Strategic Weapons in the 21st Century
Nuclear Deterrence in a
“Fundamentally Different Global Setting”

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Workshop Summary¹

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The 18th annual Strategic Weapons in the 21st Century (SW21) workshop aimed to sustain high-level focus on key deterrence challenges and to promote well-informed discussion of them on a non-partisan basis. It brought together interested stakeholders from the national security laboratories, federal government, military, think tank, and academic communities, as well as allied counterparts, to share perspectives in an unclassified setting. The agenda was designed to examine the following key questions:

• What are the principal dangers and challenges in this new global setting?
• What decisions have been made to adjust the U.S. strategic posture?
• What further decisions are required, either to preserve or to pursue options?
• Has the nuclear security enterprise been successful in accelerating its adaptation to new requirements? What more is needed from it?

All remarks and discussion were on a non-attribution basis.

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Panel 1: Calibrating the Risks of War

- What are the potential pathways to crisis and war with Russia or China?
- Has the erosion of deterrence continued or stabilized?
- How do the leaders of Russia and China perceive the political resolve of the United States and its allies and partners to defend their interests if attacked?

The United States today is in a situation of accumulating strategic risk. Some of these it has knowingly accepted; others are just part of the emerging multipolar system. The National Defense Strategy Commission has painted a clear picture of the evolving strategic environment and the growing risks over the last 15 years. The 2010 report stated that the United States was facing diminishing defense resources and increasing threats around the world. In 2018 it concluded that the situation has so deteriorated that the United States was at risk of losing a conflict against a strategic competitor. Since 2018, the threat landscape has only become worse, and the United States may be even less prepared to deal with it.

The risk of great power war is high and rising. And if such war occurs, there is a very significant likelihood that nuclear weapons will be employed. These new threats come at a time when the United States has lost some of its nuclear deterrence muscle-memory. The nation has been focused instead on counterterrorism, ethnic conflicts, and civil wars. This is not surprising as most people currently serving in leadership positions gained their professional experiences in national security after the Cold War. Unfortunately, while the United States was on a holiday from nuclear deterrence, Russia continued to think seriously about it. With the dissolution of the Soviet Union, Russia found itself in a conventionally inferior position—the same way the United States did in the Cold War—leading to renewed emphasis on nuclear deterrence.

Understanding the different approaches to deterrence is important. The U.S. gap in nuclear deterrence thinking has resulted in misguided mirror imaging, and the erroneous belief that adversaries have the same understanding of deterrence as the United States does. Thinking along the lines of “if this will deter us, it will deter them” is a wrong approach.

The panel highlighted three recent examples of deterrence failure: 1) the Russian invasion of Ukraine, 2) the Hamas attack on Israel, and 3) Iran’s recent attacks on Israel. An argument could be made that Russia did not attack NATO, so deterrence held in that regard, but as a panelist pointed out, the United States has shown a fear of escalation by hesitating at times to send certain weapons to Ukraine, which actually emboldened Russia. Strengthening deterrence requires sowing doubt in an adversary’s mind of what might come next. As one of the panelists noted, the United States should “stop talking about what we won’t do but leave to Russian imagination what we might do.” Panelists also lamented the tendency to have a locked-in mindset about what adversaries would or would not do. To overcome this, and to plan for uncertainties and deterrence failures, the U.S. government must keep a mindset that its
adversaries have different approaches to deterrence, and even the best assessments may be wrong. Finally, U.S. leadership should also keep in mind that all of these events are being closely watched by China, and a lot of nuclear learning is happening now.

There are many negative factors that increase nuclear risks. Geopolitically, the most important negative factors are China’s belief that it will return to the global stage as the predominant power, Russia’s repeated aggressions that threaten global peace, and the lack of a clear U.S. strategy to handle the three-body problem. The United States has decades of experience in deterring a peer adversary in a bilateral context, but the deterrence dynamics among three major powers are fundamentally different. Other negative factors include an underinvestment in critical capabilities for deterrence by denial; lagging in sustaining an adequate nuclear deterrent; and a domestic political environment that adversaries believe they can take advantage of.

The United States must also do more to maintain a secure second-strike capability. Ballistic missile submarines (SSBNs) and submarine-launched ballistic missiles (SLBMs) are in very good shape now thanks to acquiring significant advantages in acoustics and more recently in the cyber domain. However, undersea supremacy may not last forever. Therefore, intercontinental ballistic missile (ICBM) survivability should not be neglected and there should be at least a research and development program for road-mobile systems. This would be an important hedge for the SLBM leg.

The good news is that there are some positive factors that could help to avert great power conflict. The United States has a strong network of allies and partners. This administration has done very well to deepen collaboration with allies. To continue strengthening these relationships it is important to understand that alliances are not separable. Allies and partners watch each other closely, and U.S. relationships and actions in one region have an impact on extended deterrence everywhere. The war in Ukraine has provided the lesson that support for Ukraine (if it can hold) can be a cautionary tale for Russia, and it could also help to deter others from starting a war in their own region. Another positive factor is the fact that the economic costs of war concern all adversaries—China especially. Thus, imposing costs on China early on in a crisis could help to dissuade them from escalating. Finally, it might also be a positive factor that escalation is a two-way street. China and Russia do not want a war with the United States, nor does the United States with them. The general public does not want war, and allies do not want it either. Building a strategy based on these factors could help to avert war.

However, a great power conflict might still arise. One of the panelists argued that the most likely pathway to war is miscalculation. This could be due to a miscalculation of the U.S. resolve by adversaries, or the United States might be the one that miscalculates adversary intentions. Given the polarized debate in the United States, China and Russia might perceive that there is a lack of will in the U.S. government to support allies and partners. And even if support came, it
would be too little, too late. To signal resolve to China and Russia, the United States needs to decide what its core values are and what kind of role it wants to play in the world. Building a strong unity in purpose would strengthen the country against adversary attempts at influencing the domestic debate in the United States. It is also important that the leadership of the executive and legislative branches level with the American people about the challenges, risks, and dangers that America and the world face today.

Panel 2: Calibrating the Challenges of Long-Term Competition

- How are Russia, China, and the United States competing for strategic advantage?
- Can Russia and China be dissuaded from taking further destabilizing actions? If so, how?
- What goals should guide a more competitive U.S. response to the nuclear challenges posed by Russia, China, and North Korea?

Panelists agreed that the greatest strategic advantage that the United States has, and that China and Russia do not, is its network of allies and partners. This alliance system is strong, and getting stronger. Japan is spending an increased percentage of its GPD on defense, particularly missile defense, the United States and South Korea signed the Washington Declaration, and at least 20 NATO allies will reach the 2% defense spending threshold before the end of this year. The two new NATO members, Finland and Sweden, have very significant defense capabilities and a strong defense industrial base. Central and Eastern European NATO members are getting rid of their old equipment, and they are transitioning to interoperable post-Cold War systems. Other allies, such as the Philippines, are also becoming more important on the world stage, and their partnership provides the United States with significant strategic advantages over regional competitors.

However, it is important to not take allies and partners for granted. First, there are many domestic issues. While allies must overcome some of their domestic challenges, questions are arising about the U.S. commitment to allies and partners, and how the U.S. elections might influence the future of extended deterrence. Second, there is the question whether these defense spending increases are sustainable. While more NATO countries are meeting the 2% threshold, it is unclear how sustainable it will be over the long run. Finally, the United States might come to a milestone where allies in Asia could ask for more, including potentially deploying nuclear weapons on their territory. Balancing these demands with other U.S. priorities will be challenging.

To strengthen extended deterrence and allied confidence in U.S. commitments requires action from both the United States and its allies. In Europe, the United States could do more to help allies develop their capabilities and to train them to fully participate in the deterrence mission. In Asia, deploying the nuclear Sea-Launched Cruise Missile (SLCM-N) alone is not going to erase
all allied concerns. More needs to be done with South Korea and Japan to alleviate their worries and to reassure them about the seriousness of U.S. commitments. It would also be beneficial to bring Asian and European allies together more often. While NATO will not be a major player in an Asia-Pacific conflict, it would be important to train together, especially on extended deterrence missions. Overall, the chief objective of extended deterrence is to create doubts in the minds of adversary leaders about their ability to control a regional war, and to make them believe that the United States would come to the defense of its allies and partners.

Right now, the first task is to determine how to reinforce deterrence. To do so, the United States needs resilient, responsive, and robust conventional and nuclear forces. This creates the space for statecraft, which is an integral part of the deterrence framework. Convincing adversaries to come to the negotiating table would allow them to express their concerns about U.S. capabilities, and it could help to create mutual predictability and implement confidence-building measures. Yet it is important to ask the question: do adversaries feel deterred now, and at what point would they not feel deterred? President Putin has continued to rattle the nuclear saber throughout the war in Ukraine, the Russian military is almost completely reconstituted, and even amidst sanctions, the Russian economy has turned into a productive insular wartime economy. Furthermore, Russian energy sales have not been hit too hard despite the multiple rounds of targeted sanctions from the West. China is watching the U.S. response to Russia’s invasion closely, and they are learning important lessons. They also continue to modernize and expand their nuclear forces, steal intellectual property from the West, and they managed to achieve control over a vast percentage of refined critical minerals and pharmaceuticals. All of these factors increase their resilience and responsiveness, making it more difficult to deter them.

Nuclear modernization is a key element of reinforcing deterrence. However, over-budget systems such as the Sentinel ICBMs, and transition delays with the SSBN and ICBM legs are hampering modernization. It is necessary to stay the course on the program of record, as any further delays would be detrimental. Both panelists pointed to the positive factor that there is bipartisan support for nuclear modernization, that was laid out in the Strategic Posture Commission’s final report last year. One panelist also mentioned that the United States has already demonstrated its ability to move fast and effectively on important science and technology challenges, citing the successful COVID-19 vaccine efforts. This optimism is cautious though. While people are working hard across the nuclear enterprise, they are up against many structural challenges. One panelist was worried that making nuclear modernization a priority might require a huge shock to the system first. It seems that Russia and China had several “Sputnik moments” in recent years with new capability tests and norm violations, but so far, the United States has not responded to any of these in a serious manner.

Modernization also comes with risks. Balancing the risks and meeting the deadlines within budget benchmarks is a challenge. The United States could move a lot faster if it relaxed some
of its peacetime limits, but that might come at the expense of safety. While some risks should not be taken, others might be acceptable in the current environment. As one panelist noted, this is an inherently risky business. For example, every time Service members train, they are taking on some risks. Aiming for a zero-risk standard can harm national security. A zero-risk posture costs a lot and spending all the money on risk mitigation leaves little for the force developments the United States needs. Furthermore, going fast does not always entail more risks. There may be ways to streamline the process and make more efficient modernized delivery vehicles, acquisition processes, and warheads. There may also be useful lessons in streamlined management in various industrial processes that could be transferable to the nuclear enterprise.

Finally, the audience asked questions about the domestic political aspects of nuclear modernization, and the public’s interest in the topic. Panelists agreed that this should not be a political issue. In the past, presidents have avoided the topic of nuclear weapons unless there was something to brag about. It is valuable for the public, especially for the younger generation, to engage in debates about nuclear weapons which may help to build a consensus around modernization efforts. For policymakers, it is important to have open debates and engage the public about America’s role in the world and what kind of resources that role requires.

Panel 3: The Nuclear Security Enterprise: Beyond the “New Normal”

- What is the “new normal” (as described by the Strategic Posture Commission)?
- What adaptations have been made to improve capacity and effectiveness?
- What further adaptations are needed and how can they be accomplished?

The Strategic Posture Commission’s 2023 report highlights that the global security environment is much worse today than anticipated. While the fundamentals of U.S. strategy are sound, changes are needed to adjust U.S. nuclear forces and posture to the evolving challenges. The current program of record is necessary but not sufficient. The modernization program was designed for a different security environment, and the underlying assumptions that guided those decisions are no longer true.

In general, the report had a forward-looking focus that aimed to build consensus across all stakeholders. Instead of diving right into a description of the security environment, the document starts with a discussion of the stakes to show why this issue requires high level attention and broad support across the political spectrum. Commissioners found it key to call for collaboration among all stakeholders, create a strong sense of national purpose and consensus, and inspire nonpartisanship around these questions. The remaining sections analyzed the threats, and made recommendations for adjusting U.S. nuclear strategy and forces.
Despite the many recommendations, the document also acknowledged that there are very difficult problems that make the operationalization of these changes extremely challenging. For example, the United States faces many structural problems, and it does not have the defense industrial base to bring to bear the conventional and nuclear forces that are needed in the current security environment. This is why throwing money at the problem will not be enough. Important structural changes that take a broad look at every aspect of nuclear modernization need to be implemented first. For instance, environmental regulations have made it difficult to implement quick changes, and it would be crucial for political leaders to audit some of these regulations. The United States should also take a new look at allies, and truly maximize their contributions. Allies have been eager to help the United States get into a better place, but the United States needs to relax some export control regulations and become more comfortable with advanced technology transfers to allow for a more even burden-sharing. If strengthening nuclear deterrence is a national priority, it should drive decisions in all these areas.

Both panelists noted that the United States and its allies live in a world that is the consequence of the decisions that were taken 10-20 years ago; thus the outcomes cannot be changed fast. In 2022, the NPR was nested with other strategic reviews, and it has recognized that the security environment is deteriorating, but the situation has become worse much quicker than anticipated. The Biden administration is currently assessing the implications of these changes, and it is taking a fresh look at the underlying assumptions of the current program of record. Within the administration, there is general agreement with the conclusions of the Strategic Posture Commission that the program of record remains necessary but insufficient to respond to the changes in the security environment. U.S. nuclear posture and forces must reflect these developments, and the U.S. industrial base and nuclear enterprise also need to adjust to be more responsive.

To facilitate the necessary changes, Congress and the Department of Defense (DoD) have entrusted the Nuclear Weapons Council (NWC) with a broader mandate to address issues across the board. The NWC has developed a strategic framework to identify and rank further options to strengthen the triad and introduce new capabilities. Considering the limitations of the nuclear enterprise, not everything can be done simultaneously, and not everything is feasible in light of the already ongoing modernization efforts. Adjustments come with difficult trade-offs, and the United States needs to balance risks across the nuclear enterprise. The two guiding principles are mitigating transition risks and pacing the threat.

In this process, the DoD understands that the national laboratories have a lot of technical knowledge, and the NWC is encouraging the laboratories to be creative and think outside of the box. The whole purpose of this new strategic framework was to create a formalized process where the ideas that are put forward are analyzed in a structured way. There is a sub-working group that is tasked to look at capability gaps and seek proposals for specific problems. This is a continuous effort in collaboration with STRATCOM that has already done a lot of work on requirements. Understanding the gaps and weighing options against the production capacity and possible adversary reactions is a more systematic approach to the problem. This also puts
an end to the self-censoring and pull-back culture of the past decades and provides total intellectual freedom to scientists.

In 2023, the DoD established a nuclear-focused Deputy’s Management Action Group (DMAG), and it is already providing a venue for critical high-level decisions about the future of the force. It is also tasked to examine what are the implications of any additional delays in the transition, how associated risks can be reduced, and how greater optionality can be created for the future. In the event of a delay, this body is expected to present the deputy secretary and the secretary with options to address the risks and provide recommendations on how to pace the threat. The B61-13 is one example of this process. Regular and high-level attention in recent years have been very helpful within the DoD. However, this is not just a DoD problem. Risk also resides in the defense industrial base, the workforce, supply chain security, and cyber security. The entire enterprise lacks the muscle-memory to execute modernization programs quickly, and there are growing transition risks associated with keeping forces deployed longer than originally designed.

To some extent, there are competing priorities. Certain decisions are needed now to provide decision-makers with more and better options in the next 3-5 years, but there is no margin for further delays in the ongoing modernization efforts. There is a clear demand for new capabilities, especially in a regional context, but the nuclear enterprise does not have enough runway to take on several new programs. Besides regional deterrence, homeland defense also needs to be revisited. Adversaries are developing capabilities to compel or coerce the United States through potential nuclear and conventional strikes to back down and abandon its allies. Therefore, a fresh look is needed at homeland missile defense and what kind of updates can be made there. Regarding the defense industrial base, the war in Ukraine and the COVID pandemic have both helped to identify problems in the industrial base, and the Department of Defense is currently engaged in efforts to identify what steps are needed. For example, commercial approaches have been adopted to better understand what is happening at the lower levels of the supply chain, and to make sure that there is enough transparency to identify the real chokepoints.

In terms of the workforce, panelists noted that challenges are present not just in the nuclear enterprise but everywhere. The United States has lost much of its manufacturing base, and the DoD is trying hard to engage states and local community colleges to train the needed expertise and generate a workforce that is invested in the mission and knows that they have a life-long career path ahead of them. The coming years will be very stressful for the workforce, but U.S. modernization plans simply can no longer ignore the expanding nuclear forces of adversaries.
Panel 4: Exploring Beyond the Program of Record

- If the program of record is “necessary but not sufficient” (as the Commission concluded), what else is necessary?
- What additional supplemental capabilities are required by changes in the security environment?
- What should be done to prepare for delays in the modernization program?

One of the panelists described the current security environment as the “multiple nuclear challenger” environment, arguing that the “two-peer problem” bumper sticker is overly simplistic: Russia is only a peer in the nuclear sense, but in no other way; China is a peer in many domains but not yet in the nuclear domain; and North Korea is an intense nuclear challenger that cannot be ignored. In addition, Iran may also pose a growing nuclear threat in the future. This environment is completely new, and the United States has never faced so many challengers since the beginning of the nuclear era. The current program of record was conceived when Russia was a partner and its strategic nuclear arsenal was capped by the New START agreement, China had not yet embarked on a nuclear modernization path, and North Korea was not a significant threat. Today, none of these assumptions hold true. The likelihood of a New START follow-on is almost zero, which means an unconstrained environment for the foreseeable future. The United States must assess whether in this context the current force posture requires any changes.

As a result of the above challenges, both central deterrence and regional deterrence face new problems. The Strategic Posture Commission report was timely because it highlighted the urgency of the issue and the possibility of a bipartisan consensus about the necessary steps. The Biden administration was able to say that it supports the main findings of the report and it started its own assessment of the needed adjustments. Today, the capabilities that are envisioned under the program of record are still sufficient for central deterrence, but they may no longer be if Russia and China continue to increase their forces. Given the limitations of the nuclear enterprise, the United States needs to implement those recommendations that provide “the best deterrence bang for buck” and do not break the program of record. Some of the key changes are obvious. The SLCM-N that was mandated by Congress will be implemented, but the administration is reviewing what version would suffice the legal requirement and provide the most benefit. Other hardware adaptations are also currently reviewed but keeping the program of record on track is essential.

One of the panelists suggested that these discussions about hardware adjustments should go back to deterrence theory basics. U.S. deterrence posture will be sufficient if it can hold at risk what the enemy values the most. Meeting this requirement conveys the message to adversaries that the least bad option is to do nothing. This force sizing strategy requires answering two fundamental questions. First, what kind of forces are needed to hold such targets at risk? Second, what part of this force has to be nuclear? Nuclear weapons are unique and other weapons simply cannot replace them in many scenarios. The United States needs the
flexibility to provide the President with a range of non-nuclear and nuclear options in any
contingency. Force planning also must account for the eventuality of losing an entire leg of the
triad. These considerations are not new, but the security environment in which these decisions
must be made is new. The United States should figure out how to do all of this against two
nuclear peer challengers at the same time, and therefore must be able to hold at risk a much
wider range of nuclear and conventional forces.

Translating these requirements into actual force structure decisions is difficult. While
maintaining the triad is key, calling additional systems “supplemental capabilities” is a
misleading term. An adversary is either deterred or not. Many of the new systems that the
United States has just added, or is considering adding, were not viewed as “supplemental”
during the Cold War. The basic requirement is getting to the target. In recent years, adversary
investments in defense systems have driven force structure requirements towards greater
maneuverability and hypersonic solutions. Having low-yield, non-ballistic, survivable capabilities
would provide many benefits in this context. Additionally, some operational changes in the
nuclear triad might also be needed. Today, the United States has a functional dyad—the
bomber leg is available but it would take time to deploy it. This leg no longer has day-to-day
readiness, despite the fact that it is extremely useful for visibility and signaling. This carries the
danger that in an ongoing crisis making bombers available could actually send an inadvertent or
inadvisable escalatory message to adversaries. Therefore, the panelist argued, part of the
bomber leg should again be placed to day-to-day alert. Successfully communicating with forces
is another key element of a strong deterrence posture, therefore completing the modernization
of nuclear command, control, and communications (NC3) systems should also remain a priority.

Over the past few years, the United States has used up most of the flexibility for program
delays, which significantly increases the costs of any further changes in the transition timeline.
The nuclear enterprise has also tapped into the hedge to mitigate the risks of program delays,
which could endanger nuclear operations in the future. In this high-pressure, zero-margin
context, the key question is not ‘how best to mitigate risks,’ but ‘what would it take to get the
program of record recapitalized on time.’ It is already clear that most of the new systems will be
late to meet the deterrence challenge that the United States and its allies will face in the rest of
this decade. The next STRATCOM commander will be asked to maintain strategic deterrence
under the worst capacity ever—sustainment of the legacy systems will be more challenging
since they are already at the exact maximum of their service life. This is partly the result of
turning off the production enterprise for decades and that turning it back on takes time. All
stakeholders need to re-learn the practice of nuclear deterrence and train the next generation.
Acquiring new skills is also essential since many challenges have materialized for the first time,
and expertise to address them is lacking.

Despite all these challenges, there are multiple ways to speed up delivery of the program of
record. First, make it a national priority. Second, be bold. Focusing on “not breaking the
program of record” cannot stand in the way of getting the systems that are needed for
deterrence. New systems have been added to the program of record and it has not been
broken. This proves that there is room for innovation while the current program of record is
underway. The enterprise should work on becoming more flexible and resilient, and incorporate new mechanisms that encourage innovation. Another way to speed up the delivery of modernized weapons is to consider hard trade-offs in some safety and efficiency requirements, and in environmental regulations as well.

As the United States resolves these issues, it also must look forward and think long-term. It is important to avoid getting into the same situation a few decades from now. All modernization efforts are being done simultaneously, which means that many of these new systems will age out again at the same time. It is time to consider whether it is possible to think about the program of record in a different way. Is it possible to develop a plan that would keep the entire enterprise working consistently, not just in phases. The United States cannot get into the same situation, and it should not wait until the last minute to recapitalize its nuclear forces again. This requires adjustments in the complex now.

Besides all these hardware issues, “software” adjustments are also important. These include exercises and training, and alliance management. In NATO, nuclear work has been revitalized, and the new posture is “fitter for purpose.” There are nuclear planning and posture adjustments underway, and the F-35 acquisitions and B61-13 warhead upgrades will improve NATO’s overall deterrent. In the Indo-Pacific, the United States has deepened the dialogue by kicking off the Nuclear Consultative Group with South Korea, and by upgrading and augmenting the consultations on nuclear issues with other allies. The United States has an asymmetric advantage in its network of allies and partners, and it has many opportunities to create dilemmas for its adversaries. Getting the modernization piece right is not only an effective deterrent, but it is also a key aspect of reassuring allies.

First Keynote Address

The first keynote speaker emphasized that the Biden administration is taking a balanced, responsible, and pragmatic approach to arms control. In light of the increasing nuclear threats, the White House is realistic about what can be achieved through cooperative measures. While the United States remains committed to advancing the goal of a world without nuclear weapons, and reducing the salience of nuclear weapons, it will also maintain a secure deterrence posture as long as nuclear weapons exist. Today, the nuclear landscape is even more challenging than the 2022 Nuclear Posture Review (NPR) assessed. Adversaries have updated their forces, there is increased coordination among them, and they have disengaged from arms control. Russia regularly uses nuclear threats to advance national security objectives, and they are pursuing novel systems with questionable deterrence utility. Both China and North Korea have expanded their nuclear arsenals, and they have provided support to Russia in the war against Ukraine. It remains to be seen how Russia is going to pay back this support, and how much deeper their coordination will progress.
In the meanwhile, adversaries are showing little to no interest in arms control and risk reduction efforts. The New START agreement will likely expire without replacement, and the United States must prepare for a security environment without arms control. Russia has just rejected the idea to discuss space security, and China has also refused to engage in any U.S. arms control proposals. Instead, they are trying to obscure the goals of their nuclear expansion. In the past, they have showed interest in talking about doctrine and policy, but they are not willing to go forward with current U.S. initiatives. The administration has proposed missile launch notifications, and other risk reduction measures, but so far, no success. However, strengthening nuclear deterrence, getting the modernization efforts right, and deepening cooperation with allies would help to turn the tides with China, and make them realize that engaging with the United States is better for them. The North Korean and Russian cases have shown that sanctions are not really an effective tool to bring adversaries to the negotiating table. Despite the sanctions, they both hold onto their belief that arms control is not in their strategic interests. However, Russia and China still want to maintain their reputation in international fora, which might allow for some diplomatic pressure on them (unfortunately, this is not true for North Korea).

In response to the increased nuclear threats, the United States is focused on maintaining a secure deterrence posture. However, the across-the-board, just-in-time transition from old systems to new weapons presents many challenges. There are already announced delays in modernization efforts that make it extremely difficult to maintain the current level of forces. There are several important steps the United States needs to take to remain competitive. First, strategy should be updated to account for the nuclear build-up of China, and the growing nuclear threats from other adversaries. Last month, the new employment guidance was approved that focused on the requirements of deterring two nuclear peers, the integration of nuclear and non-nuclear capabilities, enhanced cooperation with allies, and it also outlined the role of arms control in the current security environment.

The second task is to take a fresh look at nuclear modernization efforts. The Biden administration is fully committed to recapitalize the triad, and it remains confident in the current force. The B61-13 program was an example of a creative, qualitative improvement of nuclear capabilities that was possible without breaking the program of record. Similarly creative solutions might be needed in the future. The Strategic Posture Commission made many recommendations, and the Biden administration is currently evaluating those. It is taking a careful look at real and potential emerging gaps in the U.S. deterrence posture and is exploring technical options to address them. Future decisions will address gaps while preserving strategic stability and considering the costs and benefits to broader U.S. priorities, including being realistic about the capacity of the nuclear enterprise. In a post-New START world, there will be fewer options to address transition risks, and possible adversary reactions will also influence these decisions.

The third task is to strengthen U.S. alliances. The United States is committed to enhance training and exercises, and deepen coordination and consultation with allies. The administration is also exploring how allies can better contribute to burden sharing, and how
they can help to ease the need for U.S. capabilities on the ground. Allies are very interested in these opportunities, but further reform is needed in export control and licensing to increase U.S. flexibility in advanced technology transfers. Allies have also shown interest in contributing more to the nuclear mission. The Biden administration wants to make sure that non-basing states can step up by providing conventional support to nuclear operations, acquiring dual-capable aircraft, and increasing tanker capacity. These measures would send important deterrence signals to both Russia and China.

To avoid an unconstrained arms race, the Biden administration seeks to manage competition through arms control. However, it is also ready to show adversaries that unless they engage in meaningful negotiations, they will face new security challenges from the United States and its allies. The White House is pursuing arms control opportunities that are realistic, and it will not allow adversaries to dictate U.S. arms control policy. In lack of substantial cooperation from adversaries, the United States will explore unilateral steps that do not rely on adversary consent, and it will work in close coordination with allies to normalize certain standards of behavior globally. The administration is also doing its homework to get ready for the moment when legally-binding arms control agreements become possible again. Any such future agreement will also take into account China. Currently, important work is being done to develop the needed capabilities to verify future arms control agreements, and there are investments in training the next generation of arms control experts. The administration believes that there are many great opportunities to advance arms control while also maintaining a strong deterrence posture.

Second Keynote Address

The second keynote address focused on the nuclear enterprise. The speaker emphasized that there is no reason to panic that the United States is falling behind its adversaries. Last year, the National Nuclear Security Administration (NNSA) delivered over 200 modernized weapons to the DoD, which is the highest number since the end of the Cold War. With the current program of record, a comparable rate of modernized weapons will continue to be delivered over the next decade. This success is also proof that the United States has a nuclear enterprise that can refurbish, rebuild, redesign, and adjust its nuclear stockpile to improve deterrence. This is an important message to adversaries, who have also increased their weapons production capacity over the past decade.

At the same time, there is work ahead. The next weapons systems will be more difficult to produce and the NNSA infrastructure remains fragile. The program of record is daunting. NNSA is implementing five simultaneous modernization programs, which combined with the delivery system modernization by the Department of Defense make up the effort to sustain the nuclear triad. On top of these efforts, two new systems have been added to the program of record to provide the President with additional response options. The B61-13 will add a capability for certain hardened and large-area military targets, but it will result in no change to the number of
weapons in the stockpile. The number of B61-12s built will be decreased by the number of B61-13s manufactured. The SLCM-N that was authorized and funded in the FY24 budget will provide a low-yield, non-ballistic capability to the Navy. With these two announced changes, now there are seven systems in the program of record to be delivered by the mid-2030s. It will overhaul all three legs of the triad and add new deterrence capability, improving U.S. responsiveness to the threat environment.

To realize this program of record, and deliver the needed warheads, the infrastructure needs to be more modern, capable, flexible, and resilient. The big challenge is that infrastructure recapitalization must happen parallel to delivering modernized weapons. Over the past years, NNSA prioritized capabilities that are key for the program of record and for safety. For the program of record, the highest priority is re-establishing the capability to produce new plutonium pits that was lost in 1989. NNSA is pursuing a two-site plutonium pit production strategy with the goal of producing a minimum of 80 plutonium pits per year. In this regard, real progress is being made. Last year, more development pits were produced at Los Alamos than ever before. Los Alamos will achieve the capability to produce 30 pits per year in or near 2028. At Savannah River, early construction activities have begun, and NNSA is taking steps to enable timely success by, for example, training the employees who will occupy the processing facility. A resilient pit production capability will be needed as long as the United States maintains nuclear weapons. Re-establishing plutonium pit production is the largest and most complex undertaking at NNSA since the Manhattan Project. The current total estimated acquisition cost range for pit production is $28-37 billion. While this estimate still needs review, it is most likely accurate, given its consistency with other recent infrastructure projects.

The highest priority infrastructure project for safety is the Uranium Processing Facility, which is 60% built, and it is scheduled to be complete in 2027, with full operations by 2031. Additionally, many other infrastructure projects are at various stages of design or construction. NNSA also launched an effort to develop a new vision for the nuclear enterprise, which is called the Blueprint. This will identify the highest priority facilities needed for science, production, safety, security, and people across the enterprise between now and about 2050. This will enhance responsiveness, flexibility, and resilience.

A key theme that emerged from the Q&A session was risk-taking. Participants wondered whether NNSA is embracing enough risks to meet the challenges of the current security environment. The speaker acknowledged that embracing risk is not an NNSA “core competency” and it has been a struggle. But there is growing consensus in leadership that NNSA should accept more risks and that the culture of risk avoidance must transition towards better risk management. This will require that people at every level understand that certain risks are acceptable. Of course, the main challenge of accepting more risk is that it can lead to mistakes, and it only takes one big mistake to roll back all the progress that has been made.

NNSA also has several initiatives to shape the future. These include improving the efficiency of weapons design and production through digital engineering, and the introduction of a scaled agile framework to reduce the risks of program failure and more quickly incorporate modern
technologies. NNSA is also seeking improvements to manufacturing processes, and it has established construction initiatives such as Build SMART. This aims to improve cost estimating, and increase partnerships to deliver capability on time and within budget. NNSA is also exploring new acquisition approaches to save time and money. These initiatives are crucial to establishing capabilities and capacities for weapon modernization, and to take full advantage of construction and occupancy trends in the United States.

Regarding the future of nuclear deterrence, it is time to define U.S. nuclear deterrence needs beyond the 2030s. These needs should be informed by the threat environment, and all stakeholders should work together to identify future systems and the science, design, and infrastructure capabilities that will support them. At the same time, the United States should resist introducing new systems into the already busy next decade to avoid catastrophic failure of the fragile enterprise. This, however, is not only a capability question. Part of this effort should include changing deterrence thinking in response to the Russian and Chinese innovations in their deterrence postures.

The new global dynamic has also changed NNSA global security activities and priorities. In the absence of cooperation provided by treaties, the United States needs to advance its detection capabilities. For example, NNSA has developed better capabilities to detect very low-yield underground nuclear explosions around the world. Partially in response to Russian and Chinese efforts, NNSA is also advancing its ability to detect nuclear explosions from space. In addition, NNSA continues to advance U.S. global nuclear threat reduction leadership, working with the IAEA and others. Allies and partners play a critical role in all of these efforts. Strong partners create a distinct advantage for the United States. Besides defense partnerships, NNSA is also expanding national security science and technology engagements globally. Continuing these global partnerships in nuclear deterrence and science and technology is a key aspect of demonstrating U.S. leadership every day.