U.S. Department *of* Defense

2022
National Defense Strategy

of

The United States of America

Including the 2022 Nuclear Posture Review and the 2022 Missile Defense Review

2022

National Defense Strategy

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President Biden has stated that we are living in a "decisive decade," one stamped by dramatic changes in geopolitics, technology, economics, and our environment. The defense strategy that the United States pursues will set the Department's course for decades to come. The Department of Defense owes it to our All-Volunteer Force and the American people to provide a clear picture of the challenges we expect to face in the crucial years ahead—and we owe them a clear and rigorous strategy for advancing our defense and security goals.

The 2022 National Defense Strategy (NDS) details the Department's path forward into that decisive decade—from helping to protect the American people, to promoting global security, to seizing new strategic opportunities, and to realizing and defending our democratic values. For the first time, the Department conducted its strategic reviews—the NDS, the Nuclear Posture Review (NPR) and Missile Defense Review (MDR)—in an integrated way, ensuring tight linkages between our strategy and our resources. The NDS directs the Department to act urgently to sustain and strengthen U.S. deterrence, with the People's Republic of China (PRC) as the pacing challenge for the Department. The NDS further explains how we will collaborate with our NATO Allies and partners to reinforce robust deterrence in the face of Russian aggression while mitigating and protecting against threats from North Korea, Iran, violent extremist organizations, and transboundary challenges such as climate change.

The PRC remains our most consequential strategic competitor for the coming decades. I have reached this conclusion based on the PRC's increasingly coercive actions to reshape the Indo-Pacific region and the international system to fit its authoritarian preferences, alongside a keen awareness of the PRC's clearly stated intentions and the rapid modernization and expansion of its military. As President Biden's National Security Strategy notes, the PRC is "the only country with both the intent to reshape the international order, and, increasingly, the economic, diplomatic, military, and technological power to do so."

Meanwhile, Russia's unprovoked, unjust, and reckless invasion of Ukraine underscores its irresponsible behavior. Efforts to respond to Russia's assault on Ukraine also dramatically highlight the importance of a strategy that leverages the power of our values and our military might with that of our Allies and partners. Together, we have marshalled a strong, unified response to Russia's attack and proven the strength of NATO unity.

In these times, business as usual at the Department is not acceptable. The 2022 NDS lays out our vision for focusing the Defense Department around our pacing challenge, even as we manage the other threats of our swiftly changing world. It builds on my 2021 *Message to the Force*, which stressed as core values defending the nation, taking care of our people, and succeeding through teamwork.

Our central charge is to develop, combine, and coordinate our strengths to maximum effect. This is the core of integrated deterrence, a centerpiece of the 2022 NDS. Integrated deterrence means using every tool at the Department's disposal, in close collaboration with our counterparts across the U.S. Government and with Allies and partners, to ensure that potential foes understand the folly of aggression. The Department will align policies, investments, and activities to sustain and strengthen deterrence—tailored to specific competitors and challenges and coordinated and synchronized inside and outside the Department.

The Department will also campaign day-to-day to gain and sustain military advantages, counter acute forms of our competitors' coercion, and complicate our competitors' military preparations. Campaigning is not business as usual—it is the deliberate effort to synchronize the Department's activities and investments to aggregate focus and resources to shift conditions in our favor. Through campaigning, the Department will focus on the most consequential competitor activities that, if left unaddressed, would endanger our military advantages now and in the future.

Even as we take these steps, we will act with urgency to build enduring advantages for the future Joint Force, undertaking reforms to accelerate force development, getting the technology we need more quickly, and making investments in the extraordinary people of the Department, who remain our most valuable resource.

America has never been afraid of competition, and we do not shy away from tough challenges, especially when it comes to securing our national interests and defending our national values. To meet this moment, we will tap into our core strengths: our dynamic, diverse, and innovative society; our unmatched network of Allies and partners; and the tremendous men and women of our armed forces.

We live in turbulent times. Yet, I am confident that the Department, along with our counterparts throughout the U.S. Government and our Allies and partners around the world, is well positioned to meet the challenges of this decisive decade.

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I. INTRODUCTION

For more than seven decades, the vision and leadership of the United States have undergirded international peace and prosperity. A strong, principled, and adaptive U.S. military is a central pillar for U.S. leadership, particularly in the face of challenges arising from dramatic geopolitical, technological, economic, and environmental change. The Department of Defense stands ready to meet these challenges and seize opportunities with the confidence, creativity, and commitment that have long characterized our military and the democracy that it serves.

The Department will focus on safeguarding and advancing vital U.S. national interests. We will work alongside other agencies and departments to:

- Protect the security of the American people;
- Expand economic prosperity and opportunity; and
- Realize and defend the values at the heart of American way of life.

The 2022 National Defense Strategy (NDS) sets forth how the U.S. military will meet growing threats to vital U.S. national security interests and to a stable and open international system. It directs the Department to act urgently to sustain and strengthen U.S. deterrence, with the People's Republic of China (PRC) as the Department's pacing challenge.

The strategy identifies four top-level defense priorities that the Department must pursue to strengthen deterrence. First, we will defend the homeland. Second, we will deter strategic attacks against the United States, our Allies, and our partners. Third, we will deter aggression and be prepared to prevail in conflict when necessary. Fourth, to ensure our future military advantage, we will build a resilient Joint Force and defense ecosystem.

The Department will advance our priorities through integrated deterrence, campaigning, and actions that build enduring advantages. *Integrated deterrence* entails working seamlessly across warfighting domains, theaters, the spectrum of conflict, all instruments of U.S. national power, and our network of Alliances and partnerships. Tailored to specific circumstances, it applies a coordinated, multifaceted approach to reducing competitors' perceptions of the net benefits of aggression relative to restraint. Integrated deterrence is enabled by combat-credible forces prepared to fight and win, as needed, and backstopped by a safe, secure, and effective nuclear deterrent.

Day after day, the Department will strengthen deterrence and gain advantage against competitors' most consequential coercive measures by *campaigning* – the conduct and sequencing of logically-linked military initiatives aimed at advancing well-defined, strategy-aligned priorities over time. The United States will operate forces, synchronize broader Departmental efforts, and align Departmental activities with other instruments of national power to counter forms of competitor coercion, complicate competitors' military preparations, and develop our own warfighting capabilities together with those of our Allies and partners.

To shore up the foundations for integrated deterrence and campaigning, we will act urgently to *build enduring advantages* across the defense ecosystem – the Department of Defense, the defense industrial base, and the array of private sector and academic enterprises that create and sharpen the Joint Force's technological edge. We will modernize the systems that design and build the Joint Force, with a focus on innovation and rapid adjustment to new strategic demands. We will make our supporting systems more resilient and agile in the face of threats that range from competitors to the effects of climate change. And we will cultivate our talents, recruiting and training a workforce with the skills, abilities, and diversity we need to creatively solve national security challenges in a complex global environment.

The 2022 NDS advances a strategy focused on the PRC and on collaboration with our growing network of Allies and partners on common objectives. It seeks to prevent the PRC's dominance of key regions while protecting the U.S. homeland and reinforcing a stable and open international system. Consistent with the 2022 National Security Strategy (NSS), a key objective of the NDS is to dissuade the PRC from considering aggression as a viable means of advancing goals that threaten vital U.S. national interests. Conflict with the PRC is neither inevitable nor desirable. The Department's priorities support broader whole-of-government efforts to develop terms of interaction with the PRC that are favorable to our interests and values, while managing strategic competition and enabling the pursuit of cooperation on common challenges.

Even as we focus on the PRC as our pacing challenge, the NDS also accounts for the acute threat posed by Russia, demonstrated most recently by Russia's unprovoked further invasion of Ukraine. The Department will support robust deterrence of Russian aggression against vital U.S. national interests, including our treaty Allies. We will work closely with the North Atlantic Treaty Organization (NATO) and our partners to provide U.S. leadership, develop key enabling capabilities, and deepen interoperability. In service of our strategic priorities, we will accept measured risk but remain vigilant in the face of other persistent threats, including those posed by North Korea, Iran, and violent extremist organizations (VEOs). We will also build resilience in the face of destabilizing and potentially catastrophic transboundary challenges such as climate change and pandemics, which increasingly strain the Joint Force.

We cannot meet these complex and interconnected challenges alone. Mutually-beneficial Alliances and partnerships are our greatest global strategic advantage – and they are a center of gravity for this strategy. We will strengthen major regional security architectures with our Allies and partners based on complementary contributions; combined, collaborative operations and force planning; increased intelligence and information sharing; new operational concepts; and our ability to draw on the Joint Force worldwide.

We cannot delay. The NSS describes the United States' agenda for renewal in the coming "decisive decade," a ten-year window for leadership to tackle our era's defining challenges. In full accord with the urgency conveyed by the NSS and in support of its broader goals, the Department will move immediately to implement the changes detailed in this NDS, the Secretary of Defense's preeminent guidance document.

The challenges we face are formidable, but the United States possesses strengths that our competitors cannot match. Our democratic values, our open society, our diversity, our base of innovation, our culture of ingenuity, our combat experience, our globe-spanning network of Alliances and partnerships, and above all our extraordinary All Volunteer Force – these together provide firm foundations for a defense strategy that will keep America secure, prosperous, and free.

II. SECURITY ENVIRONMENT

Now and over the next two decades, we face strategic challenges stemming from complex interactions between a rapidly changing global balance of military capabilities; emerging technologies; competitor doctrines that pose new threats to the U.S. homeland and to strategic stability; an escalation of competitors' coercive and malign activities in the "gray zone"; and transboundary challenges that impose new demands on the Joint Force and the defense enterprise.

These developments and the threats they present are interconnected – in part because our competitors deliberately link them to erode deterrence, exert economic coercion, and endanger the political autonomy of states. Competitor strategies seek to exploit perceived vulnerabilities in the American way of war, including by creating anti-access/area-denial environments; developing conventional capabilities to undertake rapid interventions; posing all-domain threats to the U.S. homeland in an effort to jeopardize the U.S. military's ability to project power and counter regional aggression; and using the cyber and space domains to gain operational, logistical, and information advantages. At the same time, our competitors are building larger and more diverse nuclear arsenals and working to distract and divide the United States and our Allies and partners.

Strategic Competition with the People's Republic of China (PRC). The most comprehensive and serious challenge to U.S. national security is the PRC's coercive and increasingly aggressive endeavor to refashion the Indo-Pacific region and the international system to suit its interests and authoritarian preferences. The PRC seeks to undermine U.S. alliances and security partnerships in the Indo-Pacific region, and leverage its growing capabilities, including its economic influence and the People's Liberation Army's (PLA) growing strength and military footprint, to coerce its neighbors and threaten their interests. The PRC's increasingly provocative rhetoric and coercive activity towards Taiwan are destabilizing, risk miscalculation, and threaten the peace and stability of the Taiwan Strait. This is part of a broader pattern of destabilizing and coercive PRC behavior that stretches across the East China Sea, the South China Sea, and along the Line of Actual Control. The PRC has expanded and modernized nearly every aspect of the PLA, with a focus on offsetting U.S. military advantages. The PRC is therefore the pacing challenge for the Department.

In addition to expanding its conventional forces, the PLA is rapidly advancing and integrating its space, counterspace, cyber, electronic, and informational warfare capabilities to support its holistic approach to joint warfare. The PLA seeks to target the ability of the Joint Force to project power to defend vital U.S. interests and aid our Allies in a crisis or conflict. The PRC is also expanding the PLA's global footprint and working to establish a more robust overseas and basing infrastructure to allow it to project military power at greater distances. In parallel, the PRC is accelerating the modernization and expansion of its nuclear capabilities. The United States and its Allies and partners will increasingly face the challenge of deterring two major powers with modern and diverse nuclear capabilities – the PRC and Russia – creating new stresses on strategic stability.

Russia as an Acute Threat. Even as the PRC poses the Department's pacing challenge, recent events underscore the acute threat posed by Russia. Contemptuous of its neighbors' independence, Russia's government seeks to use force to impose border changes and to reimpose an imperial sphere of influence. Its extensive track record of territorial aggression includes the escalation of its brutal, unprovoked war against Ukraine. Although its leaders' political and military actions intended to fracture NATO have backfired dramatically, the goal remains. Russia presents serious, continuing risks in key areas. These include nuclear threats to the homeland and U.S. Allies and partners; long-range cruise missile threats; cyber and information operations; counterspace threats; chemical and biological weapons (CBW); undersea warfare; and extensive gray zone campaigns targeted against democracies in particular. Russia has incorporated these capabilities and methods into an overall strategy that, like the PRC's, seeks to exploit advantages in geography and time backed by a mix of threats to the U.S. homeland and to our Allies and partners.

Although diverging interests and historical mistrust may limit the depth of their political and military cooperation, the PRC and Russia relationship continues to increase in breadth. Either state could seek to create dilemmas globally for the Joint Force in the event of U.S. engagement in a crisis or a conflict with the other.

Threats to the U.S. Homeland. The scope and scale of threats to the homeland have fundamentally changed. The PRC and Russia now pose more dangerous challenges to safety and security at home, even as terrorist threats persist. Both states are already using non-kinetic means against our defense industrial base and mobilization systems, as well as deploying counterspace capabilities that can target our Global Positioning System and other space-based capabilities that support military power and daily civilian life. The PRC or Russia could use a wide array of tools in an attempt to hinder U.S. military preparation and response in a conflict, including actions aimed at undermining the will of the U.S. public, and to target our critical infrastructure and other systems. These threats, along with the toll taken by climate change, pandemics, and other transborder challenges will increase demands on Department resources, federal civil authorities, and the public and private sectors.

Other Persistent Threats – North Korea, Iran, and VEOs. North Korea continues to expand its nuclear and missile capability to threaten the U.S. homeland, deployed U.S. forces, and the Republic of Korea (ROK) and Japan, while seeking to drive wedges between the United States-ROK and United States-Japan Alliances. Iran is taking actions that would improve its ability to produce a nuclear weapon should it make the decision to do so, even as it builds and exports extensive missile forces, uncrewed aircraft systems, and advanced maritime capabilities that threaten chokepoints for the free flow of energy resources and international commerce. Iran further undermines Middle East stability by supporting terrorist groups and military proxies, employing its own paramilitary forces, engaging in military provocations, and conducting malicious cyber and information operations. Global terrorist groups – including al-Qa'ida, Islamic State in Iraq and Syria (ISIS), and their affiliates – have had their capabilities degraded, but some may be able to

reconstitute them in short order, which will require monitoring indications and warning against the VEO threat.

Complex Escalation Dynamics: Rapidly Evolving Domains and Technologies. A wide range of new or fast-evolving technologies and applications are complicating escalation dynamics and creating new challenges for strategic stability. These include counterspace weapons, hypersonic weapons, advanced CBW, and new and emerging payload and delivery systems for both conventional and non-strategic nuclear weapons. In the cyber and space domains, the risk of inadvertent escalation is particularly high due to unclear norms of behavior and escalation thresholds, complex domain interactions, and new capabilities. New applications of artificial intelligence, quantum science, autonomy, biotechnology, and space technologies have the potential not just to change kinetic conflict, but also to disrupt day-to-day U.S. supply chain and logistics operations.

Competitors' Gray Zone Activities. Competitors now commonly seek adverse changes in the status quo using gray zone methods – coercive approaches that may fall below perceived thresholds for U.S. military action and across areas of responsibility of different parts of the U.S. Government. The PRC employs state-controlled forces, cyber and space operations, and economic coercion against the United States and its Allies and partners. Russia employs disinformation, cyber, and space operations against the United States and our Allies and partners, and irregular proxy forces in multiple countries. Other state actors, particularly North Korea and Iran, use similar if currently more limited means. The proliferation of advanced missiles, uncrewed aircraft systems, and cyber tools to military proxies allows competitors to threaten U.S. forces, Allies, and partners, in indirect and deniable ways.

Climate Change and other Transboundary Challenges. Beyond state and non-state actors, changes in global climate and other dangerous transboundary threats are already transforming the context in which the Department operates. Increasing temperatures, changing precipitation patterns, rising sea levels, and more frequent extreme weather conditions will affect basing and access while degrading readiness, installations, and capabilities. Climate change is creating new corridors of strategic interaction, particularly in the Arctic region. It will increase demands, including on the Joint Force, for disaster response and defense support of civil authorities, and affect security relationships with some Allies and partners. Insecurity and instability related to climate change may tax governance capacity in some countries while heightening tensions between others, risking new armed conflicts and increasing demands for stabilization activities.

The COVID-19 pandemic continues to impact societies, global supply chains, and the U.S. defense industrial base. It has required substantial commitment of Department resources for support of civil authorities and support to international partners. COVID-19 also spotlights the costs and risks of future biological threats, whether natural or human-made, for the Department and the Joint Force.

III. DEFENSE PRIORITIES

Together, these rapidly evolving features of the security environment threaten to erode the United States' ability to deter aggression and to help maintain favorable balances of power in critical regions. The PRC presents the most consequential and systemic challenge, while Russia poses acute threats – both to vital U.S. national interests abroad and to the homeland. Other features of the security environment, including climate change and other transboundary threats, will increasingly place pressure on the Joint Force and the systems that support it.

In this context, and in support of a stable and open international system and our defense commitments, the Department's priorities are:

- Defending the homeland, paced to the growing multi-domain threat posed by the PRC;
- Deterring strategic attacks against the United States, Allies, and partners;
- Deterring aggression, while being prepared to prevail in conflict when necessary – prioritizing the PRC challenge in the Indo-Pacific region, then the Russia challenge in Europe; and,
- Building a resilient Joint Force and defense ecosystem.

IV. INTEGRATED DETERRENCE

Our competitors, particularly the PRC, are pursuing holistic strategies that employ varied forms of coercion, malign behavior, and aggression to achieve their objectives and weaken the foundations of a stable and open international system.

Meeting the challenge requires a holistic response: integrated deterrence. In the past, the Department's approach to deterrence has too often been hindered by competing priorities; lack of clarity regarding the specific competitor actions we seek to deter; an emphasis on deterring behaviors in instances where Department authorities and tools are ill-suited; and stovepiping. Integrated deterrence is how we will align the Department's policies, investments, and activities to sustain and strengthen deterrence – tailored to specific competitors and coordinated to maximum effect inside and outside the Department.

How We Will Deter. Deterrence is strengthened by actions that reduce a competitor's perception of the benefits of aggression relative to restraint. Effective deterrence requires the Department to consider how competitors perceive U.S., Ally, and partner stakes, commitment, and combat credibility; their perception of their own ability to control escalation risks; and their view of how the status quo will evolve – in part as a result of U.S., Ally, and partner actions – if they do not use force. Actions aimed at strengthening deterrence work by different logics: denial, resilience, and cost imposition. Optimal combinations need to be tailored to specific settings and deterrence objectives in an integrated deterrence approach.

Deterrence by Denial. To deter aggression, especially where potential adversaries could act to rapidly seize territory, the Department will develop asymmetric approaches and optimize our posture for *denial*. In the near-term, we will continue to develop innovative operational concepts and supplement current capabilities and posture through investments in mature, high-value assets. Over the mid- to long-term, we will develop new capabilities, including in long-range strike, undersea, hypersonic, and autonomous systems, and improve information sharing and the integration of non-kinetic tools.

Deterrence by Resilience. Denying the benefits of aggression also requires *resilience* – the ability to withstand, fight through, and recover quickly from disruption. The Department will improve its ability to operate in the face of multi-domain attacks on a growing surface of vital networks and critical infrastructure, both in the homeland and in collaboration with Allies and partners at risk. Because the cyber and space domains empower the entire Joint Force, we will prioritize building resilience in these areas. Cyber resilience will be enhanced by, for example, modern encryption and a zero-trust architecture. In the space domain, the Department will reduce adversary incentives for early attack by fielding diverse, resilient, and redundant satellite constellations. We will bolster our ability to fight through disruption by improving defensive capabilities and increasing options for reconstitution. We will assist Allies and partners in doing the same.

Deterrence by Direct and Collective Cost Imposition. Denial and resilience strategies are necessary but not always sufficient. Effective deterrence may also hinge on our ability to impose costs in excess to the perceived benefits of aggression. The Department will continue to modernize our nuclear forces, the ultimate backstop to deter attacks on the homeland and our Allies and partners who rely on U.S. extended deterrence. Direct cost imposition approaches also include a broad range of other means, including conventional long-range fires, offensive cyber, irregular warfare, support for foreign internal defense, and interagency instruments, such as economic sanctions, export controls, and diplomatic measures.

Collective cost imposition approaches increase the expectation that aggression will be met with a collective response. Through close collaboration with U.S. Government departments and agencies and with our Allies and partners, we will diversify our posture and broaden the scope of cooperation, adding complexity to competitors' military planning and execution. U.S. leadership in shaping norms for appropriate conduct in the cyber, space, and other emerging technology domains will reinforce deterrence by increasing international consensus on what constitutes malign and aggressive behavior, thereby increasing the prospect of collective attribution and response when these norms are violated.

Role of Information in Deterrence. Deterrence depends in part on competitors' understanding of U.S. intent and capabilities. The Department must seek to avoid unknowingly driving competition to aggression. To strengthen deterrence while managing escalation risks, the Department will enhance its ability to operate in the information domain – for example, by working to ensure that messages are conveyed effectively. We will work in collaboration with other U.S. Federal departments and agencies along with Allies and partners.

Tailored Deterrence Approaches. Coordinating and applying deterrence logics to maximum effect requires tailoring for specific problems, competitors, and settings.

Deterring Attacks against the Homeland. The Department will take steps to raise potential attackers' direct and indirect costs while reducing their expected benefits for aggressive action against the homeland, particularly by increasing resilience. We will ensure that hostile operations – including those conducted early in a crisis or conflict – will not advance adversary objectives or severely limit U.S. response options. Our work will prioritize closer coordination with U.S. interagency, state, local, tribal, and territorial partners, as well as with the private sector, starting with the defense industrial base.

Deterring Strategic Attacks. 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 have strategic effects. To maintain credible and effective deterrence of both large-scale and limited nuclear attacks from a range of adversaries, the Department will modernize nuclear forces, nuclear command, control, and communications, and the nuclear weapon production enterprise, and strengthen extended deterrence. We will bolster regional nuclear deterrence by enhanced consultations with Allies and partners and by better synchronizing conventional and nuclear

aspects of planning – including by improving conventional forces' ability to operate in the face of limited nuclear, chemical, and biological attacks so as to deny adversaries benefit from possessing and employing such weapons. The Department will employ an integrated deterrence approach that draws on tailored combinations of conventional, cyber, space, and information capabilities, together with the unique deterrent effects of nuclear weapons.

Deterring PRC Attacks. The Department will bolster deterrence by leveraging existing and emergent force capabilities, posture, and activities to enhance denial, and by enhancing the resilience of U.S. systems the PRC may seek to target. We will develop new operational concepts and enhanced future warfighting capabilities against potential PRC aggression. Collaboration with Allies and partners will cement joint capability with the aid of multilateral exercises, co-development of technologies, greater intelligence and information sharing, and combined planning for shared deterrence challenges. We will also build enduring advantages, undertaking foundational improvements and enhancements to ensure our technological edge and Joint Force combat credibility.

Deterring Russian Attacks. The Department will focus on deterring Russian attacks on the United States, NATO members, and other Allies, reinforcing our iron-clad treaty commitments, to include conventional aggression that has the potential to escalate to nuclear employment of any scale. We will work together with our Allies and partners to modernize denial capabilities, increase interoperability, improve resilience against attack and coercion, share intelligence, and strengthen extended nuclear deterrence. Over time, the Department will focus on enhancing denial capabilities and key enablers in NATO's force planning, while NATO Allies seek to bolster their conventional warfighting capabilities. For Ally and partner countries that border Russia, the Department will support efforts to build out response options that enable cost imposition.

Deterring North Korean Attacks. The Department will continue to deter attacks through forward posture; integrated air and missile defense; close coordination and interoperability with our ROK Ally; nuclear deterrence; resilience initiatives; and the potential for direct cost imposition approaches that come from globally deployable Joint Forces.

Deterring Iranian Attacks. To deter large-scale Iranian attacks on vital national security interests and partners in the region, the Department will work to increase partner capability and resilience, particularly in air and missile defense, while collaborating with partners to expose Iranian gray zone operations. The Department will continue to support U.S. interagency and international efforts to prevent Iran from acquiring a nuclear weapon.

Escalation Management. Changes in the security environment – particularly in the space and cyber domains – are likely to increase opacity during a crisis or conflict, threatening strategic stability. The Department will develop tailored approaches to assess and manage escalation risk in both crises and conflicts, including conducting analysis of escalation pathways and thresholds, and planning for situations with decreased domain awareness and impaired communications. We will strengthen strategic stability through dialogue with competitors, unilateral measures that make command, control, and communications more robust, and by developing defenses and architectural

resilience to maintain operational capabilities in cyberspace and space during conflict. Establishing and practicing crisis communications with Allies and partners, as well as with competitors, is an essential tool to reduce mutual misperceptions and to help manage escalation.

V. CAMPAIGNING

The Department strengthens deterrence and gains military advantages not only by building Joint Force capabilities, but also by campaigning – the conduct and sequencing of logically-linked military activities to achieve strategy-aligned objectives over time. Campaigning initiatives change the environment to the benefit of the United States and our Allies and partners, while limiting, frustrating, and disrupting competitor activities that seriously impinge on our interests, especially those carried out in the gray zone.

Campaigning requires discipline. It targets the most consequential competitor activities – those that, if left unaddressed, would endanger our military advantages and vital national interests now and in the future. Successful campaigning begins with focused planning that specifies how an initiative supports our defense priorities, establishes clear connections with the Department's ways and means, and incorporates feedback loops. In service of strategic prioritization, we will focus day-to-day force employment on a more narrow set of tasks than we do currently.

Campaigning to Gain Military Advantage, Enhance Deterrence, and Address Gray Zone Challenges. The Department will actively campaign across domains and the spectrum of conflict. Campaigning initiatives will improve our baseline understanding of the operating environment and seek to shape perceptions, including by sowing doubt in our competitors that they can achieve their objectives or conduct unattributed coercive actions. They will disrupt competitor warfighting advantages while reinforcing our own, and enhance interoperability and access. Working with Allies and partners, we will build and exercise force elements needed in crisis or conflict, such as infrastructure, logistics, command and control, dispersal and relocation, and mobilization.

Competitors increasingly engage in gray zone operations at odds with international norms and below the threshold of a credible military response. Emerging technologies and applications are making these activities more effective at building competitors' military and non-military advantages which, if left unaddressed, could endanger U.S. military effectiveness now and in the future.

The Department will be judicious in its use of defense resources and efforts to counter competitors' coercive behaviors in gray zone operations, as traditional military tools may not always be the most appropriate response. In many cases, intelligence sharing, economic measures, diplomatic actions, and activities in the information domain conducted by other U.S. departments and agencies may prove more effective. Nevertheless, there can be an important role for campaigning to disrupt competitors' attempts to advance their objectives through gray zone tactics, especially when integrated for maximum impact with the actions of Allies, partners, and other U.S. departments and agencies. Campaigning initiatives will provide a range of options to oppose select, acute forms of coercion carried out by competitors. We will conduct cyberspace operations to degrade competitors' malicious cyber activity and to prepare cyber capabilities to be used in crisis

or conflict. Tailored information operations can be used to support and in some instances lead the Department's response. In campaigning, the Department will carefully evaluate and manage escalation risks.

Campaigning and Our Global Posture. Our force posture will focus on the access and warfighting requirements that enable our efforts to deter potential PRC and Russian aggression against vital U.S. national interests, and to prevail in conflict if deterrence fails. The Department will conduct campaigning activities from this posture against a clear set of objectives, to include deterring adversary attacks, supporting rapid crisis response with survivable forces, and conducting operations to reinforce internationally-agreed-upon norms. In the Indo-Pacific, we will continue key infrastructure investments and coordinate with the Department of State to expand access in the region. In Europe, our posture will focus on command and control, fires, and key enablers that complement our NATO Allies' capabilities and strengthen deterrence by increasing combat credibility. For other major threats, we will leverage security cooperation and capacity building with partners, backed by a monitor-and-respond approach that takes advantage of the deterrent value of the Department's ability to deploy forces globally at the time and place of our choosing. Robust intelligence collection, in concert with the work of other departments and agencies, will seek to provide early indication and warning to help manage risk.

VI. ANCHORING OUR STRATEGY IN ALLIES AND PARTNERS AND ADVANCING REGIONAL GOALS

Countries around the world have a vital interest in a free and open international system. Close collaboration with Allies and partners is foundational for U.S. national security interests and for our collective ability to address the challenges that the PRC and Russia present, while responsibly managing the array of other threats we face.

We strive to be a trusted defense partner. We respect the sovereignty of all states, and we know that the decisions that our Allies and partners face are rarely binary. We recognize that when it comes to our security relationships, the Department cannot rely on rhetoric. Early and continuous consideration, engagement, and, where possible, collaboration with Allies and partners in planning is essential for advancing our shared interests. The 2022 National Defense Strategy is a call to action for the defense enterprise to incorporate Allies and partners at every stage of defense planning.

To strengthen and sustain deterrence, the Department will prioritize interoperability and enable coalitions with enhanced capabilities, new operating concepts, and combined, collaborative force planning. We will consult and coordinate with Allies and partners as we modernize our nuclear forces, reinforcing our extended deterrence commitments. The Department will seek to improve denial capability, including resilience, particularly for those most exposed to military coercion. And we will support regional partners' ability to respond to regional contingencies, provide strategic indicators and warning, and reduce competitors' ability to hold key geographic and logistical chokepoints at risk. By joining with Allies and partners in efforts to enhance resilience to climate change, we will both strengthen defense relationships and reduce the need for the force to respond to instability and humanitarian emergencies. Overall, the Department will work across the interagency system and in concert with Allies and partners to advance regional security goals that implement the higher-level aims of integrated deterrence, while accounting for the cross-regional and global dimensions of potential conflict.

To succeed in these objectives, the Department will reduce institutional barriers, including those that inhibit collective research and development, planning, interoperability, intelligence and information sharing, and export of key capabilities. We will work across the U.S. Government to upgrade technology and information release processes, expand release authorizations, and redefine dissemination controls to facilitate information exchange for mutual benefit.

The Indo-Pacific Region. The Department will reinforce and build out a resilient security architecture in the Indo-Pacific region in order to sustain a free and open regional order, and deter attempts to resolve disputes by force. We will modernize our Alliance with Japan and strengthen combined capabilities by aligning strategic planning and priorities in a more integrated manner; deepen our Alliance with Australia through investments in posture, interoperability, and expansion of multilateral cooperation; and foster advantage through advanced technology cooperation with

partnerships like AUKUS and the Indo-Pacific Quad. The Department will advance our Major Defense Partnership with India to enhance its ability to deter PRC aggression and ensure free and open access to the Indian Ocean region. The Department will support Taiwan's asymmetric self-defense commensurate with the evolving PRC threat and consistent with our one China policy. We will work with the ROK to continue to improve its defense capability to lead the Alliance combined defense, with U.S. forces augmenting those of the ROK. We will invigorate multilateral approaches to security challenges in the region, to include by promoting the role of the Association of Southeast Asian Nations in addressing regional security issues. The Department will work with Allies and partners to ensure power projection in a contested environment. The Department will also support Ally and partner efforts, in accordance with U.S. policy and international law, to address acute forms of gray zone coercion from the PRC's campaigns to establish control over the East China Sea, Taiwan Strait, South China Sea, and disputed land borders such as with India. At the same time, the Department will continue to prioritize maintaining open lines of communication with the PLA and managing competition responsibly.

Europe. The Department will maintain its bedrock commitment to NATO collective security, working alongside Allies and partners to deter, defend, and build resilience against further Russian military aggression and acute forms of gray zone coercion. As we continue contributing to NATO capabilities and readiness – including through improvements to our posture in Europe and our extended nuclear deterrence commitments – the Department will work with Allies bilaterally and through NATO's established processes to better focus NATO capability development and military modernization to address Russia's military threat. The approach will emphasize ready, interoperable combat power in contested environments across NATO forces, particularly air forces and other joint precision strike capabilities, and critical enablers such as intelligence, surveillance, and reconnaissance (ISR) and electronic warfare platforms. The Department will collaborate with Allies and partners to build capacity along Europe's eastern flank, strengthening defensive anti-area/access-denial capabilities and indications and warning; expanding readiness, training, and exercises; and promoting resilience, including against hybrid and cyber actions.

The Middle East. As the Department continues to right-size its forward military presence in the Middle East following the mission transition in Afghanistan and continuing our "by, with, and through" approach in Iraq and Syria, we will address major security challenges in the region in effective and sustainable ways. The Joint Force will retain the ability to deny Iran a nuclear weapon; to identify and support action against Iranian and Iranian-backed threats; and to disrupt top-tier VEO threats that endanger the homeland and vital U.S. national interests. The Department will prioritize cooperation with our regional and global partners that results in their increased ability to deter and defend against potential aggression from Iran, for example by working to advance integrated air and missile defense, maritime security, and irregular warfare capabilities. Working in concert with global and interagency partners, the Department will redouble efforts to support regional security coalitions within the Gulf Cooperation Council and among states in the region to ensure maritime security and improve collective intelligence and warning.

Western Hemisphere. The United States derives immense benefit from a stable, peaceful, and democratic Western Hemisphere that reduces security threats to the homeland. To prevent distant threats from becoming a challenge at home, the Department will continue to partner with countries in the region to build capability and promote security and stability. We will maintain the ability to respond to crises and seek to strengthen regional roles and capabilities for humanitarian assistance, climate resilience, and disaster response efforts. As in all regions, the Department will work collaboratively, seeking to understand our partners' security needs and areas of mutual concern.

Africa. In Africa, the Department will prioritize disrupting VEO threats against the U.S. homeland and vital U.S. national interests, working "by, with, and through" our African partners to build states' capability to degrade terrorist organizations and contribute broadly to regional security and stability. We will orient our approach on the continent towards security cooperation; increase coordination with Allies, multilateral organizations, and regional bodies that share these objectives; and support U.S. interagency initiatives in the region, including efforts to disrupt malign PRC and Russian activities on the continent.

The Arctic. The United States seeks a stable Arctic region characterized by adherence to internationally-agreed upon rules and norms. The Department will deter threats to the U.S. homeland from and through the Arctic region by improving early warning and ISR capabilities, partnering with Canada to enhance North American Aerospace Defense Command capabilities, and working with Allies and partners to increase shared maritime domain awareness. U.S. activities and posture in the Arctic should be calibrated, as the Department preserves its focus on the Indo-Pacific region.

VII. FORCE PLANNING

Sustaining and strengthening deterrence requires that the Department design, develop, and manage a combat-credible U.S. military fit for advancing our highest defense priorities.

Building on the 2018 NDS, the *2022 NDS Force Planning Construct* sizes and shapes the Joint Force to simultaneously defend the homeland; maintain strategic deterrence; and deter and, if necessary, prevail in conflict. To deter opportunistic aggression elsewhere, while the United States is involved in an all-domain conflict, the Department will employ a range of risk mitigation efforts rooted in integrated deterrence. These include coordination with and contributions of Allies and partners, deterrent effects of U.S. nuclear posture, and leveraging posture and capabilities not solely engaged in the primary warfight – for example, cyber and space. Additionally, the Joint Force will be shaped to ensure the ability to respond to small-scale, short-duration crises without substantially impairing high-end warfighting readiness, and to conduct campaigning activities that improve our position and reinforce deterrence while limiting or disrupting competitor activities that seriously affect U.S. interests.

Our approach to force planning aims to build strength and capability in key operational areas. To maintain information advantage, the Department will improve our ability to integrate, defend, and reconstitute our surveillance and decision systems to achieve warfighting objectives, particularly in the space domain, and despite adversaries' means of interference or deception. To preserve command, control, and communications in a fast-paced battlefield, we will make our network architectures more resilient against system-level exploitation and disruption so as to ensure effective coordination of distributed forces. To enhance our ability to deny aggression, we will improve the speed and accuracy of detection and targeting. To mitigate adversary anti-access/area-denial capability, the Department will develop concepts and capabilities that improve our ability to reliably hold at risk those military forces and assets that are essential to adversary operational success, while managing escalation. For logistics and sustainment, we will reinforce our capability to quickly mobilize and deploy forces and to sustain high-intensity joint denial operations despite kinetic and non-kinetic attack and disruption.

Achieving success in these operational areas requires tightly linking our concepts and capabilities for operating forces. The Department will continue to develop operational concepts that realistically expand U.S. options and constrain those of potential adversaries. The Department will explore force employment concepts and capabilities that degrade adversary power projection while weighing crisis stability and escalation risk; integrate new technologies; experiment with creative applications of existing capabilities; and selectively share the most effective asymmetric capabilities with threatened Allies and partners.

The Department's force development and design program will integrate new operational concepts with the force attributes required to strengthen and sustain deterrence, and to prevail in conflict if necessary. The Department will prioritize a future force that is:

- *Lethal:* Possesses anti-access/area-denial-insensitive strike capabilities that can penetrate adversary defenses at range.
- *Sustainable:* Securely and effectively provides logistics and sustainment to continue operations in a contested and degraded environment, despite adversary disruption.
- *Resilient:* Maintains information and decision advantage, preserves command, control, and communications systems, and ensures critical detection and targeting operations.
- *Survivable:* Continues generating combat power to support strike capabilities and enablers for logistics and sustainment, despite adversary attacks.
- *Agile and Responsive:* Rapidly mobilizes forces, generates combat power, and provides logistics and sustainment, even given adversary regional advantages and climate change impacts.

The Joint Force will remain prepared to employ combat-ready forces on short notice to address aggression or crisis, an ability critical to strengthening deterrence. At the same time, the Department will make sure that day-to-day requirements to deploy and operate forces do not erode readiness for future missions, or bias investments towards extant but increasingly less effective capabilities at the expense of building capability and proficiency for advanced threats.

The Department is establishing a new framework for strategic readiness, enabling a more comprehensive, data-driven assessment and reporting of readiness to ensure greater alignment with NDS priorities. To give the future Joint Force effective advocates today, current availability benchmarks and demands will be assessed against long-term force readiness, sustainability, recapitalization, and modernization objectives, in addition to priority threats and missions. Strategic readiness planning will take climate change impacts into account.

VIII. BUILDING ENDURING ADVANTAGES

Building the future Joint Force that we need to advance the goals of this strategy requires broad and deep change in how we produce and manage military capability. U.S. competitors increasingly hold at risk our defense ecosystem – the Department, the defense industrial base, and the landscape of private sector and academic enterprises that innovate and support the systems on which the Joint Force depends. To construct an enduring foundation for our future military advantage, the Department – working in concert with other U.S. Federal departments and agencies, Congress, the private sector, and Allies and partners – will take swift action to affect change in five ways.

On each dimension, the Department can and will leverage asymmetric American advantages: our entrepreneurial spirit; our diversity and pluralistic system of ideas and technology generation that drive unparalleled creativity, innovation, and adaptation; and our military's combined-arms ethos and years of combat-tested operational and coalition experience.

Transform the Foundation of the Future Force. Building the Joint Force called for by this strategy requires overhauling the Department's force development, design, and business management practices. Our current system is too slow and too focused on acquiring systems not designed to address the most critical challenges we now face. This orientation leaves little incentive to design open systems that can rapidly incorporate cutting-edge technologies, creating longer-term challenges with obsolescence, interoperability, and cost effectiveness. The Department will instead reward rapid experimentation, acquisition, and fielding. We will better align requirements, resourcing, and acquisition, and undertake a campaign of learning to identify the most promising concepts, incorporating emerging technologies in the commercial and military sectors for solving our key operational challenges. We will design transition pathways to divest from systems that are less relevant to advancing the force planning guidance, and partner to equip the defense industrial base to support more relevant modernization efforts.

Make the Right Technology Investments. The United States' technological edge has long been a foundation of our military advantage. The Department will support the innovation ecosystem, both at home and in expanded partnerships with our Allies and partners. We will fuel research and development for advanced capabilities, including in directed energy, hypersonics, integrated sensing, and cyber. We will seed opportunities in biotechnology, quantum science, advanced materials, and clean-energy technology. We will be a fast-follower where market forces are driving commercialization of militarily-relevant capabilities in trusted artificial intelligence and autonomy, integrated network system-of-systems, microelectronics, space, renewable energy generation and storage, and human-machine interfaces. Because Joint Force operations increasingly rely on data-driven technologies and integration of diverse data sources, the Department will implement institutional reforms that integrate our data, software, and artificial intelligence efforts and speed their delivery to the warfighter.

Adapt and Fortify Our Defense Ecosystem. The Department will strengthen our defense industrial base to ensure that we produce and sustain the full range of capabilities needed to give U.S., allied, and partners forces a competitive advantage. We will bolster support for our unparalleled network of research institutions, both university-affiliated and federally-funded research and development centers, as well as small businesses and innovative technology firms. The Department will act urgently to better support advanced manufacturing processes (e.g., aircraft and ship building, preferred munition production) to increase our ability to reconstitute the Joint Force in a major conflict. We will work closely with Congress on reforms needed to accelerate these transitions. We will increase collaboration with the private sector in priority areas, especially with the commercial space industry, leveraging its technological advancements and entrepreneurial spirit to enable new capabilities. We will prioritize joint efforts with the full range of domestic and international partners in the defense ecosystem to fortify the defense industrial base, our logistical systems, and relevant global supply chains against subversion, compromise, and theft.

Strengthen Resilience and Adaptability. Building enduring advantages also means having the elasticity and readiness in the defense ecosystem to adapt to emerging threats such as climate change. We will strengthen the Department's ability to withstand and recover quickly from climate events. We will continue to analyze climate change impacts on the Joint Force, and will integrate climate change into threat assessments. We will increase resilience of military installations and at affected access and basing locations vital for deterrence and warfighting objectives. We will take climate extremes into account in decisions related to training and equipping the force. We will make reducing energy demand a priority, and seek to adopt more efficient and clean-energy technologies that reduce logistics requirements in contested or austere environments.

Cultivate the Workforce We Need. People execute the strategy. To recruit and retain the most talented Americans, we must change our institutional culture and reform how we do business. The Department will attract, train, and promote a workforce with the skills and abilities we need to creatively solve national security challenges in a complex global environment.

We will streamline and simplify hiring practices for both applicants and managers. We will offer competitive incentives, flexible work environments, and rotational assignments to better compete with the private sector. We will aggressively seek to fill specific technology gaps, including in cyber, data, and artificial intelligence specializations, and work with colleges and universities to help build our future workforce. The Department will encourage personnel to gain deep expertise not only about key technologies but also about our competitors and the future of warfare. In part by refocusing the curricula of Professional Military Education institutions, we will foster critical thinking and analytical skills, fluency in critical languages, and integration of insights from the social and behavioral sciences. We will increase the availability of fellowships, internships, and rotational assignments – including in the private sector – to grow the skills of our workforce, provide a broad range of experiences, create collaboration opportunities, and carry best practices back to the Department.

We will lead with our values. We will broaden our recruitment pool to reflect all of the United States, including traditionally marginalized communities and promoting a diversity of backgrounds and experiences to drive innovative solutions across the enterprise. And we will take care of our people, never sparing support for the health, safety, and welfare of service members and their families, as well as our civilian employees.

Our efforts will ultimately fail if we allow problems in our own ranks to undermine our cohesion, performance, and ability to advance our mission. The Department will continue to take tangible steps to counter sexual assault and harassment across our Armed Forces. We will continue to work with Congress as critical changes are made, informed by the recommendations of the Independent Review Commission on Sexual Assault in the Military, to increase accountability; ensure we have a culture of zero tolerance for harassment and assault; enable active prevention, and support those who come forward. Finally, the Department will seek to eradicate all forms of extremism in our ranks.

IX. RISK MANAGEMENT

No strategy will perfectly anticipate the threats we may face, and we will doubtless confront challenges in execution. This strategy shifts focus and resources toward the Department's highest priorities, which will inevitably affect risk profiles in other areas. An NDS that is clear-eyed about this reality will help ensure that the Department effectively implements the strategy and assesses its impact over time.

Foresight Risks. In developing this strategy, the Department considered the risks stemming from inaccurate predictions, including unforeseen shocks in the security environment. Chief among these: The rate at which a competitor modernizes its military, and the conditions under which competitor aggression manifests, could be different than anticipated. Our threat assessments may prove to be either over- or underestimated. We might fail to anticipate which technologies and capabilities may be employed and change our relative military advantage. A new pandemic or the impacts of climate change could impair operations or readiness.

Foresight risks can be hedged and of course must be managed when they arise. Hedging options include continuing to exercise the Joint Force against multiple contingencies and developing new, more resource-efficient concepts of operation, in light of continuously updated intelligence and security assessments.

Implementation Risks. This strategy will not be successful if we fail to resource its major initiatives or fail to make the hard choices to align available resources with the strategy's level of ambition; if we do not effectively incorporate new technologies and identify, recruit, and leverage new talent; and if we are unsuccessful in reducing the barriers that limit collaboration with Allies and partners. We aim to mitigate these and other risks through ruthless prioritization. For example, we must not over-exert, reallocate, or redesign our forces for regional crises that cross the threshold of risk to preparedness for our highest strategic priorities. Implementation risks will be forestalled by leadership focus and discipline, as well as consistent attention to monitoring implementation in line with clear metrics to enable assessment and course correction.

X. CONCLUSION

The United States is endowed with remarkable qualities that confer great advantages, including in the realm of national security. We are a free people devoted to democracy and the rule of law. Our combination of diversity, free minds, and free enterprise drives extraordinary innovation and adaptability. We are a member of an unparalleled and unprecedented network of alliances and partnerships. Together, we share many common values and a common interest in defending the stable and open international system, the basis for the most peaceful and prosperous epoch in modern history.

We must not lose sight of these qualities and advantages. Our generational challenge is to combine and integrate them, developing our capabilities together with those of our Allies and partners to sustain and strengthen an international system under threat.

This NDS has outlined the courses of action the Department of Defense will take to help meet this challenge. We are confident in success. Our country has faced and prevailed in multi-year competitions with major powers threatening or using force to subjugate others on more than one occasion in the past. Working in service of the American people, and in collaboration with our partners around the world, the men and women of our superbly capable Joint Force stand ready to do so again.

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2022 Nuclear Posture Review

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I. A COMPREHENSIVE, BALANCED APPROACH TO DEFENDING VITAL NATIONAL SECURITY INTERESTS AND REDUCING NUCLEAR RISKS

This Nuclear Posture Review (NPR) describes United States nuclear strategy, policy, posture, and forces in support of the National Security Strategy (NSS) and National Defense Strategy (NDS). It reaffirms a continuing commitment to a safe, secure, and effective nuclear deterrent and strong and credible extended deterrence. Strategic deterrence remains a top priority mission for the Department of Defense (DoD) and the Nation. For the foreseeable future, nuclear weapons will continue to provide unique deterrence effects that no other element of U.S. military power can replace. To deter aggression and preserve our security in the current security environment, we will maintain nuclear forces that are responsive to the threats we face.

U.S. nuclear weapons deter aggression, assure allies and partners, and allow us to achieve Presidential objectives if deterrence fails. In a dynamic security environment, a safe, secure, and effective nuclear deterrent is foundational to broader U.S. defense strategy and the extended deterrence commitments we have made to allies and partners. Security architectures in the Euro-Atlantic and Indo-Pacific regions are a critical U.S. strategic advantage over those governments that challenge the rules-based international order. These regional security architectures are a key pillar of the NDS; this NPR underscores the linkage between the conventional and nuclear elements of collective deterrence and defense.

Deterrence alone will not reduce nuclear dangers. The United States will pursue a comprehensive and balanced approach that places a renewed emphasis on arms control, non-proliferation, and risk reduction to strengthen stability, head off costly arms races, and signal our desire to reduce the salience of nuclear weapons globally. Mutual, verifiable nuclear arms control offers the most effective, durable and responsible path to achieving a key goal: reducing the role of nuclear weapons in U.S. strategy. Despite the challenges in the current security environment, the United States will continue to pursue engagement with other nuclear-armed states where possible to reduce nuclear risks. We will do so with realistic expectations, understanding that progress requires reliable partners prepared to engage responsibly and on the basis of reciprocity, and with whom we can establish a degree of trust.

Russia's invasion of Ukraine underscores that nuclear dangers persist, and could grow, in an increasingly competitive and volatile geopolitical landscape. The Russian Federation's unprovoked and unlawful invasion of Ukraine in 2022 is a stark reminder of nuclear risk in contemporary conflict. Russia has conducted its aggression against Ukraine under a nuclear shadow characterized by irresponsible saber-rattling, out of cycle nuclear exercises, and false narratives concerning the potential use of weapons of mass destruction (WMD). In brandishing Russia's nuclear arsenal in an attempt to intimidate Ukraine and the North Atlantic Treaty Organization (NATO), Russia's leaders have made clear that they view these weapons as a shield behind which to wage unjustified aggression against their neighbors. Irresponsible Russian

statements and actions raise the risk of deliberate or unintended escalation. Russia's leadership should have no doubt regarding the resolve of the United States to both resist nuclear coercion and act as a responsible nuclear power.

As long as nuclear weapons exist, the United States and other nuclear weapon states have a special charge to be responsible custodians of these nuclear capabilities and work with a sense of urgency to create a security environment that would ultimately allow for their elimination. Nuclear weapons have not been employed in more than 75 years. While ensuring our security, our goal is to extend this record of non-use and reduce the risk of a nuclear war that could have catastrophic effects for the United States and the world.

Mindful of this imperative, in 2022 the leaders of the five declared Nuclear Weapon States (France, People's Republic of China, Russian Federation, United Kingdom, United States (P5)) affirmed that a nuclear war cannot be won and must never be fought, and that nuclear weapons should serve defensive purposes, deter aggression, and prevent war. The P5 leaders also reaffirmed their commitment to their disarmament-related obligations under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and their intent to strengthen stability and prevent an arms race. Russia's rhetoric and actions in Ukraine are inconsistent with and undermine this P5 statement. China also has a responsibility as an NPT nuclear weapons state and a member of the P5 to engage in talks that will reduce the risks of miscalculation and address destabilizing military dynamics.

The United States is committed to the modernization of its nuclear forces, nuclear command, control, and communications (NC3) system, and production and support infrastructure, and to sustaining fielded systems through the transition to their replacements. Our principal competitors continue to expand and diversify their nuclear capabilities, to include novel and destabilizing systems, as well as non-nuclear capabilities that could be used to conduct strategic attacks. They have demonstrated little interest in reducing their reliance on nuclear weapons. By contrast, the United States is focused on the timely replacement of legacy fielded systems that are rapidly approaching their end of service life.

The NPR identifies current or planned nuclear capabilities that are no longer required to meet our deterrence needs. Additionally, consistent with its concept for integrated deterrence, DoD will seek to identify and assess the ability of non-nuclear capabilities to contribute to deterrence, and will integrate these capabilities into operational plans, as appropriate. While we are taking steps to advance the goal of reducing reliance on nuclear weapons, more far-reaching opportunities to move in this direction will require enduring improvement in the security environment, a commitment to verifiable arms control among the major nuclear powers, further progress in developing non-nuclear capabilities, and an assessment of how nuclear-armed competitors and adversaries may react. The United States is committed to making progress toward this goal as security, political, and technology conditions evolve in ways that allow us to do so.

Meeting our nuclear policy goals would not be possible without a capable, motivated workforce. The military and civilian personnel who work every day in the nuclear enterprise are a national

asset whose accomplishments are rarely seen but vitally important. Preparing the next generation of deterrence and arms control leaders across the government and among Allies and partners is a critical task. We will sustain and strengthen activities to recruit, retain, and support the professional development of Service members and civilians working in and supporting the nuclear field.

The 2022 NPR has made the following decisions to ensure a safe, secure, and effective deterrent while taking responsible steps to advance the goal of reducing the role of nuclear weapons in U.S. strategy. This approach offers a sound path toward sustained security and stable deterrence.

- Adopt a strategy and declaratory policy that maintain a very high bar for nuclear employment while assuring Allies and partners, and complicating adversary decision calculus.
- Adopt an integrated deterrence approach that works to leverage nuclear and non-nuclear capabilities to tailor deterrence under specific circumstances.
- Eliminate "hedge against an uncertain future" as a formal role of nuclear weapons.
- Take steps to strengthen extended deterrence and Allied assurance.
- Pursue enhanced security through arms control, strategic stability, non-proliferation, and reducing the risks of miscalculation.
- Affirm full-scope Triad replacement and other nuclear modernization programs, including NC3.
- Retire the B83-1 gravity bomb.
- Cancel the nuclear-armed Sea-Launched Cruise Missile (SLCM-N) program.
- Deliver a modern, adaptive nuclear security enterprise based on an integrated strategy for risk management, production-based resilience, science and technology innovation, and workforce initiatives.

II. THE SECURITY ENVIRONMENT AND DETERRENCE CHALLENGES

The NPR contributes to a broader strategic framework that recognizes the growing risk of military confrontation with or among nuclear powers and the urgent need to sustain and strengthen deterrence. In large part due to the actions of our strategic competitors, the international security environment has deteriorated in recent years. The People's Republic of China (PRC) is the overall pacing challenge for U.S. defense planning and a growing factor in evaluating our nuclear deterrent. The PRC has embarked on an ambitious expansion, modernization, and diversification of its nuclear forces and established a nascent nuclear triad. The PRC likely intends to possess at least 1,000 deliverable warheads by the end of the decade.

While the end state resulting from the PRC's specific choices with respect to its nuclear forces and strategy is uncertain, the trajectory of these efforts points to a large, diverse nuclear arsenal with a high degree of survivability, reliability, and effectiveness. This could provide the PRC with new options before and during a crisis or conflict to leverage nuclear weapons for coercive purposes, including military provocations against U.S. Allies and partners in the region.

Russia continues to emphasize nuclear weapons in its strategy, modernize and expand its nuclear forces, and brandish its nuclear weapons in support of its revisionist security policy. Its modern nuclear arsenal, which is expected to grow further, presents an enduring existential threat to the United States and our Allies and partners. For more than twenty years, Russia has pursued a wide-ranging military modernization program that includes replacing legacy strategic nuclear systems and steadily expanding and diversifying nuclear systems that pose a direct threat to NATO and neighboring countries. This includes up to 1,550 accountable deployed warheads on strategic delivery vehicles that are limited by the New START Treaty, as well as nuclear forces that are not numerically constrained by any arms control treaty. For example, Russia has an active stockpile of up to 2,000 non-strategic nuclear warheads that is not treaty-limited. Similarly, Russia is pursuing several novel nuclear-capable systems designed to hold the U.S. homeland or Allies and partners at risk, some of which are also not accountable under New START.

By the 2030s the United States will, for the first time in its history, face two major nuclear powers as strategic competitors and potential adversaries. This will create new stresses on stability and new challenges for deterrence, assurance, arms control, and risk reduction.

The PRC and Russia are also working to augment their growing nuclear forces with a broader set of kinetic and non-kinetic capabilities, including cyber, space, information, and advanced conventional strike. Each seeks to integrate these multi-domain capabilities to support coercive strategies and enable military campaigns intended to present the Joint Force with operational dilemmas. The PRC and Russia also likely possess capabilities relevant to chemical and biological warfare that pose a threat to U.S., Allied, and partner forces, military operations, and civilian populations.

The Democratic People's Republic of North Korea (North Korea), while not a rival on the same scale as the PRC and Russia, nonetheless also presents deterrence dilemmas for the United States and its Allies and partners. It poses a persistent threat and growing danger to the U.S. homeland and the Indo-Pacific region as it expands, diversifies, and improves its nuclear, ballistic missile, and non-nuclear capabilities, including its chemical weapon stockpile. A crisis or conflict on the Korean Peninsula could involve a number of nuclear-armed actors, raising the risk of broader conflict.

Iran does not today possess a nuclear weapon and we currently believe it is not pursuing one. However, recent Iranian activities previously constrained by the Joint Comprehensive Plan of Action (JCPOA) are of great concern as they are applicable to a nuclear weapons program. U.S. policy is to prevent Iran from acquiring a nuclear weapon.

The acquisition of nuclear weapons by additional states could lead to new challenges for deterrence. Developments in the security environment, including actions taken by Iran and North Korea, and Russia's aggression against Ukraine, could create or deepen proliferation incentives.

Additionally, nuclear terrorism continues to pose a threat to the United States and our Allies and partners. Terrorists remain interested in using WMD in attacks against U.S. interests and possibly the U.S. homeland. Dual-use knowledge, goods, and technology applicable to WMD continue to proliferate.

The security environment poses a number of critical challenges for deterrence.

> ***The current and growing salience of nuclear weapons in the strategies and forces of our competitors heightens the risks associated with strategic competition and the stakes of crisis and military confrontation***. As the NDS notes, we must be able to deter conventional aggression that has the potential to escalate to nuclear employment of any scale. Russia presents the most acute example of this problem today given its significantly larger stockpile of regional nuclear systems and the possibility it would use these forces to try to win a war on its periphery or avoid defeat if it was in danger of losing a conventional war. Deterring Russian limited nuclear use in a regional conflict is a high U.S. and NATO priority.

> ***The PRC's nuclear expansion and the changes this could bring to its strategy present new complexities***. In the near-term, we must factor this into our arms control and risk reduction approaches with Russia. We also recognize that as the security environment evolves, it may be necessary to consider nuclear strategy and force adjustments to assure our ability to achieve deterrence and other objectives for the PRC – even as we continue to do so for Russia. Our plans and capabilities must also account for the fact that the PRC increasingly will be able to execute a range of nuclear strategies to advance its goals.

Opportunistic aggression could create deterrence challenges. Should we find ourselves in a large-scale military confrontation with a major power or regional adversary, the Joint Force will need to be postured with military capabilities – including nuclear weapons – that can deter and defeat other actors who may seek to take advantage of this scenario to engage in opportunistic aggression. In such circumstances, we will also need to be prepared to fully leverage other instruments of national power and the capabilities our Allies and partners can bring to bear.

Multi-domain stability challenges will grow. As all major powers develop multi-domain approaches, the United States and our Allies and partners will face new dilemmas for deterrence and managing escalation risk. One challenge arises from advances in non-nuclear capabilities, including in the cyber, space, air, and undersea domains, that likely will create complex and unpredictable pathways for conflict escalation, especially where collective experience, common understandings, and established norms of behavior (such as cyber and space) are lacking. A related challenge is the lack of collective experience and potential limited understanding of the interplay between nuclear and non-nuclear strategic capabilities in shaping a crisis or conflict.

III. THE ROLE OF NUCLEAR WEAPONS IN U.S. STRATEGY

Since the end of the Cold War, the United States has substantially reduced the size and diversity of its nuclear forces, narrowed the circumstances under which it would consider employing these forces, actively sought reciprocal force reductions with Russia, and made progress in global nonproliferation and risk reduction. Unlike some of its competitors, the United States will not use nuclear weapons to intimidate others or as part of an expansionist security policy. This policy of restraint continues to shape the role of nuclear weapons in U.S. strategy. The United States is committed to taking steps to reduce the role of nuclear weapons in our strategy as well as the risks of nuclear war, while also ensuring our strategic deterrent remains safe, secure, and effective, and our extended deterrence commitments remain strong and credible.

The Role of Nuclear Weapons. The NPR affirms the following roles for nuclear weapons:

- Deter strategic attacks;
- Assure Allies and partners; and
- Achieve U.S. objectives if deterrence fails.

These roles are interrelated and complementary and provide the basis for developing and assessing our nuclear strategies, policies, and capabilities. "Hedging against an uncertain future" is no longer a stated role for nuclear weapons. The United States will continue to carry out robust risk management strategies within the nuclear enterprise so that it is capable of delivering credible deterrence even in the face of significant uncertainties and unanticipated challenges. This requires sustaining a set of initiatives and actions in the nuclear enterprise that over time builds enduring advantage and resilience in our stockpile, production complex, and science and technology efforts. Our approach to mitigating programmatic, geopolitical, technological, and operational risk through a resilient and adaptive nuclear enterprise is discussed below.

Deter Strategic Attacks. The United States affirms that its nuclear forces deter all forms of strategic attack. They serve to deter nuclear employment of any scale directed against the U.S. homeland or the territory of Allies and partners, whether on the ground, in the air, at sea, or in space. 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 have strategic effects. We must therefore be able to deter both large-scale and limited nuclear attacks from a range of adversaries. The capability to deter limited nuclear attacks is critical given that some competitors have developed strategies for warfare that may rely on the threat of nuclear escalation in order to terminate a conflict on advantageous terms. The ability to deter limited nuclear use is thus key to deterring non-nuclear aggression. If we are not confident we can deter escalation, it will be more difficult for our leaders to make the decision to project conventional military power to protect vital national security interests – and far more dangerous to do so should that decision be made.

Consistent with prior reviews, our nuclear strategy accounts for existing and emerging non-nuclear threats with potential strategic effect for which nuclear weapons are necessary to deter. We concluded that nuclear weapons are required to deter not only nuclear attack, but also a narrow range of other high consequence, strategic-level attacks. This is a prudent approach given the current security environment and how it could further evolve.

Assure Allies and Partners. The NSS and NDS require strengthening security architectures in key regions in order to fully leverage the capabilities of Allies and partners to deter and, if necessary, defeat adversary aggression. The U.S. global alliance and partnership network is a military center of gravity. U.S. extended nuclear deterrence is foundational to this network. Thus, assuring Allies and partners that these commitments are credible is central to U.S. national security and defense strategy.

Allies must be confident that the United States is willing and able to deter the range of strategic threats they face, and mitigate the risks they will assume in a crisis or conflict. Modernizing U.S. nuclear forces is key to assuring Allies that the United States is committed and capable of deterring the range of threats U.S. nuclear strategy addresses. Extended nuclear deterrence contributes to U.S. non-proliferation goals by giving Allies and partners confidence that they can resist strategic threats and remain secure without acquiring nuclear weapons of their own. Part of our assurance to Allies and partners is a continued and strengthened commitment to arms control, nuclear nonproliferation, and nuclear risk reduction to improve collective security by reducing or constraining adversary capabilities.

Achieve U.S. Objectives if Deterrence Fails. We will maintain a safe, secure, and effective nuclear deterrent and flexible nuclear capabilities to achieve our objectives should the President conclude that the employment of nuclear weapons is necessary. In such a circumstance, the United States would seek to end any conflict at the lowest level of damage possible on the best achievable terms for the United States and its Allies and partners. As part of NPR implementation, the United States will update nuclear weapons employment guidance in accordance with the policy and strategy established by the President following publication of this report.

United States nuclear weapons employment guidance is approved by the President, and all nuclear plans are reviewed and approved by the Secretary of Defense. These plans are prepared with advice from the Chairman of the Joints Chiefs of Staff, among other senior officials. Legal advice is integral to the preparation of these documents and includes review of their consistency with the Law of Armed Conflict (LOAC), which is authoritatively stated for DoD personnel in the DoD Law of War Manual. Longstanding DoD policy is to comply with LOAC in all armed conflicts, however characterized, and the DoD Law of War Manual recognizes that "[t]he law of war governs the use of nuclear weapons, just as it governs the use of conventional weapons." In addition, longstanding U.S. policy is to not purposely threaten civilian populations or objects, and the United States will not intentionally target civilian populations or objects in violation of LOAC.

Declaratory Policy. United States declaratory policy reflects a sensible and stabilizing approach to deterring a range of attacks in a dynamic security environment. This balanced policy maintains a very high bar for nuclear employment, while also complicating adversary decision calculus, and assuring Allies and partners. *As long as nuclear weapons exist, the fundamental role of nuclear weapons is to deter nuclear attack on the United States, our Allies, and partners. The United States would only consider the use of nuclear weapons in extreme circumstances to defend the vital interests of the United States or its Allies and partners.*

The United States will not use or threaten to use nuclear weapons against non-nuclear weapon states that are party to the NPT and in compliance with their nuclear non-proliferation obligations. For all other states, there remains a narrow range of contingencies in which U.S. nuclear weapons may still play a role in deterring attacks that have strategic effect against the United States or its Allies and partners.

Declaratory policy is informed by the threat, assessed adversary perceptions, Ally and partner perspectives, and our strategic risk reduction objectives. We conducted a thorough review of a broad range of options for nuclear declaratory policy – including both No First Use and Sole Purpose policies – and concluded that those approaches would result in an unacceptable level of risk in light of the range of non-nuclear capabilities being developed and fielded by competitors that could inflict strategic-level damage to the United States and its Allies and partners. Some Allies and partners are particularly vulnerable to attacks with non-nuclear means that could produce devastating effects. We retain the goal of moving toward a sole purpose declaration and we will work with our Allies and partners to identify concrete steps that would allow us to do so.

Nuclear Weapons in U.S. Defense Strategy. While the United States maintains a very high bar for the employment of nuclear weapons, our nuclear posture is intended to complicate an adversary's entire decision calculus, including whether to instigate a crisis, initiate armed conflict, conduct strategic attacks using non-nuclear capabilities, or escalate to the use of nuclear weapons on any scale. Our nuclear deterrent thus undergirds all our national defense priorities, including defending the U.S. homeland, deterring strategic attacks against the United States, our Allies and partners, and deterring regional aggression with emphasis on the PRC and Russia. Additionally, DoD's goal to build a resilient defense ecosystem and Joint Force bears directly on our nuclear posture. Making the overall defense enterprise more resilient requires investing in the nuclear enterprise to ensure it is capable of responding in a timely way to changes in the security environment or challenges that arise in our nuclear force.

We will deter through safe, secure, and effective nuclear forces that enable country-specific strategies and plans, extended deterrence commitments, and an integrated deterrence approach that incorporates suitable non-nuclear capabilities tailored to specific threat scenarios. This approach requires modernizing our nuclear forces, NC3, production infrastructure, and science and technology and industrial base; strengthening extended deterrence relationships; and reinforcing our nuclear forces with defenses against adversaries' conventional, cyber, space, information, chemical, biological, radiological, and nuclear capabilities.

A key goal of integrated deterrence is to develop tailored options that shape adversary perceptions of benefits and costs. The role of nuclear weapons is well established and embedded in strategic deterrence policy and plans. Non-nuclear capabilities may be able to complement nuclear forces in strategic deterrence plans and operations in ways that are suited to their attributes and consistent with policy on how they are to be employed. A pragmatic approach to integrated deterrence will seek to determine how the Joint Force can combine nuclear and non-nuclear capabilities in complementary ways that leverage the unique attributes of a multi-domain set of forces to enable a range of deterrence options backstopped by a credible nuclear deterrent. Developing the needed operational and organizational concepts will take time and require additional research, evaluation, and experience. This will be a focus of NPR and NDS implementation.

Another important element of integrated deterrence is better synchronizing nuclear and non-nuclear planning, exercises, and operations. Our goal is to strengthen deterrence and raise the nuclear threshold of our potential adversaries in regional conflict by undermining adversary confidence in strategies for limited war that rely on the threat of nuclear escalation. When engaged in conventional operations against a nuclear-armed adversary the Joint Force must be able to survive, maintain cohesion, and continue to operate in the face of limited nuclear attacks. This form of resilience sends a distinct deterrence message to an adversary – that limited nuclear escalation will not render U.S., Allied, and partner forces incapable of achieving our warfighting aims. It is also critically important that the Joint Force can fight and win in a chemical, biological, radiological, and nuclear (CBRN)-contaminated environment. Further development of plans and force requirements to enable military operations in a nuclear environment will be a focus of NPR implementation, including requirements to ensure the resilience of conventional systems to limited nuclear use effects and enhanced mission assurance of space assets critical to conventional force operations.

DoD also seeks to integrate its activities, operations, and strategies more widely and deeply with Allies and partners to signal to adversaries that aggression will be met with a collective response. Greater engagement with Ally and partner forces adds uncertainty and complexity to adversary planning. An adversary may choose restraint if it believes it is challenging not just the United States but a unified alliance or coalition prepared to share risks, confront aggression, and impose prohibitive costs. Extended nuclear deterrence relationships play an important role here by operationalizing collective defense that couples U.S. and Allied security and gives Allies and partners the confidence to resist coercion and vigorously defend shared interests. Even as adversaries seek to decouple the United States and its Allies, the strength of these extended deterrence relationships conveys to them the risk that local aggression could widen, with potentially catastrophic consequences.

IV. TAILORED NUCLEAR DETERRENCE STRATEGIES

Country-Specific Approaches. Central to U.S. deterrence strategy is the credibility of our nuclear forces to hold at risk what adversary leadership values most. Effectively deterring – and restoring deterrence if necessary – requires tailored strategies for potential adversaries that reflect our best understanding of their decision-making and perceptions.

The PRC is increasing its capability to threaten the United States and our Allies and partners with nuclear weapons. The range of nuclear options available to the PRC leadership will expand in the years ahead, allowing it potentially to adopt a broader range of strategies to achieve its objectives, to include nuclear coercion and limited nuclear first use. We will maintain a flexible deterrence strategy and force posture that continues to clearly convey to the PRC that the United States will not be deterred from defending our Allies and partners, or coerced into terminating a conflict on unacceptable terms. Forces that provide this flexibility include the W76-2 low yield submarine-launched ballistic missile warhead, globally-deployable bombers, dual-capable fighter aircraft, and air-launched cruise missiles. Our intent is to prevent the PRC from mistakenly concluding that it could gain advantage through any employment of nuclear weapons, however limited. The NPR recognizes that as the security environment evolves, changes in U.S. strategy and force posture may be required to sustain the ability to achieve deterrence, assurance, and employment objectives for both Russia and the PRC.

Russia remains the U.S. rival with the most capable and diverse nuclear forces. Today it is unique in the combination of strategic and non-strategic nuclear forces it fields that enables nuclear employment ranging from large-scale attacks on the homeland to limited strikes in support of a regional military campaign. To deter large-scale attacks, we will field a modern, resilient nuclear Triad. To deter theater attacks and nuclear coercion of Allies and partners, we will bolster the Triad with capabilities that further strengthen regional deterrence, such as F-35A dual-capable fighter aircraft (DCA) equipped with the B61-12 bomb; the W76-2 warhead; and the Long-Range Standoff (LRSO) weapon. These flexible, tailorable capabilities are key to ensuring that Russia's leadership does not miscalculate regarding the consequences of nuclear use on any scale, thereby reducing their confidence in both initiating conventional war against NATO and considering the employment of non-strategic nuclear weapons in such a conflict.

The PRC and Russia are at different stages in their nuclear weapons development but each poses a major and growing nuclear threat to the United States and its Allies and partners. There is some opportunity to reduce the role of nuclear weapons in our strategies for the PRC and Russia in circumstances where the threat of a nuclear response may not be credible and where suitable non-nuclear options may exist or may be developed. At the same time, we believe that major changes in the role of nuclear weapons in our strategies for the PRC and Russia will require verifiable reductions or constraints on their nuclear forces; otherwise the United States would assume unacceptable deterrence and assurance risks.

In a potential conflict with a competitor, the United States would need to be able to deter opportunistic aggression by another competitor. We will rely in part on nuclear weapons to help mitigate this risk, recognizing that a near-simultaneous conflict with two nuclear-armed states would constitute an extreme circumstance.

Our strategy for North Korea recognizes the threat posed by its nuclear, chemical, missile, and conventional capabilities, and in particular the need to make clear to the Kim regime the dire consequences should it use nuclear weapons. Any nuclear attack by North Korea against the United States or its Allies and partners is unacceptable and will result in the end of that regime. There is no scenario in which the Kim regime could employ nuclear weapons and survive. Short of nuclear use, North Korea can also conduct rapid strategic attacks in East Asia. United States nuclear weapons continue to play a role in deterring such attacks. Further, we will hold the regime responsible for any transfers it makes of nuclear weapons technology, material, or expertise to any state or non-state actor.

Iran does not currently pose a nuclear threat but continues to develop capabilities that would enable it to produce a nuclear weapon should it make the decision to do so. The United States relies on non-nuclear overmatch to deter regional aggression by Iran as long as Iran does not possess nuclear weapons. It is U.S. policy that Iran will not be allowed to obtain a nuclear weapon. This policy has been consistent across successive administrations since the public disclosure of a clandestine Iranian nuclear program.

Managing the Risks of Escalation and Miscalculation. Changes in the security environment and new capabilities – particularly in the cyber and space domains – will contribute in crisis or conflict to an increasingly complex operating environment. In this type of environment, deterring aggression and managing escalation will be more challenging. Accordingly, in developing and executing tailored deterrence strategies, we will follow guidelines for managing escalation risk. These guidelines will reflect general principles and approaches that favor crisis stability, such as architectural resilience and defenses that reduce first mover advantages in cyber and space; operational concepts and capabilities that provide options intended to limit escalation risk; and resilient, stress-tested weapon systems and command and control networks.

Additionally, in crisis or conflict we will seek to manage escalation risk by addressing adversary misperceptions that may exist regarding U.S. resolve, capabilities, strategic intentions, or war aims that could lead to miscalculation. This can be accomplished through the way we posture our nuclear and non-nuclear forces, public and private messaging, and crisis communication and management mechanisms. It is equally important, in building operational plans and making decisions regarding nuclear posture and readiness, to reduce the risk that the United States will misinterpret adversary intentions or capabilities, or unknowingly cross a misunderstood or ambiguous threshold for adversary nuclear use. Intelligence analysis, simulations and wargames, "red teaming," and other means offer actionable insights to U.S. leaders that help mitigate this risk.

Peacetime dialogue with potential adversaries can facilitate efforts in a crisis or war to reduce risks of misperception that could lead to escalation. Our goals in discussions on strategic stability include improving transparency and mutual understanding of threat perceptions, policies, doctrine, and capabilities, as well as establishing or enhancing crisis management processes that can help avoid or limit conflict escalation. The United States has substantial experience in strategic dialogue and crisis management with Russia, but has made little progress with the PRC despite consistent U.S. efforts. The world expects nuclear powers to act responsibly, including on risk reduction and crisis communications, and the United States will continue to pursue these efforts with China.

We also recognize the risk of unintended nuclear escalation, which can result from accidental or unauthorized use of a nuclear weapon. The United States has extensive protections in place to mitigate this risk. As an example, U.S. intercontinental ballistic missiles (ICBMs) are not on "hair trigger" alert. These forces are on day-to-day alert, a posture that contributes to strategic stability. Forces on day-to-day alert are subject to multiple layers of control, and the United States maintains rigorous procedural and technical safeguards to prevent misinformed, accidental, or unauthorized launch. Survivable and redundant sensors provide high confidence that potential attacks will be detected and characterized, enabling policies and procedures that ensure a deliberative process allowing the President sufficient time to gather information and consider courses of action. In the most plausible scenarios that concern policy leaders today, there would be time for full deliberation. For these reasons, while the United States maintains the capability to launch nuclear forces under conditions of an ongoing nuclear attack, it does not rely on a launch-under-attack policy to ensure a credible response. Rather, U.S. nuclear forces are postured to withstand an initial attack. In all cases, the United States will maintain a human "in the loop" for all actions critical to informing and executing decisions by the President to initiate and terminate nuclear weapon employment.

As confidence- and security-building measures, the United States has taken steps over time to modify its nuclear posture to enhance stability. We continue to maintain our longstanding practice of open-ocean targeting of strategic nuclear forces day-to-day. Additionally, while we retain the capability to upload a portion of the ICBM force, we continue to configure these missiles with only one warhead day-to-day, thereby reducing adversary incentive to launch a first strike. Further "de-alerting" ICBMs or other steps to reduce alert levels could undermine crisis stability by heightening adversary incentives to attack or to increase nuclear readiness as a coercive measure.

DoD will continue working to gain a deeper understanding of potential risks to crisis stability. In addition, as directed by the National Defense Authorization Act for Fiscal Year 2022, DoD will commission an independent review of the safety, security, and reliability of U.S. nuclear weapons, NC3, and integrated tactical warning/attack assessment systems.

V. STRENGTHENING REGIONAL NUCLEAR DETERRENCE

As long as Allies and partners face nuclear threats, extended nuclear deterrence will remain a pillar of regional security architectures. Effective assurance of Allies and partners is built on a shared view of the security environment and deterrence challenges; a commitment to risk- and burden-sharing; modern and effective nuclear forces; robust consultation processes; and Ally and partner confidence that the United States has the will and capability to meet its security commitments. Based on these principles, we will collaborate with Allies and partners to tailor extended deterrence and assurance policies that are responsive to the security environment and that integrate our collective capabilities across all tools of national power.

Assurance also rests on a commitment to advance shared goals for arms control, non-proliferation, and other forms of risk reduction consistent with collective security interests. This includes identifying steps to reduce the risk of miscalculation that could lead to deliberate or inadvertent nuclear escalation.

Strong and Credible Nuclear Deterrence in the Euro-Atlantic Region. As long as nuclear weapons exist, NATO will remain a nuclear alliance. A strong, cohesive Alliance with a clear nuclear mission remains essential to deter aggression and promote peace and stability in the Euro-Atlantic area, especially in light of Russia's aggression against its neighbors and the central role nuclear weapons and other strategic capabilities play in Russian doctrine.

United States strategic nuclear forces and forward-deployed nuclear weapons provide an essential political and military link between Europe and North America. Combined with the independent nuclear forces of France and the United Kingdom and NATO's nuclear burden-sharing arrangements, U.S. nuclear forces remain essential to the Alliance's deterrence and defense posture. Since Russia's invasion of Ukraine and occupation of Crimea in 2014, NATO has taken steps to ensure a modern, ready, and credible NATO nuclear deterrent. This includes modernizing U.S. nuclear weapons forward-deployed in Europe and, with participating NATO Allies, transitioning to a new generation of fighter aircraft, including the U.S. F-35A Joint Strike Fighter. The United States will work with Allies concerned to ensure that the transition to modern DCA and the B61-12 bomb is executed efficiently and with minimal disruption to readiness.

Further steps are needed to fully adapt these forces to current and emerging security conditions. We will work with Allies and partners to monitor Russian capabilities and doctrine and other aspects of the threat environment; enhance the readiness, survivability and effectiveness of the DCA mission across the conflict spectrum, including through enhanced exercises; strengthen the coherence of NATO's nuclear and non-nuclear capabilities and concepts to ensure they are mutually supportive; and achieve the broadest possible participation in NATO's nuclear burden-sharing mission consistent with treaty commitments. Any changes in NATO's nuclear posture will be taken only after a thorough review within – and decision by – the Alliance.

Strong and Credible Nuclear Deterrence in the Indo-Pacific Region. Our security commitments to Allies and partners in the Indo-Pacific region are steadfast. We recognize growing concerns about nuclear and missile developments in the PRC, North Korea, and Russia, and are committed to strengthening deterrence in ways that are responsive to changes in the regional security environment. Toward that end, we will work with Allies and partners to ensure an effective mix of capabilities, concepts, deployments, exercises, and tailored options to deter and, if necessary, respond to coercion and aggression.

Foundational to this approach is stronger extended deterrence consultation emphasizing a cooperative approach between the United States and Allies in decision-making related to nuclear deterrence policy, strategic messaging, and activities that reinforce collective regional security. Building on the extended deterrence dialogues established over the last decade with the Republic of Korea (ROK), Japan and Australia, and other forums, we will identify pragmatic steps to enhance consultation. This could include periodically meeting at higher levels of seniority and examining options to improve crisis management consultation. An important goal is to identify opportunities for trilateral (United States, Japan, ROK) or quadrilateral (plus Australia) information sharing and dialogue. Relevant lessons-learned from dialogues and consultations should be directly factored into the development of tailored deterrence strategies and operational plans.

The United States will continue to field flexible nuclear forces suited to deterring regional nuclear conflict, including the capability to forward deploy strategic bombers, dual-capable fighter aircraft, and nuclear weapons to the region and globally. We will work with Allies and partners to identify opportunities to increase the visibility of U.S. strategic assets to the region as a demonstration of U.S. resolve and commitment, including ballistic missile submarine port visits and strategic bomber missions. Greater capability integration is an important goal, as well – to better synchronize the nuclear and non-nuclear elements of deterrence and to leverage Ally and partner non-nuclear capabilities that can support the nuclear deterrence mission. In advancing these goals, we view the expertise, capabilities, and resources of our Allies and partners as "force multipliers" for strengthening deterrence.

VI. ARMS CONTROL, NUCLEAR NON-PROLIFERATION, AND COUNTERTERRORISM

Beyond the critical role played by deterrence, arms control, risk reduction, and nuclear non-proliferation play indispensable roles in further reducing nuclear dangers. Together, these are mutually reinforcing tools for preserving stability, deterring aggression and escalation, and avoiding arms racing and nuclear war. We are placing renewed emphasis on arms control, nuclear nonproliferation, and risk reduction. These policies complement U.S. nuclear policy and force structure decisions and enable us to pursue opportunities to reduce the role of nuclear weapons globally, enhance strategic stability with the PRC and Russia, and reduce the risks of war or escalation during war. In particular, limitations on and greater transparency into adversary nuclear and possibly non-nuclear strategic capabilities through arms control is central to any approach to reduce the role of nuclear weapons. Mutual, verifiable nuclear arms control offers the most effective, durable and responsible path to reduce the role of nuclear weapons in our strategy and prevent their use. Consistent with our commitment to put diplomacy first, the United States will pursue new arms control arrangements that address the full range of nuclear threats and advance our global non-proliferation interests.

PRC and Russian actions to expand their nuclear arsenals make mutual and verifiable arms control challenging, but the United States will prepare for engagement and realistic outcomes in dialogues with both governments as this remains in our national security interest. We will seek opportunities to pursue practical steps to advance the goals of greater transparency and predictability, enhanced stability, reduced reliance on nuclear weapons and, ultimately, a world without nuclear weapons. Russia will remain a focus of U.S. efforts given the size, diversity, and continuing modernization of its nuclear arsenal. However, we will need to account for the PRC's nuclear expansion in future U.S.-Russia arms control discussions.

Nuclear Arms Control and Risk Reduction. Upon taking office in January 2021, the President immediately extended the New START Treaty for the full five-years provided in the Treaty. Extending verifiable limits on Russian intercontinental-range nuclear forces contributes to strategic stability and advances our defense priorities. We will continue to implement the Treaty and verify Russian compliance. Expiration of the Treaty without a follow-on agreement would leave Russia free to expand strategic nuclear forces that are now constrained, as well as novel intercontinental-range and regional systems that are not currently limited by the Treaty.

The United States is ready to expeditiously negotiate a new arms control framework to replace New START when it expires in 2026, although negotiation requires a willing partner operating in good faith. Our priorities include fostering transparency and mutual risk reduction, pursuing initiatives that limit destabilizing systems or postures, and reducing the chance of miscalculation. Although the United States and Russia have expressed support for extending nuclear arms control beyond the New START Treaty, our priorities are not identical, underscoring the importance of

dialogue, when conditions permit, to address each side's differing goals and perceptions of military systems that affect strategic stability.

The scope and pace of the PRC's nuclear expansion, as well as its lack of transparency and growing military assertiveness, raise questions regarding its intentions, nuclear strategy and doctrine, and perceptions of strategic stability. This underscores the need for discussions on practical steps to reduce strategic risks, including steps that could lay the groundwork for additional discussion of mutual restraints in capabilities and behavior. Although the PRC has been reluctant to discuss these items, the United States remains ready to engage the PRC on a full range of strategic issues, with a focus on military de-confliction, crisis communications, information sharing, mutual restraint, risk reduction, emerging technologies, and approaches to nuclear arms control, among other issues. The United States remains prepared to meet with the PRC in bilateral and multilateral fora while pressing for these discussions to include both sides' military and diplomatic authorities.

Engagement with the PRC should address its plans for expanding fissile material production to support its growing nuclear arsenal. The PRC should adopt a moratorium on fissile material production or, at a minimum, provide increased transparency to assure the international community that fissile material produced for civilian purposes is fully accounted for and not diverted to military uses. We will make clear to the international community our concerns regarding the PRC's growing nuclear arsenal, and ensure outreach to the PRC is consistent with our security commitments to allies and partners.

Successfully enforcing future arms control agreements will require new technical capabilities for verification and monitoring (V&M). The United States is already investing in some of the needed technologies, but additional resource prioritization may be required to ensure they will be available when needed. Our participation in several international collaborations (e.g., International Partnership for Nuclear Disarmament Verification) advances the technical basis for innovation in V&M. To support our long-term arms control, non-proliferation, and disarmament goals, we are committed to developing the next generation of policy and technical experts needed to negotiate and implement future agreements.

Nuclear Non-Proliferation. The United States remains dedicated to preserving and strengthening the nuclear non-proliferation regime and reaffirms its commitment to the NPT. The NPT has made the world safer and more prosperous, and all Parties, including the United States and its Allies and partners, continue to benefit from the Treaty. The International Atomic Energy Agency (IAEA) and its nuclear safeguards system, including the Additional Protocol, as well as effective international export controls, impede nuclear proliferation and should be strengthened. U.S. actions to "pursue negotiations in good faith on effective measures relating to nuclear disarmament" advance U.S. national security in their own right but also build international confidence in the broader benefits of the nuclear non-proliferation regime. The United States will continue to pursue political and technological barriers to nuclear proliferation, including through strengthened strategic trade controls and support for the adoption of nuclear weapon-free zones.

We will also continue to support efforts that enable all NPT States Parties to enjoy the benefits of peaceful nuclear technology.

U.S. policy is to prevent Iran from obtaining a nuclear weapon, and is pursuing principled diplomacy in coordination with Allies and partners to constrain Iran's nuclear activities. Further, we support measures to limit Iranian nuclear activities applicable to a nuclear weapons program and to provide the greatest possible level of international transparency and verification.

Our policy toward North Korea calls for a calibrated diplomatic approach to secure practical progress that increases the security of the United States, our Allies and partners, and deployed forces. At the same time, we will continue to press North Korea to comply with its obligations under various United Nations Security Council resolutions and return to negotiations to verifiably eliminate its nuclear program. With respect to reducing or eliminating the threat from North Korea, our goal remains the complete and verifiable denuclearization of the Korean Peninsula.

Multilateral Arms Control and Disarmament. The P5 Process promotes dialogue on nuclear issues that could build confidence and understanding, enhance transparency, and create a forum for high-level engagement. Future efforts could be tailored to deepen engagement on nuclear doctrines, concepts for strategic risk reduction, and nuclear arms control verification.

The United States supports the Comprehensive Nuclear-Test-Ban Treaty (CTBT) and is committed to working to achieve its entry into force, recognizing the significant challenges that lie ahead in reaching this goal. In the near term, we continue to support the Preparatory Commission for the CTBT Organization; the completion and provisional operation of the International Monitoring System and International Data Centre; and development of the on-site inspection regime so that it will be capable of carrying out its compliance verification mission once the Treaty enters into force.

Once in force, the CTBT would ban nuclear explosive tests of any yield. Under the CTBT there is no threshold of nuclear yield below which nuclear explosive tests are permissible. If the CTBT were to enter into force, Russia and the PRC would have an obligation to comply with the Treaty's "zero-yield" standard. The United States will engage with Russia and the PRC, as appropriate, in order to address nuclear test site activities of concern relative to the Treaty, as outlined in the Department of State's Compliance Report. Those concerns do not outweigh the security benefits of the Treaty; indeed, the Treaty's benefits would include a legally binding basis and tools for challenging that behavior. Consistent with the goals of the CTBT, the United States continues to observe a moratorium on nuclear explosive testing and calls on all states possessing nuclear weapons to declare or maintain such a moratorium. The Department of Energy's National Nuclear Security Administration (NNSA) stockpile stewardship program enables the United States to ensure a safe, secure, and effective nuclear deterrent without requiring a return to nuclear explosive testing. This helps advance U.S. non-proliferation objectives and sets a responsible example for all nuclear weapons states

A Fissile Material Cutoff Treaty (FMCT) would ban the production of fissile material for use in nuclear weapons and remains a key element of the global non-proliferation and disarmament agenda. The United States continues to support the commencement of FMCT negotiations, provided they are governed by consensus and all key states participate. In the interim, we remain committed to maintaining our unilateral moratorium on the production of fissile material for use in nuclear weapons, which has been in place since the early 1990s. We continue to encourage all states that have not yet done so, including the PRC, to declare and maintain such a moratorium immediately.

While the United States actively pursues the goal of a world without nuclear weapons, it does not consider the Treaty on the Prohibition of Nuclear Weapons (TPNW) to be an effective means to reach that goal. The United States does not share the underlying assumption of the TPNW that the elimination of nuclear weapons can be achieved irrespective of the prevailing international security environment. Nor do we consider the TPNW to be an effective tool to resolve the underlying security conflicts that lead states to retain or seek nuclear weapons.

Nuclear Counterterrorism. Preventing an act of nuclear terrorism is an enduring national security requirement. We will continue to work through diplomacy and partnerships to advance the core elements of our nuclear counterterrorism strategy: denying non-state actors access to nuclear materials and related technology; improving forensic capabilities to identify the origin of nuclear material outside of regulatory control or used in a nuclear device; monitoring and disrupting terrorist attempts to obtain nuclear capabilities; and, maintaining an incident response posture to detect, interdict, and defeat nuclear threats or minimize the consequence of nuclear events.

This strategy contributes to the deterrence of both non-state actors and hostile states that might contemplate providing nuclear material or other assistance to would-be nuclear terrorists, and provides for response options should deterrence fail. Deterring states from facilitating acts of nuclear terrorism by others is enabled in part by nuclear forensic capabilities that provide the scientific basis to hold such states accountable. Greater investment in these technical nuclear forensic tools is required to ensure they remain responsive to the threat, and thus scientifically credible and internationally accepted.

VII. U.S. NUCLEAR CAPABILITIES

The United States will field and maintain strategic nuclear delivery systems and deployed weapons in compliance with New START Treaty central limits as long as the Treaty remains in force. We will continue to deploy a nuclear triad and are fully committed to the programs that will begin to field modernized systems later this decade. Programs are also being executed to modernize U.S. DCA, the nuclear weapons stockpile, the NC3 architecture, and the weapons production infrastructure.

The three legs of the nuclear Triad are complementary, with each component offering unique attributes. Maintaining a modern triad possessing these attributes – effectiveness, responsiveness, survivability, flexibility, and visibility – ensures that the United States can withstand and respond to any strategic attack, tailor its deterrence strategies as needed, and assure Allies in support of our extended deterrence commitments.

While the U.S. nuclear arsenal remains safe, secure, and effective, most nuclear deterrent systems are operating beyond their original design life. Replacement programs are on track at this time, but there is little or no margin between the end of effective life of existing systems and the fielding of their replacements. These replacement programs are planned to deliver modernized capabilities to avoid any gaps in our ability to field a credible and effective deterrent.

The B83-1 gravity bomb will be retired due to increasing limitations on its capabilities and rising maintenance costs. In the near-term, we will leverage existing capabilities to hold at risk hard and deeply buried targets. DoD, working with its interagency partners and informed by existing concepts, will develop an enduring capability for improved defeat of such targets.

In addition, we are cancelling the nuclear-armed Sea-Launched Cruise Missile (SLCM-N) program. The 2018 NPR introduced SLCM-N and the W76-2 to supplement the existing nuclear program of record in order to strengthen deterrence of limited nuclear use in a regional conflict. We reassessed the rationale for these capabilities and concluded that the W76-2 currently provides an important means to deter limited nuclear use. Its deterrence value will be re-evaluated as the F-35A and LRSO are fielded, and in light of the security environment and plausible deterrence scenarios we could face in the future. We concluded SLCM-N was no longer necessary given the deterrence contribution of the W76-2, uncertainty regarding whether SLCM-N on its own would provide leverage to negotiate arms control limits on Russia's NSNW, and the estimated cost of SLCM-N in light of other nuclear modernization programs and defense priorities.

2022 NUCLEAR POSTURE REVIEW PROGRAMMATIC FINDINGS

LAND-BASED FORCE

- Fully fund the Sentinel ICBM replacement program of record in the 2023 – 2027 Future Years Defense Program.
- Sentinel will replace Minuteman III (MMIII) one-for-one to maintain 400 ICBMs on alert.
- Sentinel will field the W87-0/Mk21 and W87-1/Mk21A warheads and aeroshells.
- Any alternative to the Sentinel program of record that extends MMIII life and replaces it in the future would increase risk and cost.

SEA-BASED FORCE

- Fully fund the COLUMBIA-Class SSBN program to deliver a minimum of 12 boats to replace the OHIO-Class fleet beginning in 2030.
- Prioritize near-term investments in the submarine construction industrial base and OHIO-Class sustainment until the completion of the COLUMBIA-Class transition.
- Prioritize near-term investment in the Trident II D5 Strategic Weapon System second life extension. Complete the W88 Alt 370 program, which does not introduce new military capability.
- Continue the W93 warhead program. Continue to support the United Kingdom with its Replacement Warhead Program, Common Missile Compartment, and Mk7 aeroshell.

AIR-BASED FORCE

- Modernize the B-52H Stratofortress bomber fleet through 2050 as a nuclear standoff platform with global reach.
- Fully fund the B-21 Raider bomber to replace the B-2A Spirit fleet. The Air Force will acquire a minimum of 100 B-21 aircraft.
- Fully fund the Long-Range Standoff weapon and associated W80-4 warhead to replace the Air-Launched Cruise Missile.
- Retire the B83-1 gravity bomb. Leverage existing capabilities in the near-term and develop an enduring capability for improved defeat of Hard and Deeply Buried Targets.

SUPPLEMENTAL AND DCA CAPABILITIES

- Retain the W76-2 low-yield Submarine-Launched Ballistic Missile option and periodically reassess its deterrent value.
- Cancel the nuclear-armed Sea-Launched Cruise Missile program.
- Continue nuclear certification of the F-35A fighter aircraft and transition from the F-15E to the F-35A to support NATO's nuclear mission.
- Replace B61-3/4/7 nuclear gravity bombs with the life-extended B61-12.

Strengthening Nuclear Command, Control, and Communications (NC3). Our NC3 system must provide command and control of U.S. nuclear forces at all times and under all circumstances, including during and following a nuclear or non-nuclear attack by any adversary. Resilient NC3 capabilities are a critical enabler of mission assurance for nuclear operations. The five essential functions for nuclear command and control are detection, warning and attack characterization; adaptive nuclear planning; decision-making conferencing; receiving and executing Presidential orders; and enabling the management and direction of forces.

We will employ an optimized mix of resilience approaches to protect the next-generation NC3 architecture from threats posed by competitor capabilities. This includes, but is not limited to, enhanced protection from cyber, space-based, and electro-magnetic pulse threats; enhanced integrated tactical warning and attack assessment; improved command post and communication links; advanced decision support technology; and integrated planning and operations.

Technology Innovation for the Nuclear Enterprise. A stronger and more systematic approach to technology innovation is key to building enduring advantage in the nuclear enterprise. This requires investing in new research, prototyping, and engineering efforts that can be leveraged as needed to ensure a safe, secure, and effective nuclear deterrent into the future. The nuclear enterprise will increase focus on research, development, test, and evaluation efforts; government purpose data rights; and faster development of technologies and system concepts through digital engineering and open architecture designs, for example. Development activities will emphasize a robust experimental approach to the use of emerging technologies and innovative design practices to promote competition of concepts, accelerate technology readiness, bolster the critical workforce, and help leadership understand technology opportunities. This multi-faceted approach will promote technology-based resilience and will reduce the risks associated with developing or adapting future nuclear deterrent capabilities.

Stockpile Certification. Since 1992, the United States has maintained a moratorium on nuclear explosive testing and remains committed to assuring the safety, security and reliability of our arsenal through a rigorous science-based stockpile stewardship program. For more than twenty years, the Secretaries of Defense and Energy, the directors of the national security laboratories, and the Commanders of U.S. Strategic Command (USSTRATCOM) have annually assessed that our nuclear stockpile is safe, reliable, and effective, and that there is no current need to conduct nuclear explosive tests to ensure stockpile reliability. As nuclear warhead system lifetimes are extended, the NNSA and USSTRATCOM required assessments and certifications of warhead systems are increasingly challenged by limited surveillance hardware and testing opportunities. Additionally, if any issues are observed through surveillance activities and tests, the capacity of the production infrastructure to make necessary changes can interrupt other planned modernization programs. Therefore, the United States maintains a nuclear explosive test readiness program in the event it is required to resolve technical uncertainties. The United States does not envision or desire a return to nuclear explosive testing. Any resumption of nuclear testing would occur only at the President's explicit direction.

VIII. A RESILIENT AND ADAPTIVE NUCLEAR SECURITY ENTERPRISE

For most of the post-Cold War period, the focus of our nuclear security enterprise has been to sustain existing nuclear weapons and improve our ability to assess their safety, security, reliability, and effectiveness without nuclear explosive testing. When aging issues were identified in the stockpile, weapons were partially refurbished without changing their military characteristics, and safety and security systems were sometimes upgraded. Elements of the production infrastructure were dismantled and other elements were not sustained.

Today, much of the stockpile has aged without comprehensive refurbishment. At a time of rising nuclear risks, a partial refurbishment strategy no longer serves our interests. A safe, secure, and effective deterrent requires modern weapons and a modern infrastructure, enabled by a world-class workforce equipped with modern tools. We must develop and field a balanced, flexible stockpile capable of pacing threats, responding to uncertainty, and maintaining effectiveness. To accomplish this, we must re-establish, repair, and modernize our production infrastructure, and ensure it has appropriate capabilities and sufficient capacity to build and maintain modern nuclear weapons in a timely manner. The nuclear security enterprise must be able to respond in a timely way to threat developments and technology opportunities, maintain effectiveness over time, and at all times ensure that Presidential guidance can be achieved.

This plan has three pillars. First, given the complexity and interconnected nature of ongoing nuclear modernization and sustainment programs, DoD and NNSA will improve coordination and integration. DoD and NNSA will develop and implement a *Nuclear Deterrent Risk Management Strategy* to identify, prioritize, and recommend actions across the portfolio of nuclear programs and monitor the overall health of the nuclear deterrent as we sustain current capabilities and transition to modernized systems. This strategy 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.

Second, NNSA will institute a *Production-based Resilience Program* (PRP) to complement the science-based stewardship program and ensure that the nuclear security enterprise is capable of full-scope production. The PRP will establish the capabilities and infrastructure that can efficiently produce weapons required in the near-term and beyond, and that are sufficiently resilient to adapt to additional or new requirements should geopolitical or technology developments warrant. Key attributes are flexibility, supply chain security and resilience, production capacity margin, and elimination of single point failures. The PRP will enable more regular and timely incorporation of advanced technologies to improve safety, security, and reliability; accommodate arms control considerations as design features as weapons and infrastructure are modernized; and enable improved stockpile management and risk mitigation without overreliance on single warhead types, a large reserve stockpile, or increases to the size of the stockpile.

The PRP will address all elements of the enterprise including production of primaries, secondaries, tritium, and non-nuclear components; domestic uranium enrichment; and system assembly and disassembly. For primary production, the highest priority for the next ten years is pit production, a capability lost when the Rocky Flats facility was closed in 1992. Restoring the ability to produce plutonium pits for primaries will guard against the uncertainties of plutonium aging in today's stockpile and will also allow new pit designs to be manufactured if necessary for future weapons. The two-site strategy at Los Alamos National Laboratory and the Savannah River Site will eliminate single point failure and provide flexible capacity options. Priorities for secondary production are completion and full operation of the Uranium Processing Facility, as well as depleted uranium and lithium facilities modernization. Modernizing tritium production will assure a reliable and resilient domestic source and options for longer stockpile life tritium components. Modernizing development and production capabilities of high explosives and energetic materials will eliminate single points of failure. Modernizing production capacity for non-nuclear components encompasses items such as strategic radiation-hardened microelectronics, component test capabilities, and sufficient manufacturing floor space.

Third, NNSA will establish a *Science and Technology Innovation Initiative* to accelerate the integration of science and technology (S&T) throughout its activities. This initiative will add to the existing science portfolio an increased focus on leveraging S&T to support the weapon design and production phases and modernize the production complex. The goal is to more rapidly assimilate findings from academic, commercial, and internal research and thereby reduce the time and cost required to design and produce weapons with the most modern technologies that are most responsive to potential threats. This initiative will include new and replacement science facilities. Additionally, NNSA will partner closely with DoD's S&T community as both pursue activities to foster and exercise the national technology base.

The health of the enterprise depends critically on recruiting and retaining a skilled and diverse workforce. We will place priority on programs and policies to ensure the nuclear security enterprise can attract and retain talent and conduct effective knowledge transfer. Building a resilient and adaptive enterprise will take time. There is no quick fix, but with sustained national commitment, a sound strategy, and a 21st century workforce, we will maintain a safe, secure, and effective nuclear deterrent for as long as necessary.

IX. CONCLUSION

In an increasingly complex security environment, we are committed to ensuring a safe, secure, and effective nuclear deterrent, and strong and credible extended deterrence – a posture that contributes to stability and supports the broader objectives of our National Defense Strategy. This includes a commitment to responsible stewardship of our nuclear weapons, constructive collaboration with our Allies and partners, pragmatic approaches to arms control and non-proliferation, and responsible technology innovation that enhances stability. We fully recognize the enduring importance of a nuclear policy that balances the evolving demands of deterrence with our goal of taking steps to reduce the role of nuclear weapons in our national security strategy, and thereby reducing the salience of nuclear weapons globally. We will work with a sense of urgency to reduce the danger of nuclear war, which would have catastrophic consequences for the United States and the world. Developments in the security environment make these goals both more challenging and more pressing to pursue. However, we can only make progress in these respects if we are confident in the ability of our nuclear posture to deter aggression and protect our Allies and partners. Thus, for the foreseeable future, nuclear weapons will continue to provide unique deterrence effects that no other element of U.S. military power can replace. To deter aggression and preserve our security in the current security environment, we will maintain a nuclear posture that is responsive to the threats we face.

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2022 Missile Defense Review

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I. INTRODUCTION

The 2022 Missile Defense Review (MDR) provides direction to the Department of Defense (DoD) and guidance to its interagency partners on U.S. missile defense strategy and policy in support of the National Defense Strategy (NDS). The MDR provides a framework for U.S. missile defenses that is informed by: defense priorities and deterrence objectives as indicated in the NDS; the framework of integrated deterrence; and the multifaceted elements of U.S. missile defenses. The MDR also identifies how the United States is integrating missile defense with its Allies and partners to strengthen international cooperation against shared threats.

Since the release of the last MDR in 2019, missile-related threats have rapidly expanded in quantity, diversity, and sophistication. U.S. national security interests are increasingly at risk from wide-ranging missile arsenals that include offensive ballistic, cruise, and hypersonic weapons, as well as lower-tier threats such as Uncrewed Aircraft Systems (UAS).

The United States will continue to rely on strategic deterrence – underwritten by a safe, secure, and effective nuclear arsenal, and reinforced by a resilient sensor and Nuclear Command, Control and Communications (NC3) architecture – to address and deter large intercontinental-range, nuclear missile threats to the homeland from the People's Republic of China (PRC) and the Russian Federation (Russia). As the scale and complexity of the Democratic People's Republic of Korea (North Korea) missile capabilities increase, the United States will also continue to stay ahead of North Korean missile threats to the homeland through a comprehensive missile defeat approach, complemented by the credible threat of direct cost imposition through nuclear and non-nuclear means.

Missile defeat encompasses the range of activities to counter the development, acquisition, proliferation, potential and actual use of adversary offensive missiles of all types, and to limit damage from such use. In support of the homeland missile defense mission, continued modernization and expansion of the Ground-based Midcourse Defense (GMD) system will remain an essential element of our comprehensive missile defeat approach. In addition, as part of this comprehensive approach, the United States will also continue to improve defensive capabilities to address the threat of evolving cruise missile strikes by any adversary against the homeland.

To strengthen regional defense and deterrence, close cooperation with Allies and partners on Integrated Air and Missile Defense (IAMD) will remain an important priority. As such, the United States will continue to pursue Joint, Allied and partner IAMD capabilities needed to maintain a credible level of regional defensive capability for joint maneuver forces and critical infrastructure against all missile threats from any adversary in order to protect U.S. forces abroad, maintain freedom of maneuver, and strengthen security commitments to our Allies and partners.

II. EVOLVING AIR AND MISSILE THREAT ENVIRONMENT

Adversaries are developing, fielding, and integrating more advanced air and missile capabilities into their strategies in order to favorably shape the course of a potential crisis or conflict. These air and missile capabilities pose an expanding and accelerating risk to the U.S. homeland, U.S. forces abroad, and our Allies and partners.

Current and emerging ballistic, cruise, and hypersonic missile capabilities, as well as new threats such as small Uncrewed Aircraft Systems (sUAS), are complicating the traditional roles of air and missile defense. Potential adversaries are acquiring longer-range and more complex missiles, and are seeking meaningful military advantage with advanced conventional missiles, enabled by sophisticated information systems and sensors. Threat actors are developing and deploying mobile missile systems to reduce the ability of the United States, Allies, and partners to detect, identify, and respond to launch preparations. Hypersonic weapons, designed to evade U.S. sensors and defensive systems, pose an increasing and complex threat due to their dual (nuclear/conventional) capable nature, challenging flight profile, and maneuverability.

PRC. As outlined in the NDS, PRC efforts and activities to contest the rules-based international order make it the pacing challenge for the Department. Over the past two decades, the PRC has dramatically advanced its development of conventional and nuclear-armed ballistic and hypersonic missile technologies and capabilities, through intense and focused investment, development, testing, and deployments. The PRC currently utilizes Russian-developed air and missile defense systems while also pursuing indigenous capabilities that are growing in sophistication. In many areas such as conventional ballistic and hypersonic missile technologies, the PRC continues to close the gap with the United States, and will likely continue to develop and expand its missile capabilities. Increasingly sophisticated and proliferated space-based Intelligence, Surveillance, and Reconnaissance (ISR) networks, and improved Command and Control (C2) systems, have greatly improved the precision and accuracy of missile systems the PRC would employ to deter and counter U.S. forward presence and operations, especially in the Western Pacific region.

Russia. The unprovoked Russian invasion of Ukraine clearly signals the re-emergence of a more militaristic Russia that seeks to overturn the post-Cold War European security system and challenge the broader rules-based international order. Through its hostile actions, Russia seeks to expand its control over portions of the former Soviet empire in order to reclaim what it regards as its rightful position on the world stage. In Ukraine, Russia has used thousands of air, land, and sea-launched cruise and ballistic missiles, including hypersonic missiles. Current battlefield losses threaten to reduce Russia's modernized weapons arsenal, and coordinated and wide-ranging economic sanctions and export controls may hinder its future ability to effectively produce modern precision-guided munitions.

As noted in the NDS, Russia also seeks to advance its interests by directly challenging U.S. national interests. Over the last 10 years, Russia has prioritized modernization of its intercontinental range missile systems and is developing, testing, and deploying new, diversified capabilities that pose new challenges to missile warning and defense of the U.S. homeland. Russia is developing and fielding a suite of advanced precision-strike missiles that can be launched from multiple air-, sea-, and ground-based platforms, and feature many capabilities designed to defeat missile defenses. Russia has retained and upgraded its own missile defense system designed to protect Moscow against a U.S. strike, and has developed several lower-tier air defense systems for its own use and export as a foreign policy instrument.

North Korea. North Korea continues to improve, expand, and diversify its conventional and nuclear missile capabilities, posing an increasing risk to the U.S. homeland and U.S. forces in theater, as well as regional Allies and partners. In 2017, North Korea flight-tested two different types of domestically-produced road-mobile Intercontinental Ballistic Missiles (ICBM), both of which can reach the U.S. homeland. In 2020, North Korea displayed a new, larger ICBM during a military parade. Additionally, North Korea has a range of domestically-produced missile systems, including short-, medium-, and Intermediate-Range Ballistic Missiles (IRBM) that can hold deployed U.S. forces, Allies, and partners at risk. Most of North Korea's ballistic missiles have an assessed capability to carry nuclear payloads. North Korea has publicly stated its intent to continue advancing the size and complexity of its ballistic missile program regardless of future U.S. regional or homeland missile defense capabilities or postures. Additionally, since September 2021, North Korea has conducted multiple flight tests of what it claims are hypersonic missiles. In January 2022, North Korea conducted another series of tests of a variety of missile systems, including an IRBM – its first such test since 2017.

Iran. The Islamic Republic of Iran (Iran) maintains a large and growing regional missile and UAS capability, which it leverages (often through proxies) to conduct attacks in the region, ensure regime survival, deter attacks against its territory, and respond if attacked. Iran continues to maintain the largest missile force in the Middle East, augmented with a growing UAS capability. Its missiles pose a risk to U.S. forces, Allies, and partners in the Middle East and beyond, but cannot currently reach the U.S. homeland. Iran also continues to pursue a space program, which could shorten the pathway to a future long-range missile capability.

Non-State Actors. Non-state actors pose an increasing threat to U.S. regional interests, including Allies and partners, particularly in the Middle East and Africa. On today's battlefields, non-state actors are employing increasingly complex offensive sUAS, rocket, and missile capabilities, and continue to benefit from technology transfer by U.S. adversaries.

UAS. UAS are an inexpensive, accessible, flexible, expendable, and plausibly deniable way to carry out armed attacks and project outsized power over a variety of domains. Accelerating technology trends continue to transform applications of UAS, making them increasingly capable platforms in the hands of both state and non-state actors. UAS can have similar lethality to cruise

missiles and can launch from a wide array of locations, virtually undetected. UAS are generally not perceived by adversaries as having the same destabilizing geostrategic implications as larger missile forces, making them an increasingly preferred method to carry out tactical-level strikes. Adversaries also are utilizing multiple types of missile salvos – such as one-way attack UAS in combination with rockets – in an effort to defeat missile defense systems. UAS usage will likely expand and continue to pose a threat to U.S. personnel overseas, Allies and partners, and potentially to the U.S. homeland.

III. STRATEGY AND POLICY FRAMEWORK

As outlined in the NDS, integrated deterrence is a framework weaving together all instruments of national power – with diplomacy at the forefront – to work seamlessly across warfighting domains, theaters, the spectrum of conflict, and our network of alliances and partnerships. Tailored to specific circumstances, integrated deterrence applies a coordinated, multifaceted approach to reducing competitors' perceptions of the net benefits of aggression relative to restraint. Integrated deterrence is enabled by combat-credible forces and backstopped by a safe, secure, and effective nuclear deterrent.

Missile defenses, as one component of this integrated, multilayered framework, are critical to the top priority of defending the homeland and deterring attacks against the United States. Whether protecting the homeland, deployed U.S. forces, or our Allies and partners, missile defenses deny the benefits of an attack by adversaries and limits damage should deterrence fail.

The continued evolution and progress of missiles as a principal means by which adversaries seek to project conventional or nuclear military power makes missile defense a core deterrence-by-denial component of an integrated deterrence strategy. Missile defense capabilities add resilience and undermine adversary confidence in missile use by introducing doubt and uncertainty into strike planning and execution, reducing the incentive to conduct small-scale coercive attacks, decreasing the probability of attack success, and raising the threshold for 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 crisis or conflict, missile defenses offer military options that help counter the expanding presence of missile threats, and may be less escalatory than employing offensive systems. Damage limitation offered by missile defenses expands decision making space for senior leaders at all levels of conflict, and preserves capability and freedom of maneuver for U.S. forces.

Within the framework of integrated deterrence, missile defense and nuclear capabilities are complementary. U.S. nuclear weapons present a credible threat of a robust response and overwhelming cost imposition, while missile defenses contribute to deterrence by denial. If deterrence fails, missile defenses can potentially mitigate some effects from an attack. Missile defense contributes directly to tailored U.S. deterrence strategies to dissuade attacks on the United States from states like North Korea, and contributes to extended deterrence for U.S. Allies and partners, and our respective forces abroad.

To address intercontinental-range, nuclear threats from Russia and the PRC, the United States will continue to rely on strategic deterrence – underwritten by safe, secure, and effective nuclear forces – to deter such threats as outlined in the 2022 Nuclear Posture Review (NPR). Ensuring the continued credibility of this deterrent will require investments in missile warning, missile tracking, and resilient NC3 to keep pace with the evolving PRC and Russian threats, and avoid the possibility of evading U.S. sensor networks in a surprise attack. For states like North Korea,

missile defenses and the U.S. nuclear arsenal are complementary and mutually reinforcing, as both capabilities contribute to deterring an attack against the United States and our Allies and partners.

Homeland Missile Defense. The Department's top priority is to defend the homeland and deter attacks against the United States. For the purposes of this review, homeland missile defense refers to the defense of the 50 states, all U.S. territories, and the District of Columbia against missile attacks. Missile defenses can raise the threshold for initiating nuclear conflict by denying an aggressor the ability to execute small-scale coercive nuclear attacks or demonstrations. Further, the presence of missile defense complicates adversary decision-making by injecting doubt and uncertainty about the likelihood of a successful offensive missile attack.

Missile defense systems such as the 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 North Korea and potentially Iran. In the event of crisis, globally integrated domain awareness capabilities increase warning and allow for flexible decision-making to respond, as necessary and appropriate, with escalatory options such as kinetic strike. Should deterrence fail, missile defenses can help mitigate damage to the homeland and help protect the U.S. population.

The U.S. homeland ballistic missile defense architecture centers on the GMD system, consisting of interceptors emplaced in Alaska and California, a network of space-based and terrestrial-based sensors, and an integrated C2 system. Together, these U.S. homeland defense capabilities provide the means to address ballistic missile threats from states like North Korea and Iran.

Though the United States maintains the right to defend itself against attacks from any source, GMD is neither intended for, nor capable of, defeating the large and sophisticated ICBM, air-, or sea-launched ballistic missile threats from Russia and the PRC. The United States relies on strategic deterrence to address those threats.

As part of an integrated approach to deterrence, the United States recognizes the interrelationship between strategic offensive arms and strategic defensive systems. Strengthening mutual transparency and predictability with regard to these systems could help reduce the risk of conflict.

As North Korean ballistic missile threats to the U.S. homeland continue to evolve, the United States 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 (GBI). In addition to the GMD system, the United States will leverage and improve its full spectrum of missile defeat capabilities, complemented by the credible threat of direct cost imposition through nuclear and non-nuclear means, to continue to counter North Korean missile threats to the homeland. To deter attempts by adversaries to stay under the nuclear threshold and achieve strategic results with conventional capabilities, the United States will examine active and passive defense measures to decrease the risk from any cruise missile strike against critical assets, regardless of origin.

Within the context of homeland defense, an attack on Guam or any other U.S. territory by any adversary will be considered a direct attack on the United States, and will be met with an appropriate response. Additionally, Guam is home to key regional power projection platforms and logistical nodes, and is an essential operating base for U.S. efforts to maintain a free and open Indo-Pacific region. The architecture for defense of the territory against missile attacks will therefore be commensurate with its unique status as both an unequivocal part of the United States as well as a vital regional location. Guam's defense, which will include various active and passive missile defense capabilities, will contribute to the overall integrity of integrated deterrence and bolster U.S. operational strategy in the Indo-Pacific region.

Regional Missile Defense. The United States will continue to strengthen defenses for U.S. forces, and with Allies, and partners against all regional missile threats from any source. As part of an integrated, interoperable, and multi-layered approach to deterrence, IAMD capabilities need to keep pace with expanding regional missile threats, while protecting and enabling U.S., Allied, and partner maneuver forces to conduct operations.

Regional missile threats continue to expand in capability, capacity, and complexity, challenging existing U.S., Allied, and partner regional IAMD capabilities and placing all at risk. Likely designed for employment below the U.S. nuclear threshold, adversaries are pursuing and demonstrating advanced, long-range space and missile systems capable of traversing entire Combatant Command Areas of Responsibility (AORs). Attacks from these systems could increasingly blur the line between regional and homeland defense and challenge existing IAMD architectures. In addition to missile threats, U.S. forces, Allies and partners also face the proliferation of lower-tier threats (e.g., rockets, armed UAS, etc.) as adversaries seek to take advantage of these relatively inexpensive, flexible, and expendable systems while exploiting inherent difficulties with attribution and its implications for deterrence.

Cooperation with like-minded nations is crucial. The United States will continue to seek ways to integrate and interoperate with Allies and partners as well as encouraging greater integration among Allies and partners to fill gaps against the increasing spectrum of regional threats. Additionally, as the ability to share sensor information and data is critical to regional defense, the United States will continue to streamline processes for information and data sharing, while encouraging Allies and partners to enhance their information protection posture and cyber security.

The United States will also continue to develop 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. Acquisition strategies for new sensors, interceptors, and C2 systems must be fully aligned – with sensors as the priority. As appropriate, the United States will pursue joint research and development on hypersonic defense programs with key Allies and partners.

IAMD. Nested within our broader missile defeat approach, IAMD is the integration of capabilities and overlapping operations to defend the homeland, Allies and partners, protect the Joint and combined forces, and enable freedom of action by negating an adversary's ability to create adverse effects with air and missile capabilities.

IAMD represents an effort to move beyond platform-specific missile defense toward a broader approach melding all missile defeat capabilities – defensive, passive, offensive, kinetic, non-kinetic – into a comprehensive joint and combined construct.

Developing and fielding IAMD systems is a complex problem set. To address the rapidly evolving threat, the acquisition community must continue to exploit adaptive acquisition approaches to ensure the timely and cost-effective development, procurement, sustainment, and improvement of IAMD systems, while providing a clear investment strategy over the near-, medium-, and long-terms.

The Department must develop, design, acquire, and maintain Joint IAMD systems that are integrated, interoperable, and sufficiently mobile, flexible, and affordable to protect the homeland and dispersed joint and combined maneuver forces from the full spectrum of air and missile threats. Interoperability breeds efficiency and economy of resources. To enhance this effect in IAMD, the Department must develop and exercise innovative combinations of Service, national, and Allied and partner capabilities to meet mission needs.

One area of importance related to IAMD is the increasing challenge of counter-UAS (C-UAS). UAS are an inexpensive, flexible and plausibly deniable way for adversaries endeavoring to carry out tactical-level attacks below the threshold for major response, making them an increasingly preferred capability for state and non-state actors alike. UAS capabilities are also growing in variety, quality, and quantity. The homeland and regionally forward deployed forces require the fielding of technical and integrated C-UAS solutions with cross-DoD and interagency synchronization to ensure they can meet the range of threats and appropriately hedge against future advancements. Within the homeland, protecting the population from UAS threats is a combined interagency mission.

Future Technologies. The United States requires responsive, persistent, resilient, and cost-effective joint IAMD sensor capabilities to detect, characterize, track, and engage current and emerging advanced air and missile threats regionally, and to improve early warning, identification, tracking, discrimination, and attribution for missile threats to the homeland. Sensors must be integrated into a cohesive architecture with increasingly capable C2 in order to provide leaders with a maximized decision space for informed actions.

Sensors should be able to seamlessly transition from theater-level threats, to homeland defense, to global threats, by sharing and transmitting data with C2 as threats move in and out of the atmosphere. Because of their global nature, persistence, and greater access to denied regions, resilient space-based infrared, radar, and associated data transport systems will be critical to any

future integrated sensor network. Likewise, modern over-the-horizon radar capabilities are essential to improving warning and tracking against cruise missile and other threats to the homeland.

Advanced sensor capabilities need to facilitate different mission areas simultaneously. These include strategic and theater missile warning and tracking to: alert national leadership and cue missile defenses in the event of a missile launch; offer space domain awareness to provide indications and warning of threats; support mission assurance of the space architecture; and prompt ISR to provide persistent, and often unwarned, global information essential to the whole of government. Therefore, the ability to operate these sensors through common, joint and combined all-domain integrated and survivable C2 networks and architectures is paramount. The United States will continue to leverage industry, academia, government, and allied and partner solutions to augment existing Department of Defense capabilities and foster rapid future capability employment.

Advanced and innovative technologies and more effective battle management will be crucial to moving the United States towards a cost-effective and integrated set of offensive and defensive capabilities. To cope with rapidly increasing adversary development of missile-centric Anti-Access/Area-Denial (A2/AD) threats, the Department must seek new technologies and hedge against continuing adversary missile developments and emerging capabilities such as hypersonic weapons, multiple and maneuvering warheads, and missile defense countermeasures. Future air and missile defense capabilities must also be more mobile, flexible, survivable, and affordable, and emphasize disaggregation, dispersal, and maneuver to mitigate the threat from adversary missiles. Finally, these technologies and platforms – including those enabling NC3 – must be inherently cyber-secure, joined by resilient, redundant and hardened networks, and monitored by an agile defensive cyber force operating under a clear, unified C2 construct.

IV. STRENGTHENING INTERNATIONAL COOPERATION WITH ALLIES AND PARTNERS

America's alliances and close partnerships around the world are one of its greatest assets. Working closely with select countries in North America, the Indo-Pacific, Europe, and the Middle East to enhance our collective IAMD efforts continues to be an important priority for the United States. From a strategic standpoint, cooperation in this area strengthens common protection, enhances extended 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 the effectiveness of adversary A2/AD capabilities. To pursue these objectives and goals, the Department of Defense 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.

North America. The United States and Canada have worked together in the defense of North America for decades. Over the years, our shared homeland defense concerns have grown more acute as adversaries have developed increasingly sophisticated conventional missile capabilities that are able to target critical infrastructure in North America. Through the binational North American Aerospace Defense (NORAD) Command, the United States and Canada will continue to work together to improve early warning surveillance for potential incursions or attacks originating from any direction into North America.

Indo-Pacific. The pacing challenge posed by the PRC, as well as the growing North Korean missile threat, have magnified the importance of collaborative regional air and missile defense efforts in the Indo-Pacific region. To counter these threats, the U.S. conducts missile defense cooperation with Allies and partners throughout the region, which is strongest with Japan, Australia, and the Republic of Korea (ROK). Our cooperation with these countries strengthens collective regional deterrence and defense efforts while offering assurances critical to the unity of our alliances. Japan, Australia and the ROK practice and signal their respective defensive military capabilities through sustained investment in air and missile defense systems, as well as participation in regular exercises and training with the United States. We will continue to work closely with these Allies and partners, encouraging them to pursue ground- and space-based sensor systems for warning and tracking, and exploring joint opportunities to invest in the cooperative development of complementary IAMD technologies and capabilities such as hypersonic defenses to address advanced and increasingly diverse air and missile threats.

Europe. The United States works multilaterally within NATO and also cooperates bilaterally with specific NATO and non-NATO countries in Europe to counter air and missile threats from potential adversaries.

NATO IAMD addresses cruise and ballistic missile threats in a 360-degree defense, encompassing a mixture of lower-tier air and missile defenses (e.g., PATRIOT, National Advanced Surface-to-Air Missile System (NASAMS), Surface-to-Air Missile Platform/Terrain (SAMP/T)). NATO IAMD is an essential and continuous mission in peacetime, crisis, and times of conflict, which contributes to deterrence and defense, and the indivisible security and freedom of action of the Alliance, including NATO's capability to reinforce, and to provide a strategic response. NATO has enhanced its IAMD mission and taken steps to improve NATO IAMD forces' readiness and responsiveness in peacetime, crisis, and times of conflict – strengthening our ability to ensure that all necessary measures are implemented for the security of the Alliance.

The NATO Ballistic Missile Defense (NATO BMD) system defends European NATO territory from ballistic missiles originating from outside the Euro-Atlantic region. These efforts include a voluntary U.S. national contribution to the NATO BMD system, the European Phased Adaptive Approach (EPAA). EPAA includes an AN/TPY-2 radar based in Turkey, one Aegis Ashore site in Romania, one Aegis Ashore site under construction in Poland, plus Aegis BMD capable ships homeported in Spain.

The United States will continue to work closely with its NATO Allies and other European partners to strengthen both NATO IAMD and NATO BMD through improved readiness and preparedness, greater integration and coherence, multilateral and bilateral exercises, Foreign Military Sales, and international armaments cooperation initiatives where applicable.

Middle East. The United States has a long history of working with Israel and other partners in the Middle East to counter air and missile threats. With Israel, we have a longstanding relationship of robust cooperation on missile defense. The United States also has strong bilateral air and missile defense cooperation with many Gulf Cooperation Council (GCC) states, including the United Arab Emirates (UAE) and Saudi Arabia, as well as collectively with GCC itself, that includes regular engagements with air and missile defense forces in support of operational activities. An ongoing, longer-term goal with the GCC and other regional states is to establish a network of air and missile defense capabilities across the Middle East to facilitate greater cooperation while bolstering defense through a layered approach. Ongoing normalization efforts between Israel and key Arab states provide additional opportunities to strengthen regional air defenses given shared missile and UAS threats.

V. CONCLUSION

The evolution of offensive air and missile threats has accelerated greatly since the United States began developing its first ballistic missile defense systems over fifty years ago. This trend represents a growing national security challenge expected to multiply in scope and complexity over the coming decade. To meet these challenges, U.S. IAMD posture must be comprehensive, layered, mobile, and ready to degrade, disrupt, and defeat adversary missiles at every opportunity and in all phases of flight, and include evolving warfighting concepts that emphasize dispersal and maneuver to ensure resilience in contested environments. To be most effective, it must also be integrated and interoperable with Allies and partners, and underpinned with increasingly robust domain awareness capabilities within a pliable missile defense network.

As a proven capability within an integrated deterrence approach, 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 investments and innovation in the development of full spectrum missile defeat capabilities in order to maintain deterrence and offer protection, while hedging against uncertainty.

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