

**Statement of Dr. John R. Harvey**  
**Future Nuclear Posture of the United States**  
**Before the**  
**Subcommittee on Strategic Forces**  
**Committee on Armed Services**  
**U.S. Senate**  
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**Introduction**

Chairman Sessions, Ranking Member Donnelly, and members of the Subcommittee: I am pleased to testify before you today along with colleagues and friends—all of whom reflect the highest standards of public service—about the future nuclear posture of the United States.

My statement today reflects 38 years of experience working nuclear weapons and national security issues, first at Lawrence Livermore National Laboratory, then at Stanford University's Center for International Security and Arms Control and in senior positions in the Departments of Defense (twice) and Energy. From 2009-2013, I served as Principal Deputy Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs, initially under Ash Carter then serving as Undersecretary for Acquisition, Technology and Logistics. I was his "go to" person for the 2010 Nuclear Posture Review as well as for interactions with the Department of Energy on all aspects of the nuclear stockpile. I provided oversight to DoD acquisition programs to sustain and modernize nuclear delivery systems and systems for their command and control. Today, I consult with several organizations on many of these same issues. My statement today, however, reflects my views and not necessarily those of any organization to which I consult.

**Priority One—Bolstering the Fragile Consensus on Modernization**

It is worthwhile to take a step back and recall the state of the U.S. nuclear posture in 2009 when President Obama took office. The prospects were grim:

- Funding was insufficient to sustain the R&D base needed for long-term certification of stockpile safety and reliability and, at the same time, recapitalize an aging infrastructure.
- Basic nuclear weapons design, engineering, and production skills and capabilities were increasingly at risk because they were not being exercised.
- Ongoing warhead life extension activities were under funded and constrained in their ability to improve warhead safety, security, and reliability.
- Operations at warhead component production facilities were at increased risk of safety shutdown.
- DoD had yet to step up to its own nuclear modernization needs.
- There was little consensus within Congress, or between the administration and Congress, on the role of nuclear weapons in our national security strategy.
- Many in Congress were concerned that a comprehensive approach to nuclear security had not been clearly articulated, and they were right!

Today, the tide has shifted. Specifically:

- The 2010 NPR was built on a foundation of bipartisan support; in large part, it adopted the recommendations of the Bipartisan Congressional Commission on the Strategic Posture of the United States (aka “the Perry-Schlesinger commission”).
- It was achieved with unprecedented interagency cooperation and White House involvement, and defined an integrated/balanced strategy for reducing nuclear dangers.
- Very importantly, the strategy strongly linked our nuclear deterrent to other elements of nuclear security including arms control, nonproliferation, threat reduction, and nuclear counterterrorism.
- High level support across his administration for increased investments in DOE’s nuclear weapons programs and DoD’s nuclear delivery systems enabled the President to conclude, and convinced the Senate to ratify, the New START Treaty.
- Recent President’s budget requests have further increased investment for modernization. To a very large degree, Congress is funding these programs and, as it should, is holding the administration accountable for sustained progress.

Not everything is “fixed,” but there is a fragile consensus in place regarding the future nuclear posture and a plan (that changes a bit every year) to achieve it.

To what do I attribute this remarkable demonstration of bipartisanship in a political environment that is as corrosive as many of us can remember? I think the answer is two-fold. First, the actions of Vladimir Putin, in essence to reestablish the Soviet Union, have made it clear to most Americans that optimistic assumptions about the future global security environment are not coming to pass. Recent Russian behavior has also muted the voices of those who sought to hijack, and misrepresent, the President’s Prague agenda in calling for unilateral reductions to small numbers now.

Perhaps more importantly, is the commitment of this Committee and its staff (both minority and majority) working together, and together with their House counterparts and with colleagues both inside and outside the Obama administration to do what’s right for our nation’s security. I must add that vocal support for the President’s modernization program from my colleague at the table, Keith Payne, taken at some personal risk, has helped to solidify support of other conservatives not inclined in general to agree with the President.

This decades-long modernization program for all elements of the nation’s deterrent—the nuclear stockpile and supporting infrastructure, nuclear delivery platforms, and command and control systems that link nuclear forces with Presidential authority—faces several challenges. The next few years are critical as we climb the so-called modernization “bow wave” of needed investment that peaks in the mid-2020’s. The greatest challenge, however, is to bolster consensus, and sustain momentum, in the transition over the next year to a new administration. Continued close attention and bipartisan support from Congress will be essential.

### **The 2017 Nuclear Posture Review**

Given changes in the security environment since the 2010 NPR, it is almost certain that the next President will direct a review of the current posture, policies, and programs for U.S. nuclear forces and, very likely, will do this whether or not Congress passes legislation requiring it. What should Congress do? There are three primary options to consider:

- Take no action—leave to the discretion of the next President.
- Direct the next administration to conduct a review of U.S. nuclear posture and deliver, by a date certain, an unclassified report (with classified annex, if needed) on the way ahead.
- Establish a new bipartisan commission to inform the nuclear review of the next President.

In considering options, it is noteworthy that previous NPRs—those concluded by Clinton in 1994, by Bush in 2001, and by Obama in 2010 (informed by Perry-Schlesinger)—reflect much more continuity than change. After evaluating alternatives, all concluded that a strategic triad of nuclear forces—consisting of land- and sea-based ballistic missiles, and heavy bombers—and forward basing of B61 nuclear bombs carried by NATO dual capable aircraft were essential to both strategic and extended deterrence. All concluded that a hedge capability, held in reserve, was needed to respond to unanticipated technical problems with a warhead or delivery system, or to adverse geopolitical changes that required augmentation of deployed forces. All agreed that it is insufficient to base deterrence solely on the existence of some level of nuclear forces; rather, it depends on the ability of forces to hold at risk assets and installations most highly valued by an adversary. Thus, force capabilities mattered and all understood that capabilities might need to be adjusted as adversary target sets and employment strategies evolved.

Given the trend of continuity, given the current, if fragile, consensus on modernization and given the intense bipartisan review that was carried out by Perry-Schlesinger in 2008-09, a new bipartisan commission is not needed at this time. Even if the FY17 NDAA were to establish one, and assuming it became law in late Fall 2016, it would take at least another 18-24 months to get the members appointed, the commission up and running, and recommendations developed. The commission would likely be carrying out its work in parallel with the next administration's nuclear review and would thus not be timely.

Rather, the next administration should review and update the conclusions and recommendations of the 2010 NPR based on the global security environment as it has evolved since that review was completed. This review would benefit from the analyses, assessments, and contributions of experts in the think tank community. Examples include work of the National Institute of Public Policy in informing the 2001 NPR, and recent work (i.e. Project Atom) at the Center for Strategic and International Studies addressing options for the future U.S. nuclear posture.

### **Major Considerations of the Next NPR**

The Committee has requested that we provide views of “what should be the major considerations and content of the next NPR.” Most importantly, the next NPR should “open the aperture” on issues and activities that the Obama administration had “put to bed” based on its assessment of the future global security environment. In doing so, we must manage the downside risk that certain recommendations could rupture existing consensus on today's modernization program.

#### ***Russia***

Deterring a potentially hostile Russia remains the primary focus of U.S. nuclear forces. Mr. Putin believes he has a “responsibility to protect” ethnic Russians wherever they reside. He has used this argument to intervene in the internal affairs of Moldova, Georgia and now Ukraine including the illegal annexation of Crimea. Putin's modus operandi in Ukraine has not been an

all-out armored assault as the Soviets did in Hungary in 1956 and Czechoslovakia in 1968. Rather, he seeks to achieve his political ends by introducing covert forces employing “gray ops” (aka hybrid warfare) to incite, or amplify, instabilities and insurgencies among fringe elements in Eastern Ukraine. He has also given increased prominence to nuclear forces, and to brandishing these forces in seeking to intimidate his perceived adversaries.

What do the events in Ukraine mean for NATO members such as Latvia and Estonia with sizable ethnic Russian populations? Would NATO even recognize that a member state was under such covert assault? How would other members respond under the Article V commitment to defend that member? How should these events be reflected in U.S. and NATO security posture and planning? What does all this mean for the U.S. nuclear posture. These questions are at the top of the list for the next NPR. Ten years ago, few would have imagined the events of the past two years in Ukraine. Today, it must inform our thinking about future conflict.

Russia has an active strategic modernization program underway. Some of it, like ours, involves upgrading older systems at the end of their service lives. Other modernization involves potential qualitative advancements that we must monitor closely so that we are not surprised and, if required, can make a timely (and possibly asymmetric) response. That said, we must be careful not to convey that U.S. modernization is being driven by Russia’s. We must modernize whether or not Russia modernizes if we are to retain basic components of an effective Triad.

More so than its modernization program, I am concerned about Russia’s evolving nuclear strategy. In short, Russia seems to embrace the threat of limited nuclear use to deescalate a conflict, for example, to solidify near-term gains against a conventionally superior adversary. Does Russia really believe that it could escalate its way to victory say in restoring the Baltics to Russian rule? If it does, then we must set Russia straight that no conceivable advantage at all could ever accrue from nuclear use against NATO. The next NPR should determine, among other things, whether existing U.S. declaratory policy needs to be refined or clarified.

### ***Nuclear Delivery Systems and Command and Control***

Several issues involving nuclear delivery systems and nuclear command and control (NC2) are timely for consideration in a new NPR:

- How many ICBMs should we deploy (at how many bases) to meet security needs while maintaining a robust cadre and career path for ICBM operations?
- How best can ICBM and SLBM life extension program be leveraged to reduce costs through a smart approach to commonality (e.g., in solid rocket motors, firing systems, guidance and control, and ground components), recognizing that these two systems experience different operating environments?
- What additional modernization is needed to convey credibly an important message for deterrence; that is, U.S. nuclear forces cannot be neutralized by attacks, whether kinetic or cyber, on the NC2 system?
- In light of security developments in East Asia, and the continuing challenge of assuring allies of U.S. security commitments, is it time to revisit options to:

- Establish and exercise, with allied concurrence and support, a capability to deploy U.S. dual capable aircraft, and nuclear weapons, to bases in Japan and the ROK?
- Restore nuclear capability to carrier air via the F-35?
- Develop and deploy on attack submarines a modern, nuclear, land-attack SLCM?

### *Are New Military Capabilities Needed?*

Two looming questions involving stockpile modernization are worthy of debate and discussion:

- Do we need nuclear warheads with new or different military capabilities?
- Do we need to retain capabilities to develop and produce such warheads?

My short answers to these questions are, respectively, “maybe” and “most assuredly.” It is timely to review needed military capabilities in light of the evolution of the global security environment including Russia’s actions upsetting the emerging post Cold War international order and increased focus on the challenge of deterring escalation in a conventional conflict between nuclear-armed states. At least three options may be seen as pertinent:

- Lower yield options for ICBM and SLBM warheads, at least until a viable prompt global conventional strike capability is achieved.
- Capabilities to hold at risk hardened, underground installations.
- Warheads that provide extended service life, greater margin for enhanced reliability, modern safety and security features, and ease and rapidity of manufacture.

These ideas are not new and I do not think it urgent to develop and field such warheads. That said, consideration of these and other such options should be on the agenda of the next NPR.

The second question addresses the challenge of maintaining capabilities of weapons scientists and engineers to develop and field modern warheads if required by a future President. To maintain such readiness, designers and engineers must be provided opportunities to exercise critical capabilities with challenging design problems.

Over the past decade and more, however, challenging warhead design and development opportunities have been few and far between. Most work today involves warhead life extension programs (LEPs) that do not present sufficiently complex design and development challenges to fully exercise skills. The B61-12 LEP offers challenges to the Sandia teams developing non-nuclear warhead components—e.g., a modern warhead electrical system—but not to the design and engineering teams at Los Alamos. Indeed, the bomb’s “physics package” (the warhead primary, secondary, inter-stage and radiation case) is essentially the same as the original bomb.

Today, there are no requirements for new military capabilities. How then can critical skills be exercised? The LEP for an interoperable ICBM/SLBM warhead, called IW1, when compared to today’s refurbishment LEPs, presents a formidable challenge for training young designers. The follow-on interoperable warhead (IW2) presents an even greater challenge. Both programs, however, were delayed by five years in recent budgets and are late to need for retaining critical capabilities. The next NPR should review whether to accelerate the IW1 and IW2 LEPs.

Prototyping is another option to exercise the entire design, development and manufacturing enterprise. Here, a modern warhead design would be taken from initial concept through prototype development and flight testing, up to a point where a few are built but not fielded.

The FY15 and FY16 NDAs have advanced legislation to facilitate retention of capabilities through expanded use of prototype development at the national laboratories, and by establishing a nuclear weapons design responsiveness program as a key component of stockpile stewardship. Absent these initiatives, and possibly within a decade, there is serious risk that the nuclear weapons enterprise will be unable to provide a timely response to unanticipated contingencies. Establishing affordable programs to exploit these opportunities is a challenge for the next NPR.

### ***Nuclear Stockpile and Supporting Infrastructure***

Several other issues involving the nuclear stockpile and supporting infrastructure should be addressed with high priority in the next NPR:

*Early retirement of the B83 bomb:* U.S. hedge strategy seeks to provide two separate, genetically diverse warheads for each leg of the Triad. Sufficient numbers of one warhead are held in reserve to provide backup in the event of an unanticipated technical failure of the other. There are two U.S. gravity bombs—the B61, undergoing life extension, and the B83. Current plans are to retire the B83 well before the end of its service life, and possibly before sufficient experience is gained with the B61-12 LEP to fully assess any “birth defects”, in part to avoid a relatively small investment in B83 warhead surveillance. In light of the increased importance of extended deterrence in our security posture, it makes sense to revisit that decision.

*W76 backup:* A major goal of the “3+2 strategy” for stockpile modernization is to provide a “backup” for the W76 SLBM warhead—the most prevalent warhead in the future force—in the event of unanticipated technical failure. This was to be achieved by fielding interoperable ICBM/SLBM warheads. That specific approach has been called into question, in part by the more urgent need to extend the life of our other SLBM warhead—the W88. In any case, there are insufficient W88s to back up the W76. A new approach is needed to hedge W76 failure.

*Recapitalizing uranium and plutonium manufacturing infrastructure:* A responsive nuclear infrastructure to repair or rebuild warheads would relieve the need to maintain a large stockpile of reserve warheads to back up the deployed force. We have not had one since the early 1990s. Progress has been made recently on what seems to be affordable approaches to recapitalization. But the capability being provided, particularly regarding plutonium pit manufacture, may not be in time to meet the needs of future LEPs. It is time to resolve this problem.

### **Conclusion**

Certain issues will be highly controversial and thus pose a risk to maintaining a continued consensus on modernization. That does not mean that the next NPR should not study them. Rather, all of the security implications of alternative courses of action must be understood before moving forward carefully, and with transparency, to any recommended changes in U.S. nuclear posture. This can best be achieved with an NPR that integrates all elements of nuclear security, not just force posture, embraces all agencies with national security equities as well as allies, and communicates clearly with Congress and the American public.