

Statement of Dr. Donald L. Cook  
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On the  
The B61 Life Extension Program and Future Stockpile Strategy  
Before the  
Subcommittee on Strategic Forces  
House Committee on Armed Services

**INTRODUCTION**

Chairman Rogers, Ranking Member Cooper, and distinguished members of the Subcommittee, thank you for having me here to discuss the President's plans for nuclear weapon modernization focused on the B61 Life Extension Program (LEP) and the Nuclear Weapons Council (NWC) approved "3+2 Strategy." Your ongoing support for the men and women of the National Nuclear Security Administration (NNSA) the work they do, and your bi-partisan leadership on some of the most challenging national security issues of our time, has helped keep the American people safe, assured our allies, and enhanced global security.

I am here to state how critically important it is for the United States to have an unambiguous and effective strategy to achieve the goals articulated very clearly by the President, first at Prague in 2009, again in the 2010 Nuclear Posture Review, and most recently in Berlin this June to ensure a safe, secure and effective deterrent while reducing the number and types of nuclear weapons. That national strategy is the "3+2" Strategy advocated by the U.S. Strategic Command, endorsed by the NWC, and with congressional support, will be implemented by the NNSA and the DoD Services.

I will also take a moment to discuss an integral part of the "3+2 Strategy", the B61-12 LEP, and why your continued support is essential to achieve a significant reduction in our stockpile of nuclear bombs while meeting the President's commitment to maintain a safe, secure, and effective arsenal to deter any adversary, and guarantee that defense to our allies.

**3 + 2 Strategy**

The B61-12 Life Extension Program created the opportunity to reduce the number of weapon variants and opened the door for further reductions in stockpile numbers. This opportunity forms a key part of the fundamental basis for the "3+2" Strategy. Fewer weapon types provide the President with the flexibility to respond to technical and geopolitical uncertainty and meet the requirement to maintain a safe, secure, and effective arsenal while reducing our reliance on nuclear weapons.

The “3 + 2” Strategy is a significant advancement in the continued evolution away from the Cold War strategy of a large and diverse stockpile and makes marked improvements in the safety and security of the weapons that remain. Our existing stockpile today consists of two submarine launched ballistic missiles (SLBMs), two Intercontinental ballistic missiles (ICBMs), and three air delivered systems with multiple modifications. “3 + 2” is a long-term strategy that will move us toward a stockpile consisting of only three interoperable ballistic missile warheads deployed on both the SLBM and ICBM legs of the Triad and two air delivered warheads deployable on strategic bombers and tactical aircraft. Interoperable means that the nuclear explosive packages can be interchanged between the SLBM and the ICBM.

Already, the United States has reduced the size of our nuclear stockpile very substantially – by more than 80% – since its peak during the Cold War. Today we have the smallest stockpile since the Eisenhower Administration. The interoperability provided by implementing the “3+2” Strategy will allow the United States to reduce further its hedge against technical failure and geopolitical surprise while maintaining an effective deterrent through a balanced and flexible stockpile. The W78/88-1 LEP is the first of three interoperable warheads supporting the “3+2” Strategy that will be addressed as funding becomes available. By deploying a warhead that the DoD can use in either an Air Force Mk21 aeroshell or a Navy Mk5 aeroshell, a single pool of hedge warheads can respond to technical issues or a change in the security posture. Further, the opportunity exists to make a qualitative improvement in the safety of these systems by utilizing insensitive high-explosives with demonstrated effectiveness based on tested designs. Work is currently underway that will culminate in a Weapon Design and Cost Report that will enable a cost-informed decision on the W78/88-1 LEP design and schedule during FY 2015.

### **B61-12 LEP Planning**

The B61 is one of the oldest nuclear weapons in the stockpile and requires refurbishment of some of its components in order to remain viable for years into the future. The B61 has major strategic and tactical requirements, to which the DoD will speak. From the NNSA perspective, we are charged with maintaining the health of the B61 variants currently in the active stockpile and also conducting the life extension program on this important aspect of our nuclear deterrent.

LEP planning is a complex NNSA and DoD process to balance a number of goals, objectives and constraints. The key to this process is preventing any operational gaps in the Nation’s nuclear deterrence capabilities while enhancing the safety, security and effectiveness of the stockpile. NNSA manages the LEP planning and execution process by working through the NWC approved “6.X” process covering the life extension of a weapons system from initial feasibility studies through development and production. The scope, schedule and cost for all LEPs is managed

through this 6.X process, and it typically runs over the course of about 10-15 years. The NWC makes decisions at critical junctures along the 6.X process.

On February 27, 2012, the NWC authorized the United States Air Force (USAF) and the NNSA to begin Phase 6.3 Engineering Development for the B61-12 LEP. The B61-12 LEP will consolidate the existing B61 variants, also known as mods 3/4/7/10, into the mod 12, which will provide strategic and extended deterrence for an additional 20 years following the First Production Unit in 2020.

Regarding the NWC process that led to the decision to choose the final scope of the B61-12 LEP, let me be clear that the resulting decision supported the lowest cost option that meets threshold military requirements. For three years, from 2010-2012, the NNSA, in consultation with the NWC, evaluated four major options for the B61 LEP with many sub-options before selecting the current B61-12 design approach. The major options reviewed included the "Triple Alt" (replacing only three end-of-life components), Option 1E (a non-nuclear LEP), Option 3B (nuclear and non-nuclear LEP maximizing reuse of components), and Option 2C (full nuclear and non-nuclear LEP with enhanced surety capabilities). Parametric cost estimates intended only for NWC decision option down-selection--and not to serve as initial cost estimates--ranged from \$1.3 billion to \$7.9 billion for a 2017 First Production Unit (FPU). A subset of these options also assessed FPU in 2019 to reduce schedule risk. After reviewing those options, the NWC in December 2011 selected the Option 3B as the program that would satisfy the threshold (minimum) requirements at the lowest life cycle cost, over 25 years.

The chosen option - Option 3B - maximizes the reuse of nuclear and non-nuclear components while meeting the needed design life. This option forgoes the newest surety technologies and instead improves security and safety of the bombs using somewhat older, but proven, technologies. Although two of the other options had lower initial costs, their lifecycle costs were higher as a result of not addressing all known aging concerns. Because of this, these two options would necessitate starting another life extension program after initial alterations in order to address the remaining concerns.

Furthermore, Option 3B architecture allows for consolidation of existing B61 variants (B61-3/4/7/10) with the integration of an Air Force provided tailkit assembly. This decision improves the survivability of our pilots, reduces the certification challenge for our laboratories, and eliminates the need for a parachute. As an additional benefit, U.S. Strategic Command determined that with the accuracy provided by a tail kit, the yield provided by today's lowest yield B61 variant would be sufficient to meet all of the strategic and non-strategic requirements for gravity systems. As a result, there will no longer be any need to design, develop, certify, or maintain multiple variations of the B61. The resulting single modification for the B61, the Mod

12, provides a global, responsive, and visible deterrent deployable on strategic bombers and non-strategic aircraft.

### **LEP Costs**

Following the 6.3 decision, NNSA and the U.S. Air Force finalized the requirements for the selected LEP option, and finalized the B61-12 Weapon Design and Cost Report in July 2012. After further work on risk mitigation and schedule integration, the NNSA submitted the initial cost estimate for the B61-12 LEP to Congress in May 2013, with the first formal Selected Acquisition Report (SAR). Other than to account for the added schedule driven by sequestration cuts in FY 2013, that baseline cost estimate has not deviated from the Weapon Design and Cost Report from July 2012.

The current cost estimate reported in the May 2013 Selected Acquisition Report to Congress is \$8.1B which includes \$7.3B in direct B61-12 funding (including management reserve) and another \$0.8B in other NNSA funds. However, FY 2013 sequestration underfunded the program. As a result, NNSA slipped the First Production Unit (FPU) from September 2019 to March 2020 and added \$244M to the management reserve to offset the potential increased cost and risks with slipping the program six months. The first B61-12 Selected Acquisition Report to Congress, which formally documents weapon program cost and schedule, included the sequestration impacts. NNSA is submitting quarterly updates to Congress on cost and schedule and will formally update the cost estimate following the Baseline Design Review to establish an Acquisition Program Baseline in FY2016.

The estimate is founded on firm military requirements and a disciplined approach to product realization informed by historical data. This is a significant investment consistent with other major weapon-system acquisitions. To keep the program on schedule and to control cost, NNSA has implemented rigorous systems engineering and program management practices. As required each quarter, NNSA will submit to Congress our continued progress in subsequent Selected Acquisition Reports.

### **LEP Execution**

The B61-12 LEP is making great progress. We are in the second year of full scale engineering development. The program has met its development milestones, it is on schedule and it is on budget. Today, the most significant risk the program faces is not technical risk, but uncertainty of consistent funding. However, because of the demonstrated success we have had to date, confidence from U.S. Strategic Command and the NWC has been sufficient to expand planning for the consolidation of nuclear bombs by including the future retirement of the B83 in the overall strategy. This allows for a reduction in the total (active and inactive) number of U.S. nuclear gravity bombs by a factor of two within a few years after completion of the B61-12 LEP.

The reduction in numbers of bombs and the decision to use the lowest yield variant from today's stockpile can reduce the total amount of special nuclear material in the total (active and inactive) number of U.S. nuclear gravity bombs by more than a factor of six. This equates to a substantial reduction in the total potential nuclear explosive yield within the air-delivered weapons in the U.S. nuclear stockpile. These planned reductions in the number of weapons, explosive yield, and amount of special nuclear material are all dependent upon successful completion of the B61-12 LEP, which in turn directly contributes to the President's goal of reducing the number and types of nuclear weapons, as outlined in his Prague speech in 2009, the 2010 Nuclear Posture Review, and restated in Berlin in the updated nuclear employment guidance from this June.

### **B61 LEP and the Broader Stockpile Stewardship Program**

The B61 LEP represents not only a critical modernization activity to sustain the health of the nuclear deterrent and a viable triad, but from the NNSA perspective it also exercises the talents and pushes the technical skills of the nuclear security enterprise—both the labs and plants. Overall, it is one of the most important programs in which the NNSA is currently engaged. It is also critical to appreciate the complex integration and interdependency of these LEPs. Today, NNSA is delivering W76-1 life extended warheads to the Navy, and we have active LEP work on over 80% of today's stockpile. Funding uncertainty can have a great impact not just on one critical LEP but rather a cascading effect on the integrated schedule of LEP work across the nuclear security enterprise and our ability to synchronize the NNSA work on warheads with the DoD delivery platforms, as outlined under the 3+2 strategy. In addition, the research, development, testing and engineering of the Stockpile Stewardship Program is critical. It allows us to not only certify our current stockpile without returning to underground nuclear explosive testing but to also develop predictive capabilities through our suite of experimental facilities and supercomputers that conduct simulations and experiments on future LEP concepts. Finally, we also remain focused on modernizing the supporting infrastructure—whether it is for plutonium at Los Alamos, uranium at Y-12, high explosive pressing at Pantex or non-nuclear component production at the Kansas City Plant—ensuring we have the base capabilities to support these LEPs and the workforce to carry out this highly technical work is paramount.

### **Conclusion**

Sustained support for the completion of the B61-12 will enable the retirement of the B83, the last megaton-class weapon in the U.S. arsenal, and will result in a reduction in the total number of nuclear gravity bombs in our stockpile by a factor of two, and a reduction in the amount of special nuclear material in the total number of gravity bombs by more than a factor of six. Other strategies to extend the life of the many current variants of the B61 and the B83 would likely be double the cost compared to continuing progress on the B61-12. The B61-12 is part of

an integrated national strategy for the future of the stockpile. The “3+2” Strategy provides responsiveness to the inherent uncertainty of the future global security environment with a capability that is more safe, more secure, with fewer weapons and less destructive power. I cannot endorse an alternative strategy for the weapons complex that is less safe, less secure, and that requires more weapons with greater destructive power, all at higher cost to the taxpayer.

It will take patience and persistence to achieve the goals of the “3+2” Strategy and to execute this B61 LEP. We will never get there if we do not continue the clear-minded implementation of the 2010 Nuclear Posture Review and associated decisions. I ask that you join me in supporting these concrete steps toward realizing these nuclear modernization goals.