect and track potential threats and friendly forces anywhere in the world, while delivering data to decision makers as rapidly as possible. This provides leaders with the time and informed options needed to achieve a favorable outcomes for the United States. That reality is the basis for the central principles of USNORTHCOM and NORAD homeland defense design: **all-domain awareness, information dominance, decision superiority, and global integration.**

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Domain Awareness can be achieved through an integrated network of sensors from the seafloor to space, including cyberspace, in order to detect, track, and deter potential threats. I need improved domain awareness to increase warning time and provide leaders at all levels with as many options as possible to deter or defend against an attack. Global all-domain awareness will generate a significant deterrent effect by making it clear that we can see potential aggressors wherever they are, which inherently casts doubt on their ability to achieve their objectives.

I am grateful to the Committee for your support of the over-the-horizon radar (OTHR) that was included on USNORTHCOM's unfunded priority list for Fiscal Year 2022. OTHR is a proven technology that will provide persistent surveillance of the distant northern approaches to the United States and mitigate the limitations of the Cold War-era North Warning System, while contributing to broader domain awareness challenges including space domain awareness. The ability to detect air-breathing and spaceborne threats in the approaches to Canada and the United States will be significantly enhanced by fielding OTHR as soon as possible. It is also vital to move quickly toward advanced space-based sensors capable of detecting hypersonic weapons, including hypersonic cruise missiles, and other advanced systems designed to evade detection. Modernizing and expanding the Integrated Undersea Surveillance System (IUSS) is equally important as Russia and China continue to field highly advanced guided missile submarines.

While some new domain awareness platforms will be required, it is possible to make exponential improvements in our nation's ability to detect and track potential threats by improving the ways data is collected, processed, and shared. As I testified last year, the technology already exists to apply artificial intelligence and machine learning to collect and rapidly distribute information gathered from sensors around the globe. Current processes rely on human analysts to comb through enormous volumes of data, and it can take days or weeks to

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process, exploit, and distribute critical information—if it is ever processed at all. We will always need expert human analysts in the loop, but I need the ability to tap into that technology to dramatically speed the delivery of information to leaders at all levels who need it.

Success in competition, crisis, and conflict depends on effectively distributing and integrating the data collected from domain awareness capabilities to establish **information dominance** over competitors and adversaries. To unlock the full value and potential of our intelligence and sensor networks, information must be integrated, appropriately classified, and rapidly shared to allow commands, agencies, allies, and partners to collaborate globally in real time and across all domains.

The potential for this capability has already been demonstrated in USNORTHCOM's Global Information Dominance Experiments (GIDE), which provided combatant commanders, intelligence and operations directors, and other participants at multiple sites with a shared, customizable, and near real-time data set. The data gathered by existing global sensors provided leaders, analysts, and operators with the information needed to make assessments and recommended courses of action that were coordinated across multiple commands in a matter of hours. Speeding the flow of information to senior civilian decision makers and commanders enabled significantly more options to achieve desired outcomes.

Decision superiority means increasing decision space and options to provide senior leaders. The ultimate goal of decision superiority is to provide multiple paths to avoid conflict through the application of all available elements of national power, rather than emphasizing options that are only available after a conflict has already begun. To successfully defend the homeland, we must provide leaders with pertinent information and as much time as possible to deter and de-escalate before a situation escalates out of control.

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Finally, I believe it is critical for the entire defense enterprise to shift its culture and vision toward global all-domain integration. Too often, DoD posture development, communications, planning, exercises, and operations are stovepiped and isolated in ways that do not reflect the reality that all challenges are global and all-domain in nature. The Department increasingly understands that competitors would likely intend to strike the homeland in an effort to prevent flowing U.S. forces toward a regional crisis or conflict. And, in the event that the United States and our allies become engaged in a regional crisis or conflict, other competitors would likely exploit that opportunity to their own advantage—which could quickly lead to simultaneous crises in multiple theaters.

Global challenges cannot be overcome with a hodgepodge of isolated regional plans. Success in competition, crisis, or conflict is increasingly dependent on moving past outdated parochial approaches in favor of greater focus on competition rather than restricting options and absorbing unnecessary costs by continuing to over-emphasize crisis and conflict. With that in mind, USNORTHCOM, our fellow combatant commands, the Services, and our Canadian partners have demonstrated the immediate impact of improved information sharing and collaboration between commands and allies in all phases of competition, crisis, and conflict.

The current regional approach to plans, strategies, and force design is outdated and more influenced by bureaucratic inertia than the realities of the modern strategic environment. The same is true of stagnant acquisition practices and cumbersome civilian hiring rules that only impede progress and hinder the Department's ability to move at the speed of relevance necessary to compete in today's environment.

RISK MITIGATION

Risk mitigation must be a shared whole-of-government responsibility focused on broad nodes, enterprises, and capabilities rather than attempting to establish a priority-ranked list of specific sites or facilities to be protected. Mitigating the risk associated with an attack on the United States requires policy determinations about what must be defended from kinetic and non-kinetic attack. Those policy decisions, in turn, allow USNORTHCOM, NORAD, and our mission partners to determine the best ways to protect priority assets and resources.

Importantly, risk mitigation is the responsibility of the DoD, as well as a number of other interagency partners at the federal, state, and local levels. Risk mitigation requires a dedicated policy framework and deliberate interagency planning and coordination. Notably, the deterrent effect of resiliency and effective consequence management requires far fewer resources and less expense than direct defense systems.

Ballistic missile defense (BMD): Defending the United States against intercontinental ballistic missile (ICBM) threats from rogue nations remains a critical priority for USNORTHCOM and an important component of integrated deterrence. While current BMD capability and capacity is sufficient to defeat a limited ballistic missile attack from a rogue nation, North Korea's ongoing development of increasingly complex and capable strategic weapons requires the Next Generation Interceptor to be fielded on time or early, and for the Long Range Discriminating Radar in Alaska to achieve full operational capacity on schedule.

The ballistic missile defense system is not capable of intercepting hypersonic glide vehicles; I cannot defend, nor am I tasked to defend, against a hypersonic glide vehicle attack. It is imperative that the Department of Defense develop and field an integrated space-based domain awareness network capable of detecting and tracking ICBMs, hypersonic weapons, and cruise

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missiles as quickly as possible. I require the ability to detect, track, and assess potential missile threats of all types to immediately determine whether an attack is underway and provide national leaders with as much time and as many options as possible.

Cruise Missile Defense: Russia has the capability today to hold targets in the United States and Canada at risk with long-range air- and submarine-launched conventional cruise missiles. These highly precise and stealthy systems highlight the need for policy determinations regarding what must be defended along with continued demonstrations of resiliency and hardening. It is also necessary to quickly improve domain awareness by fielding sensors such as OTHR and the integrated undersea surveillance system (IUSS)—and by integrating and sharing the collected data with global stakeholders. To successfully deter aggression and defend the homeland, we must be able to detect and track the submarines, aircraft, and surface ships that carry weapons systems capable of striking the homeland before they depart from their home stations. We also need to improve our capability to defeat those launch platforms before they are within range of their targets.

It is vital that we accept risk today in order to compete against highly advanced and determined peers in the near future. As an example, the military Services must be allowed to retire aging platforms, especially those that cannot survive in combat against highly advanced and lethal capabilities already fielded and proliferated by our peer competitors. The Department must re-invest the savings from those divestments to resilient domain awareness and other capabilities necessary to increase the decision space that will provide national leaders with options to deter, de-escalate, and defeat threats. Those difficult choices are critical to integrated deterrence today and avoiding the unthinkable tomorrow.

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THE ARCTIC

The Arctic demonstrates how regional challenges increasingly take on global implications that require a global framework. The Unified Command Plan designates the Commander of USNORTHCOM as the DoD's Advocate for Arctic Capabilities in recognition of the fact that the region encompasses a vast geographic area overlapping the areas of responsibility of three separate geographic combatant commands and includes eight sovereign nations with inherent interest in the region. It is critical that USNORTHCOM, our fellow geographic combatant commands, the U.S. interagency, and our fellow Arctic nations continue our shared efforts to ensure the Arctic remains peaceful, stable, prosperous, and cooperative. This is especially true in light of the increasing potential for resource competition and opportunities for commercial enterprise, both of which must be balanced with the inherent rights of Arctic states to control their territorial waters and resources within their Exclusive Economic Zones.

Diminished Arctic ice has led to increased access to sea lanes, longer shipping seasons, and expanded access to subsurface minerals and proteins, although environmental changes are also increasing operational hazards and introducing new uncertainties. Those changes, in turn, now require clear communication and coordination among Arctic allies, partners, and competitors. A continued rules-based international order in the Arctic has served the international community well for decades, and forums like the Arctic Council are critical to emphasizing the value of the Arctic as a cooperative region where countries consistently work together to solve shared challenges.

Rising competition near the United States and Canada is of significant concern for USNORTHCOM and NORAD. The Arctic strategies published by DoD and each of the military

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Services demonstrate the shared understanding of the need to adapt policy, capabilities, and resourcing to meet the challenges and requirements associated with operating in the Arctic. However, the Services and the Department must accelerate implementation of those strategies or risk falling further behind rapidly advancing competitor capabilities, which jeopardizes USNORTHCOM and NORAD's ability to execute the commands' missions in the high north.

Likewise, Canada remains our essential partner in the NORAD mission and in ensuring NORAD's capability and capacity to deter aggression and defend the United States and Canada from airborne and maritime threats. That contribution includes investment in modernizing sensors, infrastructure, and platforms that ensure NORAD's ability to successfully conduct aerospace warning, aerospace control, and maritime warning. Those capabilities are vital to homeland defense and to our nations' capability to project forces forward in support of operations overseas, including meeting NATO commitments.

I am excited by the opportunities for building partnerships in the Arctic and the continued shared effort to maintain the stability and security of the entire region. The upcoming Arctic Security Forces Roundtable, to be held in Alaska in May 2022, will provide the United States with a rare opportunity to host an international forum focused specifically on Arctic security and military cooperation. USNORTHCOM and NORAD have important roles at the Arctic Security Forces Roundtable, and I am looking forward to joining Arctic military counterparts to make this a productive and forward-thinking event.

Likewise, the newly established DoD regional center, the Ted Stevens Center for Arctic Security Studies, in Anchorage will provide an important venue for academic, diplomatic, and military Arctic experts to address key challenges in the region, in alignment with DoD strategic guidance. None of those challenges, from mitigating the operational impacts of climate change

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to avoiding miscalculation resulting from undue militarization of the Arctic, can be overcome unilaterally. USNORTHCOM will continue to leverage the strength of our regional alliances and partnerships to enhance regional security cooperation and support a secure and stable Arctic.

DEFENSE SUPPORT OF CIVIL AUTHORITIES (DSCA)

USNORTHCOM's defense support of other federal agencies during the COVID-19 pandemic, hurricanes, wildfires, and Operation ALLIES WELCOME has tested the command in unexpected ways over the past year. While our DSCA mission can be time- and resource-intensive, USNORTHCOM support to our interagency partners continues to strengthen relationships, validate plans, and demonstrate the ability of the U.S. interagency enterprise to respond quickly and effectively to contingencies. In addition to supporting American citizens in need, these missions provide a visible deterrent effect by demonstrating flexible response options and effectively executing plans to mitigate and recover from the effects of disaster and other emergencies.

In 2021 and 2022, USNORTHCOM continued DoD's COVID-19 support by deploying military medical providers to civilian medical facilities around the country. Building on existing pandemic response plans and quickly adapting to lessons learned during the pandemic, USNORTHCOM's support to the Federal Emergency Management Agency and the Department of Health and Human Services provided much-needed relief to hospitals overwhelmed by COVID-19 caseloads.

USNORTHCOM is also proud to work alongside the Department of Homeland Security and the Department of State throughout the Operation ALLIES WELCOME mission to evacuate, house, and resettle tens of thousands of Afghan partners and their families following the collapse of the Afghan government. With the support of the military departments, USNORTHCOM has

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been responsible for providing safety and security, shelter, food, and other essential services for Afghans who contributed to the U.S. mission in Afghanistan as they await resettlement in the United States.

SECURITY COOPERATION

Global alliances and partnerships provide the United States with a critical asymmetric advantage over our competitors. USNORTHCOM's military-to-military partnerships with Canada, Mexico, and The Bahamas remain critically important, and those ties continue to pay significant dividends as we work toward improving regional security, strengthening military ties with regional partners, and expanding interoperability. These efforts contribute to improved shared domain awareness and domain control, while strengthening the institutions that support our common strategic objectives. By working together toward these objectives, USNORTHCOM is supporting our partners' important contributions to regional security while emphasizing our shared prioritization of the rule of law, human rights, and denying our competitors the opportunity to expand their presence and malign influence.

The Mexican Secretariat of National Defense (SEDENA) and Secretariat of the Navy (SEMAR), are steadfast security partners and remain a bulwark against encroaching competitor presence and influence in Central and South America. USNORTHCOM was proud to host the annual U.S.-Mexico Bilateral Military Cooperation Roundtable in August 2021, during which key military leaders from USNORTHCOM, SEDENA, and SEMAR refined our shared efforts toward improved domain awareness, domain control, and institutional strengthening. In September 2021, I was also honored to personally attend the Mexico Aerospace Fair—commonly known as FAMEX—to demonstrate USNORTHCOM's commitment to the security relationship with our Mexican military partners and to join the Secretaries of SEMAR and

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SEDENA in reaffirming Mexico's vital contributions to the security of our region and our shared commitment to countering common threats.

Our partnership with The Bahamas remains critical. USNORTHCOM and The Bahamas' Bilateral Security Cooperation Framework provides a distinct and important venue for developing and implementing mutual objectives that contribute to regional security. Due to The Bahamas' geographic location along the U.S. southern approaches, domain awareness and domain control are in the vital national interests of both the United States and The Bahamas. In October 2021, I met with the new Bahamian government and my Royal Bahamas Defence Force counterpart in Nassau for the activation of a maritime surveillance radar donated by DoD that has already significantly improved our collective ability to detect and monitor traffic in the approaches to The Bahamas and the United States. China has expanded economic investment and visible diplomatic presence in The Bahamas and has highlighted the lack of a confirmed U.S. ambassador in an ongoing information campaign to boost Chinese influence while weakening that of the United States.

CONCLUSION

The global strategic environment will remain complex and extraordinarily dynamic for the foreseeable future. Our competitors already possess the capability to strike the homeland with kinetic and non-kinetic means, and they will take full advantage of slow responses, technological shortfalls, and policies that do not reflect the realities of the modern era.

USNORTHCOM and NORAD, in concert with our interagency colleagues, will continue our unending mission to defend our homelands and protect our citizens from threats in all domains, institutions, culture, and process. However, our commands' ability to effectively deter threats to the homeland will increasingly rely on improved domain awareness and providing

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leaders with the time and options necessary for success. Just as important, it is critical for military leaders and civilian policymakers to acknowledge that all regional challenges have global implications and present potential risk to the U.S. homeland. Our competitors have demonstrated their intent to leverage any opportunity to advance their own interests—often to the detriment of our own.

Defense of the homeland and continental defense remains the absolute priority for both USNORTHCOM and NORAD, and our commands' constant vigilance will be a key element of the integrated deterrence that safeguards our citizens and advances our vital national interests. It is my profound honor to lead all of the proud U.S. and Canadian military and civilian personnel of USNORTHCOM and NORAD as they stand our never-ending watch over our nations. I look forward to working with all of our vital partners as we continue to advance those efforts in the defense of our nations. We Have the Watch.

General Glen D. VanHerck

Gen. Glen D. VanHerck is Commander, United States Northern Command and North American Aerospace Defense Command. USNORTHCOM conducts homeland defense, civil support and security cooperation to defend and secure the United States and its interests. NORAD conducts aerospace warning, aerospace control and maritime warning in the defense of North America.

Gen. VanHerck is a graduate of the University of Missouri and commissioned through the Reserve Officer Training Corps program. He has a diverse background that includes operational and training assignments in the F-15C Eagle, F-35A Lighting II, B-2A Spirit and B-1B Lancer aircraft. He has served as an instructor pilot and flight examiner in the F-15C, B-2A and T-6A Texan II. Additionally, he served as a U.S. Air Force Weapons School instructor in the F-15C and the B-2A.

He has commanded at the squadron, group and twice at the wing level, including the 325th Weapons Squadron, the 71st Operations Group, the 7th Bomb Wing, the 509th Bomb Wing. As a major general, he commanded the U.S. Air Force Warfare Center. His staff assignments include tours as the Chief of the B-2 Program Element Monitor at Headquarters Air Combat Command, the Director of Operations at Headquarters Air Force Global Strike Command, the Director of Plans and Integration at U.S. Strategic Command, the Vice Director of Strategy, Plans and Policy (J5) at the Joint Staff, and the Vice Director of the Joint Staff.

Prior to his current assignment, Gen. Glen D. VanHerck was the Director, Joint Staff, the Pentagon, Arlington, Virginia. In this role, he assisted the Chairman of the Joint Chiefs of Staff in his role as advisor to the President and Secretary of Defense, coordinated and directed the activities of the Joint Staff in support of the Chairman and served as the Staff Inspector General.

EDUCATION

1987 Bachelor of Science, Liberal Studies, University of Missouri, Columbia
 1995 Squadron Officers School, Air University, Maxwell Air Force Base, Ala.
 1999 Air Command and Staff College, Maxwell AFB, Ala., by correspondence
 2000 Master of Science, Aviation Safety/Management, University of Central Missouri, Warrensburg
 2005 Air War College, Air University, Maxwell AFB, Ala., by correspondence
 2008 Master of Arts, National Security and Strategy, Naval War College, Newport Naval Station, R.I.
 2008 Naval War College, Newport, R.I.
 2009 U.S. Air Force Executive Leadership Seminar, Darden School of Business, University of Virginia, Charlottesville
 2014 Combined Force Air Component Commanders Course, Maxwell AFB, Ala.
 2015 Cyberspace Operations Executive Course, Maxwell AFB, Ala.
 2015 Joint Flag Officer Warfighting Course, Maxwell AFB, Ala.
 2016 Joint Senior Information Operations Course, Maxwell AFB, Ala.

ASSIGNMENTS

January 1988–January 1989, Undergraduate Pilot Training, 14th Flying Training Wing, Columbus Air Force Base, Miss.
 February 1989–May 1989, Student, Lead-in-Fighter Training, Holloman AFB, N.M.
 June 1989–November 1989, Student, F-15C Replacement Training, Tyndall AFB, Fla.
 November 1989–December 1993, F-15C Aircraft Commander, Mission Commander, Instructor Pilot, Flight Examiner, 44th Fighter Squadron, Kadena Air Base, Japan
 January 1994–June 1994, Student, U.S. Air Force Weapons School, Nellis AFB, Nev.
 July 1994–May 1997, Chief, Weapons and Tactics, Flight Commander, Assistant Director of Operations, 94th Fighter Squadron, Langley AFB, Va.
 May 1997–July 1998, F-15C Instructor Pilot, Chief of Safety, U.S. Air Force Weapons School, Nellis AFB, Nev.
 August 1998–March 2001, Assistant Director of Operations, 393rd Bomb Squadron, Whiteman AFB, Mo.

April 2001–December 2001, Director of Operations, 325th Bomb Squadron, Whiteman AFB, Mo.
 January 2002–July 2004, B-2 Program Element Monitor, Chief, Air Combat Command Senior Officer Management, Headquarters Air Combat Command, Langley AFB, Va.
 July 2004–December 2004, B-2 Requalification Training, 394th Combat Training Squadron, Whiteman AFB, Mo.
 January 2005–January 2007, Commander, 325th Weapons Squadron, Whiteman AFB, Mo.
 January 2007–July 2007, Deputy Commander, 509th Operations Group, Whiteman AFB, Mo.
 August 2007–June 2008, Student, U.S. Naval War College, Newport Naval Station, R.I.
 July 2008–August 2008, Student, T-6A Pilot Instructor Training, 559th Flying Training Squadron, Randolph AFB, Texas
 September 2008–January 2010, Commander, 71st Operations Group, Vance AFB, Okla.
 January 2010–June 2010, Vice Commander, 71st Flying Training Wing, Vance AFB, Okla.
 June 2010–June 2012, Director, Plans and Integration, Joint Functional Component Command for Global Strike, U.S. Strategic Command, Offutt AFB, Neb.
 July 2012–February 2014, Commander, 7th Bomb Wing, Dyess AFB, Texas
 February 2014–June 2015, Commander, 509th Bomb Wing, Whiteman AFB, Mo.
 June 2015–March 2016, Director, Operations, Headquarters Air Force Global Strike Command, Barksdale AFB, La.
 March 2016–July 2017, Commander, U.S. Air Force Warfare Center, Nellis AFB, Nev.
 July 2017–August 2018, Vice Director, Strategy Plans and Policy (J5), Joint Staff, the Pentagon, Arlington, Va.
 August 2018–September 2019, Vice Director, Joint Staff, the Pentagon, Arlington, Va.
 September 2019–August 2020, Director, Joint Staff, the Pentagon, Arlington, Va.
 August 2020–present, Commander, North American Aerospace Defense Command and United States Northern Command, Colorado Springs, Colo.

SUMMARY OF JOINT ASSIGNMENTS

June 2010–June 2012, Director, Plans and Integration, Joint Functional Component Command for Global Strike, U.S. Strategic Command, Offutt Air Force Base, Neb., as a colonel
 July 2017–August 2018, Vice Director, Strategy, Plans, and Policy (J5), Joint Staff, the Pentagon, Arlington, Va., as a major general
 August 2018–September 2019, Vice Director, Joint Staff, the Pentagon, Arlington, Va., as a major general
 September 2019–August 2020, Director, Joint Staff, the Pentagon, Arlington, Va., as a lieutenant general
 August 2020–present, Commander, North American Aerospace Defense Command and United States Northern Command, Colorado Springs, Colo. as a general

FLIGHT INFORMATION

Rating: command pilot
 Flight hours: more than 3,200
 Aircraft flown: T-1A, T-6A, T-37, T-38A, A/T-38B, T-38C, F-15A/B/C/D, F-35A, B-1B and B-2A

MAJOR AWARDS AND DECORATIONS

Defense Distinguished Service Medal
 Distinguished Service Medal (Air Force)
 Defense Superior Service Medal
 Legion of Merit with two oak leaf clusters
 Meritorious Service Medal with three oak leaf clusters
 Air Medal
 Aerial Achievement Medal with oak leaf cluster
 Joint Service Commendation Medal
 Air Force Commendation Medal
 Air Force Achievement Medal

EFFECTIVE DATES OF PROMOTION

Second Lieutenant Sept. 16, 1987
 First Lieutenant Sept. 16, 1989
 Captain Sept. 16, 1991
 Major Aug. 1, 1998

Lieutenant Colonel Feb. 1, 2003
Colonel Sept. 1, 2007
Brigadier General Sept. 2, 2013
Major General May 13, 2016
Lieutenant General Sep. 27, 2019
General Aug. 20, 2020

(Current as of September 2020)

**WITNESS RESPONSES TO QUESTIONS ASKED DURING
THE HEARING**

MARCH 1, 2022

RESPONSE TO QUESTION SUBMITTED BY MR. LANGEVIN

Ms. BAKER. The Department of Defense, specifically the Test Resource Management Center (TRMC), is making significant investments to accelerate the delivery of hypersonic weapons to the warfighter through enhancing test capabilities and throughput for both ground and flight testing. Ground test improvements in wind tunnel facilities located in Tennessee, Maryland, New York, Ohio, Indiana, and Arizona will assist us in testing hypersonic aerodynamics, aerothermal materials, and hypersonic propulsion systems. These investments are being made to support future hypersonic programs of record and are being executed by the TRMC under the purview of the Office of the Under Secretary of Defense for Research and Engineering. [See page 20.]

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

MARCH 1, 2022

QUESTIONS SUBMITTED BY MR. COOPER

Mr. COOPER. The GAO has reported that the DOD and DOE face challenges mitigating risk to U.S. nuclear deterrence efforts. What steps have or should be taken to improve risk management and prioritization across the nuclear forces portfolio?

Ms. BAKER. The Department of Defense (DOD) and the Department of Energy (DOE) have long implemented policies and procedures to mitigate risk to nuclear modernization programs, including a joint process for managing program-level risks at a program level for each nuclear weapon life extension program. DOD and DOE are working now to set up a process that will leverage the Nuclear Weapons Council (NWC), an existing governance body that has both DOD and DOE/National Nuclear Security Administration representatives, to develop an enterprise-level nuclear deterrent risk management strategy that will identify, prioritize, and recommend actions across the nuclear portfolio, and monitor the overall health of the nuclear deterrent as we sustain current capabilities and transition to modernized systems and infrastructure. This framework and resulting actions will be informed by ongoing assessment of the security environment and early identification of potential risks, with the goal of enhancing senior leader visibility and framing options for risk mitigation.

Mr. COOPER. How has Russia's recent aggression in Ukraine affected the administration's plan to pursue strategic stability dialogue with Russia?

Ms. BAKER. The U.S. froze participation in the Strategic Stability Dialogue in February following Russia's brutal and premeditated invasion of Ukraine. There are no plans to resume the Strategic Stability Dialogue with Russia at this time. The last meeting to take place in the format of the Strategic Stability Dialogue, an extraordinary session working toward de-escalation, occurred on January 10, 2022.

Mr. COOPER. The GAO has reported that the DOD and DOE face challenges mitigating risk to U.S. nuclear deterrence efforts. What steps have or should be taken to improve risk management and prioritization across the nuclear forces portfolio?

Admiral RICHARD. [Answer provided to the committee and available upon request from Member offices.]

Mr. COOPER. It seems that USSTRATCOM no longer sees missile defense as a component of strategic deterrence as the command looks to transfer all missile defense gap analysis and integrated prioritization responsibilities to the Joint Staff and USSPACECOM. Should USSTRATCOM rid itself of the current responsibilities it has with regards to prioritization of missile defense capabilities, how do you envision your Command being able to balance missile defense requirements in the context of strategic deterrence?

Admiral RICHARD. [Answer provided to the committee and available upon request from Member offices.]

QUESTIONS SUBMITTED BY MR. LAMBORN

Mr. LAMBORN. Last year, you testified that STRATCOM supported development of the sea-launched cruise missile (SLCM-N) to address regional deterrence challenges. You testified, "Without this capability adversaries may perceive an advantage at lower levels of conflict that may encourage limited nuclear use." Is it still your best military advice that the United States pursue development of the SLCM-N? Can you elaborate the risks the United States would accept if we do not acquire the SLCM-N?

Admiral RICHARD. (U) Yes. Throughout the Nuclear Posture Review process, I recommended continued pursuit of the SLCM-N.

(U) As I discussed, the risk of not doing so may not adequately deter an adversary from limited nuclear use. The SLCM-N would enhance deterrence by denying adversaries any mistaken confidence that limited nuclear employment could prove advantageous in regional aggression against the United States, its Allies, and partners. That is, the SLCM-N is designed to ensure that an opponent does not believe there is a threshold below which they could employ nuclear weapons, ultimately leaving the United States only with disproportionate, unusable response options.

(U) Russia's invasion of Ukraine and China's nuclear trajectory convinces me a deterrence and assurance gap exists. To address this gap, a low-yield, non-ballistic

capability to deter and respond without visible generation is necessary to provide a persistent, survivable, regional capability to deter adversaries, assure Allies, provide flexible options, as well as complement existing capabilities. Such a capability with these attributes should be re-examined in the near future.

Mr. LAMBORN. In 2020, the U.S. Navy deployed the W76-2 low-yield warhead on some of our Trident submarine-launched ballistic missiles in order to fill a gap in U.S. capabilities that can deter limited nuclear employment. How might the removal of the W76-2 from our deployed nuclear forces impact our ability to deter Russian and Chinese limited nuclear capabilities?

Admiral RICHARD. (U) The W76-2 low-yield warhead has been critical in maintaining deterrence during Russia's invasion of Ukraine. Further, it is currently the only persistent and survivable low-yield capability in our inventory.

(U) The W76-2 warhead addresses, in part, an exploitable deterrence gap by denying adversaries any mistaken confidence that limited nuclear employment could provide a useful advantage in regional aggression against the United States, its Allies and partners; thus, making nuclear weapon employment less likely. More specifically, the W76-2 warhead provides a prompt response option able to penetrate adversary defenses, requires no host nation support, and offers additional diversity in platforms, range, and survivability. Lastly, the W76-2 promotes nonproliferation by assuring our Allies and partners. These advantages would be lost should the W76-2 be removed from our forces.

Mr. LAMBORN. Last year, you explained that you're opposed to adoption of a nuclear declaratory policy of No First Use because "[y]ou will remove a level of ambiguity now that has a deterring effect." Why is it in the U.S. best interest to keep the existing declaratory policy of calculated ambiguity?

Admiral RICHARD. (U) Calculated ambiguity enhances the President's flexibility to shape United States actions to the specifics of the conflict. This flexibility complicates an adversary's decision calculus, thus enhancing deterrence. Further, the United States and our Allies and partners face the potential of strategic attacks from multiple vectors, and calculated ambiguity enhances deterrence and assurance from these extreme threats.

(U) During the NPR process our allies were unanimous in recommending that no changes be made to weaken or otherwise remove the strategic ambiguity in our nuclear declaratory policy, which is indicative of the assurance it provides.

Mr. LAMBORN. The 2018 NPR announced that the B83 gravity bomb would be sustained to remain in the stockpile beyond its planned retirement date. According to previous testimony, "the B83-1 is needed to meet current policy guidance and Operation Plan objectives. Adversaries protect much of what they value most in hard and deeply buried facilities, and adversaries continue to grow this class of targets. The B-83-1 is the best weapon in denying this sanctuary to adversaries." Admiral Richard, how might retiring the B83, instead of sustaining it, impact STRATCOM's ability to hold at risk hard and deeply buried targets?

Admiral RICHARD. [The information is classified and retained in the committee files.]

Mr. LAMBORN. In response to concerns over China's nuclear buildup, critics argue that the United States will still have thousands of more nuclear weapons than China, implying that our full force of about 3,700 nuclear warheads is available to you. Admiral Richard, can you please walk us through in what ways you are limited from deploying the full nuclear arsenal?

Admiral RICHARD. (U) The United States does not deter one adversary at a time; rather the nation must simultaneously deter two nuclear-capable near-peer adversaries as well as North Korea. It follows that a one-for-one stockpile comparison is misleading.

(U) Further, the New Strategic Arms Reduction Treaty (New START) provides a ceiling on the United States and Russia of 1550 accountable warheads on deployed intercontinental ballistic missiles (ICBMs), deployed submarine launched ballistic missiles (SLBMs) and accounted for on deployed heavy bombers. As this limit cannot be exceeded, the majority of our nuclear weapons remain in storage as part of the stockpile.

(U) Likewise, New START limits both parties to 700 deployed ICBMs, SLBMs, and nuclear-capable heavy bombers; and to 800 deployed and non-deployed ICBM launchers, SLBM launchers, and nuclear-capable heavy bombers.

(U) China has no treaty constraints, such as New START, regarding the deployment of its nuclear weapons or its nuclear delivery systems.

(U) Regardless of any treaty limits, there are capacity limits on our platforms that would prevent the use of our available weapons. Further, the ongoing maintenance and modernization of our stockpile precludes the use of all our weapons.

Mr. LAMBORN. After New START was signed in 2010, Obama administration officials assured Congress that the treaty enables the U.S. to maintain an upload capacity for strategic delivery systems to hedge against “a serious deterioration in the international security environment.” Admiral, would you consider China’s strategic breakout and Russia’s invasion into Ukraine backed by nuclear threats to constitute “a serious deterioration in the international security environment”? If so, do you agree that this would imply the U.S. needs to take a look at uploading more warheads to our deployed forces?

Admiral RICHARD. (U) Yes, I would characterize these actions as a serious deterioration in the international security environment.

(U) I agree we should evaluate uploading more warheads to our deployed forces. Recognizing New START constraints, uploading is currently the primary hedge option available.

(U) More generally, we must make threat-informed decisions to provide strategic deterrence now and well into the future. Likewise, our strategic capability, capacity, and posture must evolve with the threat to achieve our National strategy. We have the minimum capabilities needed to address today’s threats. Going forward, we must evaluate more frequently what additional capability, capacity, and posture are required from our strategic forces-based on how the threat is evolving and where it is going.

Mr. LAMBORN. It was recently reported that by the end of the decade Russia may double its stockpile of about 2,000 non-strategic nuclear weapons that it incorporates into its warfighting doctrine. China also deploys hundreds of dual-capable missiles capable of striking out to the second island chain in the Indo-Pacific. In comparison, U.S. non-strategic nuclear capabilities are extremely limited. Can the U.S. deter Russian and Chinese regional nuclear capabilities by bolstering its conventional forces alone? What changes can the U.S. make to its nuclear posture to ensure a strong deterrent threat against limited nuclear use?

Admiral RICHARD. (U) No. We cannot deter Russian and Chinese regional nuclear capabilities by bolstering conventional forces alone.

(U) We must make threat-informed decisions to provide strategic deterrence now and well into the future. Likewise, our strategic capability, capacity, and posture must evolve with the threat to achieve our National strategy. We have the minimum capabilities needed to address today’s threats. Going forward, we must evaluate more frequently what additional capability, capacity, and posture are required from our strategic forces-based on how the threat is evolving and where it is going.

(U) At a minimum, we must continue to invest in modernizing our strategic forces by recapitalizing the triad, Nuclear Command, Control, and Communications, weapons complex, and supporting infrastructure in order to maintain a viable, flexible, and full spectrum strategic deterrent force that is ready and able to pace the threat.

(U) Additionally, Russia’s war in Ukraine and China’s nuclear trajectory demonstrate that we have a deterrence and assurance gap against the threat of limited nuclear employment. To help close this gap, pursuing a low-yield, non-ballistic capability that does not require visible generation should be re-examined in the near future along with other measures to address this.

Mr. LAMBORN. Last year, you explained that in light of China’s nuclear expansion, “For the first time in history, the nation is facing two potential strategic peer, nuclear-capable adversaries at the same time, who must be deterred differently.” However, the design of the current U.S. nuclear posture dates to around 2010, when Russia was our only peer nuclear competitor. How might having to deter two nuclear peers at once impact our deterrence requirements? In your best military advice, should the United States consider changes to the size and posture of its nuclear forces in order to account for the doubling of peer nuclear threats?

Admiral RICHARD. (U) As stated in the Nuclear Posture Review, we will deter through safe, secure, and effective nuclear forces, country-specific strategies, extended deterrence, and an integrated deterrence approach that incorporates conventional and other non-nuclear capabilities.

(U) We must make threat-informed decisions to provide strategic deterrence now and well into the future. Likewise, our strategic capability, capacity, and posture must evolve with the threat to achieve our National strategy. We have the minimum capabilities needed to address today’s threats. Going forward, we must evaluate more frequently what additional capability, capacity, and posture are required from our strategic forces-based on how the threat is evolving and where it is going.

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Mr. LAMBORN. According to the Pentagon's 2021 China Military Power Report, China seeks to move at least some of its forces to a Launch on Warning posture, a capability that the U.S. and Russia already possess. Admiral Richard, why might a Chinese Launch on Warning capability be dangerous or increase risk of conflict with the U.S.?

Admiral RICHARD. [The information is classified and retained in the committee files.]

Mr. LAMBORN. To the extent possible in an unclassified format, can you please characterize the activities conducted at the Lop Nur and Novay Zemlya tests sites and how Russia and China likely use supercritical tests and experiments to modernize their deterrents?

Admiral RICHARD. (U) I refer you to NNSA for a more in-depth and authoritative response regarding the types of tests Russia and China are conducting and how these tests and experiments could be used to modernize their respective deterrents.

(U) Any advanced nuclear testing has the potential to support development of new nuclear technology, or confirm certain characteristics of existing capability.

(U) China's possible preparations to operate its Lop Nur test site year-round include extensive excavation at the site, use of explosive containment chambers, blocking data flow from International Monitoring System stations, and lack of transparency on its nuclear testing activities. With respect to the Novaya Zemlya Central Test Site (NZCTS), the Intelligence Community assesses Russia has likely used NZCTS to conduct nuclear weapons tests, some of which have created nuclear yield.

Mr. LAMBORN. At what point will STRATCOM have more Chinese targets to hold at risk that Russian?

Admiral RICHARD. [The information is classified and retained in the committee files.]

Mr. LAMBORN. What is STRATCOM's estimate for the size of the Russian active nuclear warhead stockpile number in 2030? What is STRATCOM's estimate for the size of Russia's non-strategic nuclear warhead stockpile in 2030?

Admiral RICHARD. [The information is classified and retained in the committee files.]

Mr. LAMBORN. There have been concerns raised about the confusion and overlap of authorities between the United States Space Force and United States Space Command. How is USSPACECOM working to ensure that the U.S. Space Force is able to operate within the full scope of its title 10 authorities? What are the JISTs doing that couldn't be facilitated by service planners provided by the service component to reduce redundancy in overseas billets?

General DICKINSON. We designed USSPACECOM's Joint Integrated Space Teams (JIST) to integrate space into all Combatant Commands Headquarters, especially into the front end of operations, intelligence, planning, and executing, through education, integration, advocacy, and communication of all space-related activities that pertain to our Unified Command Plan-assigned roles and responsibilities, both in USSPACECOM's supporting, and supported functions. As an example, our JIST intelligence professionals link the USSPACECOM J2 and Joint Intelligence Operations Center to the other combatant commands. Given the United States Space Force (USSF) is a close and critical partner of USSPACECOM, we work diligently to ensure that we are not duplicating efforts. In support of this effort, USSPACECOM and USSF signed a "Joint Space Integration Terms of Reference" on 17 September 2021 to codify and differentiate the roles and responsibilities of the JISTs and the Space Force Service Components supporting other combatant commands. Overall, JISTs synchronize across combatant commands and enable globally integrated deterrence and other operations, while combatant command service components integrate capability inside their theater of operations.

Mr. LAMBORN. Last year I sponsored an amendment to establish a Space National Guard. Has there been any progress within the Department of Defense to stand up the Space National Guard? Is USSPACECOM involved in these discussions?

General DICKINSON. National Guard and Reserve members are an invaluable part of our team, with representatives throughout our Headquarters, and within our Components. The industry experience that National Guard members bring to the command is invaluable. For specifics on how best to organize a future space oriented multi-component force, and the results reflected in the subject report legislated in the FY22 National Defense Authorization Act, I would defer to the Secretary of the

Air Force. Additionally, the Secretary of the Air Force and Chief of Space Operations are better suited to describe the organization of the U.S. Space Force.

Mr. LAMBORN. What are the expected results of the Warfighter Talks with the Space Force that your posture statement discusses? Is there a document, agreement, or standard operating procedure for the two organizations to understand lanes in the road?

General DICKINSON. The nation's newest Combatant Command, United States Space Command, and newest branch of the Armed Forces, United States Space Force, are critical partners in deterring conflict in space, and protecting and defending U.S. and allied interests in the domain. In July 2021, we held our first warfighter talks with two primary goals: (1) Identify opportunities "to continue to leverage the unique service and combatant command relationship between these space domain-focused organizations" to achieve seamless integration in delivering superior space combat power to deter and defeat adversaries, and (2) to deconflict respective activities in operational and strategic support to the other combatant commands. Based on the outcome of those discussions, we signed a Joint Space Integration Terms of Reference (TOR) which aimed to drive continued collaboration in optimizing the integration of space capabilities in support of Combatant Commands' theater plans and globally integrated operations. This year's talks, planned for July 2022, will build on the momentum gained with this TOR as we continue clarifying how our organizations will execute our mutual supporting, but different roles and responsibilities.

QUESTIONS SUBMITTED BY MR. LANGEVIN

Mr. LANGEVIN. Can you update us on the status of the testing infrastructure for hypersonic programs of record? Are there any additional investments required beyond those mentioned in the Science and Technology or Testing and Infrastructure MILCON unfunded requirement submissions?

Ms. BAKER. As of today, all current unfunded requirements are captured in the Science and Technology/Test and Evaluation Military Construction (MILCON) unfunded requirements submissions. As the Department advances hypersonic developments, the TRMC is continually analyzing emerging requirements to forecast future needs.

QUESTIONS SUBMITTED BY MR. GARAMENDI

Mr. GARAMENDI. There was only one bidder for the GBSB contract and competition would have helped drive billions of dollars in lifecycle savings (according to Air Force General Timothy Ray). How is the DOD ensuring that there is competition within the National Security Space Launch program in Phase III and in the nuclear and space arenas generally? How is DOD planning on maximizing competition and removing barriers to entry for new technology areas like additive manufacturing?

Ms. BAKER. Sustainable competition is a cornerstone of the Department's acquisition approach to ensure delivery of cost-effective capabilities. Nuclear modernization and space launch strategies are constantly evolving to adopt new technologies and opportunities to gain cost-savings while supporting the defense industrial base. Analysis shows the current launch market can support a limited number of medium-to-heavy launch providers. The DOD is currently working with industry in public-private partnerships like the National Security Space Launch (NSSL) program, which ensures the DOD has multiple competitive options for launch by facilitating the growth and sustainability of a robust U.S. space industrial base and encouraging competition among launch providers and suppliers to lower the costs and associated risks. NSSL seeks to develop capabilities like additive manufacturing and others through organizations like AFWerx, SpaceWerx, AFVentures, and the Space Enterprise Consortium (SpEC). In combination, these initiatives present a holistic approach to leveraging the commercial space industry across the entire marketplace to ensure a competitive edge for the U.S. and its allies in space. The ability to conduct rapid, responsive, and reliable launches of national security payloads is integral to executing DOD missions. These initiatives ensure the DOD has multiple competitive options for launch by facilitating the growth and sustainability of a robust U.S. space industrial base and encouraging competition among launch providers and suppliers to lower the costs and risks associated with these endeavors.

Mr. GARAMENDI. What is the administration's strategy for pursuing future strategic arms control dialogue with Russia and China?

Ms. BAKER. One of the first actions of the Biden Administration was to agree with Russia to an extension of the New START Treaty, and express a desire to pursue

arms control discussions as an element of the bilateral Strategic Stability Dialogue. Due to Russia's recent actions in Ukraine, the United States suspended the Strategic Stability Dialogue, but we will be prepared to resume dialogue when conditions are right. With regard to China, we are laying the groundwork for broader arms control engagements by prioritizing efforts to reduce strategic risks and strengthen guardrails in the bilateral relationship. These efforts require a willing partner, however, and we are working with allies and partners to highlight the importance of pursuing strategic stability and risk reduction with Beijing.

Mr. GARAMENDI. Lt. Gen. Thomas Bussiere, Deputy Commander, United States Strategic Command, signed the forward of a book published in 2020 by the Louisiana Tech Research Institute entitled, *Guide to Nuclear Deterrence in the Age of Great-Power Competition*. The Guide states that it is "about educating airmen" within the strategic deterrence sphere. Instead of being a true educational tool, however, it is laced with faulty assumptions and logic, promotes the perception that a nuclear war can be won, minimizes the devastation that would ultimately come from a conflict, and endorses questionable policy. Who commissioned this Guide? Who paid for it? How widely was it distributed within Strategic Command? Why is the command implicitly endorsing a one-sided version of deterrence?

Admiral RICHARD. Air Force Global Strike Command (AFGSC) contracted with Louisiana Tech Research Institute (LTRI) to produce the guide as a response to the limitations of operating AFGSC's "Global Near-Peer Competition Concepts and Applications Workshop" under COVID restrictions. LTRI published the article in October 2020 with funding obtained through an Air Force Partnership Intermediary Agreement. However, AFGSC subsequently obtained a "Zoom for Gov" license to conduct the training live in a virtual environment. AFGSC did not use the guide for the workshop.

Lt Gen Thomas Bussiere, Deputy Commander, U.S. Strategic Command (USSTRATCOM), wrote the Foreword at the request of the editor. USSTRATCOM had no further involvement and did not commission or pay for the guide. Additionally, USSTRATCOM did not distribute the "Guide to Nuclear Deterrence in the Age of Great Power Competition" in the command or to its forces.

Mr. GARAMENDI. The Trump administration proposed an additional nonstrategic nuclear weapon, a nuclear-capable Sea-Launched Cruise Missile. This is a weapon system that even a former Acting Secretary of Navy recommended not developing and it could blur the line between conventional and nuclear warfare because it would be challenging to determine what warhead is actually on a cruise missile once launched. Will the DOD keep it in its arsenal?

Admiral RICHARD. (U) The 2022 Nuclear Posture Review cancelled the nuclear-armed Sea-Launched Cruise Missile program. However, Russia's war in Ukraine and China's nuclear trajectory demonstrate that we have a deterrence and assurance gap against the threat of limited nuclear employment. To address this gap, a low-yield, non-ballistic capability to deter and respond without visible generation is necessary to provide a persistent, survivable, regional capability to deter adversaries, assure Allies, provide flexible options, as well as complement existing capabilities. Such a capability with these attributes should be re-examined in the near future.

(U) It should be noted that the United States deployed the Tomahawk Land-Attack Missile-Nuclear (TLAM-N) for 25 years before it was retired.

Mr. GARAMENDI. Is the DOD going to continue to request funding for the B83-1?

Admiral RICHARD. [Answer provided to the committee and available upon request from Member offices.]

QUESTIONS SUBMITTED BY MS. STEFANIK

Ms. STEFANIK. Ms. Baker, do you think that bolstering our missile defense and nuclear deterrent is provocative to our adversaries?

Ms. BAKER. No. Both capabilities are core elements of the Department's integrated deterrence strategy which influences adversary decision-making by introducing doubt and uncertainty, providing options to decision-makers tailored to the scope and scale of possible threats, and ultimately deterring potential conflict. Within the framework of integrated deterrence, missile defense and nuclear capabilities are complementary, along with other strategic and non-strategic capabilities.

Ms. STEFANIK. Admiral Richard, what role do you envision for nonstrategic or theater nuclear forces in U.S. deterrence posture?

What specific capabilities and attributes do you believe will be required to deter limited nuclear employment by U.S. adversaries?

Admiral RICHARD. (U) All nuclear weapons are strategic. Any adversary use of nuclear weapons, regardless of location or yield, would fundamentally alter the nature of a conflict, create the potential for uncontrolled escalation, and would have strategic effects. As the Nuclear Posture Review states, the roles of nuclear weapons are to deter strategic attacks on the United States and assure Allies and partners.

(U) Our current capabilities are the minimum essential to prevail against the unprecedented challenges that the Nation, our Allies, and partners face.

(U) Russia's recent behavior, especially its recent invasion of Ukraine, underscore the continued importance of U.S. nuclear forces, to include Dual Capable Aircraft (DCA), to NATO's deterrence and defense posture. Although primarily under U.S. European Command purview, we must continue working with our NATO allies to ensure that B61-12 life extension program and DCA transition are efficiently and expeditiously completed.

(U) However, Russia's invasion of Ukraine and China's nuclear trajectory convinces me that a deterrence and assurance gap exists. To address this gap, a low-yield, non-ballistic capability to deter and respond without visible generation is necessary to provide a persistent, survivable, regional capability to deter adversaries, assure Allies, provide flexible options, as well as complement existing capabilities. Such a capability with these attributes should be re-examined in the near future.

Ms. STEFANIK. General Dickinson, with your mission as the global sensor manager, are the current array of ground and space-based sensors adequate to warn the homeland of an imminent cruise missile attack?

General DICKINSON. The preponderance of our existing space and terrestrial sensors were designed to provide warning for ballistic missiles, and cruise missiles do not "fly" on a ballistic trajectory. Some of our sensors are constrained by environmental factors such as clouds, fog, smoke, dust, and other variables, while others are constrained by physical limitations like the curvature of the earth. We are working with STRATCOM, who currently has the missile defense mission, and other combatant commands on integrating all sensors within the DOD's air warning, missile warning, and missile defense portfolios to improve our space domain awareness. This will improve our capacity to detect imminent attacks, and will contribute to integrated deterrence by raising the cost calculus of our competitors.

Ms. STEFANIK. General VanHerck, what are some ways we can improve homeland defenses against cruise missiles and submarine launched cruise and ballistic missiles from Russia or other adversaries?

General VANHERCK. First, the designation of a single lead integrator, as directed by the 2017 NDAA, for acquisition and fielding of cruise missile defense capability is imperative to success. I am actively working to get the Department to comply with the law. Next, defense against cruise missiles begins with domain awareness, being able to detect threats to North America. NORAD and USNORTHCOM are working with the Department, and the Canadian Department of National Defence, to add significant improvements in this regard. My number #1 priority is the fielding of Over the Horizon Radar (OTHR). If/When fully integrated into our command and control systems, OTHR will be a game-changing technology in my ability to detect and track advanced cruise missile threats while also providing maritime and space domain awareness. With domain awareness, and policy directing what critical infrastructure to defend and what threats to defend against, then cruise missile defenses can be built to provide a credible and effective deterrent to cruise missile attacks against the homelands. With respect to ballistic missiles, I am confident in my current capability to provide ballistic missile defense (BMD) of the homeland against a limited attack from rogue actors like North Korea. As you are aware, the homeland BMD architecture is not designed to counter ballistic threats from peer adversaries, we rely on our strategic nuclear deterrent for those countries.

QUESTIONS SUBMITTED BY MR. WALTZ

Mr. WALTZ. Considering the strategic deterrence challenge that China and Russia pose, the Sea Launched Cruise Missile-Nuclear would provide a regionally present, sea-based, survivable option to fill a gap in America's nuclear deterrence capabilities and allied assurance commitments. The United States must adjust its force posture in some way to respond to the drastic change in the nuclear threat; however, former Acting Navy Secretary Thomas Harker had directed the Navy to defund the SLCM-N for FY 2023. Why is the Department leaning towards ceding strategic leverage and ending development of a vital weapons system in our strategic deterrence?

Ms. BAKER. As an outgrowth of the Nuclear Posture Review, the Secretary of Defense has made a recommendation to the President on the future of the nuclear-armed Sea-Launched Cruise Missile program, which is reflected in the President's

budget for FY2023. SLCM-N was cancelled given the deterrence contribution of the W76-2 and other capabilities, and its estimated cost in light of other nuclear modernization priorities. The Nuclear Posture Review affirmed the need to deter limited nuclear use by adversaries. The United States applies tailored deterrence strategies and maintains a variety of nuclear capabilities to address this need.

Mr. WALTZ. If China and Russia continue to develop intermediate range nuclear weapons and we unilaterally pause the development of SLCM-N, what other weapon systems are available to fill the strategic gap in the absence of SLCM-N?

Ms. BAKER. Other systems for deterring limited nuclear attack include the W76-2 low-yield submarine-launched ballistic missile warhead, the air-launched cruise missile (ALCM), U.S. and Allied dual-capable aircraft equipped with U.S. B61 nuclear gravity bombs, and the future long-range stand-off (LRSO) weapon.

Mr. WALTZ. There have been several high-profile hypersonic missile test failures and a noted lack of progress on the developmental hypersonic weapon systems. In July of last year, the second test of the Air Launched Rapid Response Weapon failed at igniting its solid rocket motor. Not exactly failure of cutting-edge technology but failing at the basics. A third try at the test in December and the missile did not even leave the wing of the B-52 carrying it. What is causing our hypersonics programs to fail at the basics of testing new designs? Are the failures indicative of structural problems that our defense industrial base has at rapidly developing and fielding new weapons systems?

Admiral RICHARD. (U) The determination of what constitutes testing failure or success in these advanced developmental hypersonic weapon systems lies with the respective Service program managers. Further, they are ideally positioned to assess industrial base concerns. I would refer you to these subject matter experts for testing failure root cause analysis.

(U) The Department is developing hypersonic strike capabilities to meet an immediate requirement for a highly responsive, long-range, non-nuclear strike capability to address distant, defended, and time-critical threats.

(U) Rapid development and testing of new technologies introduces new challenges, and we the Department must be allowed to learn through both successful and "failed" tests. Failures help identify causes, make modifications and incorporate lessons learned to speed development and move rapidly through testing to production and fielding.

(U) Several conventional hypersonic flight tests are planned this year including all-up round testing supporting Army, Navy, and Air Force programs. I am encouraged by the joint Army/Navy development program which will field the Nation's first operational hypersonic weapon system next year and optimistic Air Force is effectively addressing past test failures.

Mr. WALTZ. What additional resources does the Department need to not only to pace the hypersonic threat posed by weapon systems that are being operationally fielded by Russia and the CCP, but leap ahead of where their programs currently stand?

Admiral RICHARD. (U) The Office of the Under Secretary of Defense for Research and Engineering is spearheading a "Leap Ahead" effort to examine the trade space of advanced technologies beyond what is currently planned to be fielded by the United States or our potential adversaries. This office is best situated to address questions on additional resourcing needs.

Mr. WALTZ. Considering the strategic deterrence challenge that China and Russia pose, the Sea Launched Cruise Missile-Nuclear would provide a regionally present, sea-based, survivable option to fill a gap in America's nuclear deterrence capabilities and allied assurance commitments. The United States must adjust its force posture in some way to respond to the drastic change in the nuclear threat; however, former Acting Navy Secretary Thomas Harker had directed the Navy to defund the SLCM-N for FY 2023. Why is the Department leaning towards ceding strategic leverage and ending development of a vital weapons system in our strategic deterrence?

Admiral RICHARD. (U) I acknowledge the decisions made by our national policy-makers and defer to them for the reasons why the SLCM-N was cancelled. The threats that drove the need for the SLCM-N did not vanish, and lessons learned from the Ukraine crisis have demonstrated the need for the attributes of this capability. I look forward to follow-on activities that will determine how these threats will be addressed in the future. (U) Throughout the NPR process, I recommended continued pursuit of the SLCM-N. The current situation in Ukraine and China's nuclear trajectory convinces me that a deterrence and assurance gap exists. To address this gap, a low-yield, non-ballistic capability to deter and respond without visible generation is necessary to provide a persistent, survivable, regional capability to deter adversaries, assure Allies, provide flexible options, as well as complement

existing capabilities. Such a capability with these attributes should be reexamined in the near future.

Mr. WALTZ. If China and Russia continue to develop intermediate range nuclear weapons and we unilaterally pause the development of SLCM-N, what other weapon systems are available to fill the strategic gap in the absence of SLCM-N?

Admiral RICHARD. (U) The threats that drove the need for the SLCM-N did not vanish. The lessons learned from the Ukraine crisis show that certain scenarios, previously judged as unlikely, are far more probable than previously thought.

(U) While the addition of the W76-2 low yield warhead (and the Long Range Stand-Off weapon (LRSO) in 2030) is an important asset for strengthening the preservation of credible deterrence against limited nuclear use in regional aggression, Russia's current invasion in Ukraine and China's nuclear trajectory convinces me that a deterrence and assurance gap exists. To best address this gap, a low-yield, non-ballistic capability to deter and respond without visible generation is necessary to provide a persistent, survivable, regional capability to deter adversaries, assure Allies, provide flexible options, as well as complement existing capabilities. Such a system with these attributes should be re-examined in the near future.

Mr. WALTZ. A key component to a resilient space architecture is ensuring the continuing availability, diversity, responsiveness, and resilience of launch locations here on Earth. What steps do you believe the Department should take to leverage the growing number of U.S. spaceports, and how can the Department work to leverage mobile, responsive launch providers?

General DICKINSON. Assured access to space remains a top national security priority. Robust launch infrastructure and responsive launch capabilities are essential to our assured use of space. We are fortunate to have our U.S. Space Force service component, and its subordinate field command, Space Systems Command, focused on developing indigenous military responsive launch capabilities, while also fostering industry's development of the same. Prior congressional action and direction in support of tactically responsive space launch, small satellite constellations, and hybrid space architectures serve to inform this development. We appreciate the continued support from Congress in developing these capabilities, especially in providing the necessary resources to our service components to accomplish their responsive spacelift organize, train, and equip responsibilities.

Mr. WALTZ. Several of our international partners and allies are starting to build requirements and identify funding for the responsive launch/responsive space mission area; but, despite several years of Congressional support for it, we've yet to see the same attention paid by the Department of Defense. How is USSPACECOM working with our partners to develop interoperable responsive space missions and CONOPs, and how might we expect these to flow back into the Department's own planning?

General DICKINSON. U.S. Space Command, as well as our allies and partners, need a responsive space and launch capability. I applaud U.S. Space Force and Congressional efforts to grow the U.S. launch base overall, as well as add a time-sensitive launch capability known as Tactically Responsive Launch. Efforts to date have focused on bringing timelines down to less than 12 months, but we need to push industry farther. In a conflict which may not last longer than weeks or months, a 12 month timeline is still not tactically relevant. We need to be targeting days, not months. Additionally, we appreciate the \$50M authorized in the FY22 NDAA for 2 responsive launch, and are looking forward to hopefully seeing the subsequent appropriation. We must have the ability to rapidly augment, reconstitute, and replenish our critical space capabilities. The recent Russian Anti-satellite test makes this even more urgent. I've recently commissioned a study on Tactically Responsive Space to determine where we can incorporate this into the overall space architectures in order to improve our warfighting capabilities. This will set the demand signal that helps shape future technical investments and eventual programs of record. We continue to engage with allies and partners in bilateral and multilateral forums including the most recent U.S. Space Command Commander's Conference to identify gaps and develop the requirements to protect the space domain. As this coordination advances, we expect it to shape our plans and our global posture to enable us to fight with our allies and levy requirements to the services that enable that fight such as responsive launch. As we progress with our own understanding of what is required and subsequently outline our path forward, we will be closely synchronized with our allies and partners in the areas of technology, CONOPs, and interoperability.