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on
the Long Range Stand-Off Program
Subcommittee on Energy and Water Development
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Chairman Alexander, Ranking Member Feinstein, and Members of the Subcommittee, thank you for the opportunity to discuss the Department of Energy/National Nuclear Security Administration's (DOE/NNSA) role in the Air Force's Long Range Stand-Off (LRSO) program. The life extension program (LEP) for the W80-1 warhead supports U.S. policy to deter potential adversaries and to assure U.S. allies and other security partners that they can count on America's security commitments. And as President Obama said, while "we seek the peace and security of a world without nuclear weapons, as long as nuclear weapons exist the United States will maintain a safe, secure and effective nuclear arsenal."

Background

The nation's nuclear security enterprise has successfully designed, developed, produced, and surveilled nuclear warheads for cruise missiles since the early 1950s. The last remaining nuclear cruise missile in the inventory, the Air Launched Cruise Missile (ALCM), which carries the W80-1 warhead, entered service in 1982. Both the missile and the warhead are now well past their planned design life. As you will hear from the Air Force, extensive surveillance data shows that as a result of aging and increasingly capable foreign air defense systems, the ALCM will soon no longer meet military requirements, and thus, a new replacement missile is needed to meet those requirements. Similarly, the life of the current W80-1 warhead must be extended to safely and effectively meet LRSO mission requirements. The Nuclear Weapons Council's (NWC's) August 2015 Strategic Plan reaffirmed the need for a W80-1 life extension -- the W80-4 -- in support of DoD's new, nuclear capable air launched cruise missile, the LRSO.

The LRSO, like its predecessor systems, will play an important role in the nation's nuclear deterrent. In fact, it's importance was re-emphasized in December, 2015 when the Administration decided to pull forward by two years the date of the W80-4 first production unit (FPU) -- from FY 2027 to FY 2025 -- and accelerate the date of the missile to 2026 in recognition of the LRSO's vital role in signaling assurance and deterrence and, if necessary, defending the nation, our allies and our partners. The LRSO will satisfy the military requirements currently met by the ALCM and provide the President with important capabilities and options in an increasingly unpredictable and dynamic security environment. As the 2010 Nuclear Posture Review (NPR) concluded, "the United States will continue to maintain and develop long-range strike capabilities that supplement U.S. forward military presence and strengthen regional deterrence."

For these reasons, the NWC endorsed the need for a nuclear cruise missile warhead life extension program as part of the 3+2 Strategy. Following NWC approval the W80 warhead for use in the LRSO in July 2014, NNSA began phase 6.1, *Concept Assessment*, the first phase of the life extension process. Subsequently, in July 2015 the NWC approved entry of the W80-4 LEP into Phase 6.2, *Feasibility Study and Design Options*. The W80-4 LEP team is currently analyzing several design options for the W80-4, and by the conclusion of Phase 6.2 in September 2017, will present their recommendations to the NWC. The program will then transition to Phase 6.2A, *Design Definition and Cost Study*. Phase 6.2A will conclude in the fourth quarter of FY 2018, at which time the NNSA will produce a Weapon Design and Cost Report (WDCR) that will establish the first total program cost estimate for the W80-4 LEP. The program is scheduled to produce the first W80-4 unit by the end of FY 2025.

NNSA will refurbish the nuclear components from the W80-1 for the W80-4 warhead to meet military requirements. When completed, the LEP will extend the life of the W80-4 warhead for 30 years. The W80-4 LEP will use insensitive high explosives, incorporate modern electronics and safety features, make maximum use of non-nuclear component technologies and designs developed for other LEPs, and incorporate enhanced surety options. It is important to note that the W80-4 warhead will not introduce any capabilities that do not already exist in the nuclear stockpile. The LEP will, however, significantly enhance the safety and security of the warhead. Moreover, because this will also be the first time that a life extended warhead is mated to a new missile, the LEP program must be closely aligned with and tightly coupled to the Air Force missile program to be successful.

NNSA Laboratory Roles

The W80-4 LEP will be the most significant weapon modernization program at Lawrence Livermore National Laboratory (LLNL) since the end of the Cold War. LLNL, working with Sandia National Laboratories, is developing options for the LEP that include developing new detonators and using enhanced safety features. Sandia is also responsible for designing the non-nuclear components and sub-systems, and systems integration. The W80-4 LEP requires Sandia to coordinate options development work with the B61-12 LEP, the W88 Alteration (ALT) 370, and the W87 Fuse Replacement programs. These four programs will share Sandia's resources, including microchip fabrication at the Microsystems and Engineering Sciences Applications complex, computational simulations, and large-scale testing at Sandia's major environmental test facilities. NNSA has also established a new program office to manage the LEP and to coordinate integration with the Air Force.

Sustaining the Workforce

NNSA's laboratory, plant, site, and federal workforce is our most valued asset. When the United States stopped its program of explosive underground nuclear testing in the 1990s, the laboratories were called upon to develop a new approach to maintain the stockpile and to certify its continuing safety, security and reliability. The Stockpile Stewardship Program (SSP) was created to develop a variety of experimental tools underpinned by leading edge computation, simulation and modeling capabilities to meet this challenge. As the nuclear weapons aged, the task of sustaining a deterrent transitioned from programs to replace warheads at the end of their

life to programs that extend the life of existing warheads. The LEPs draw upon the tools of the SSP to accomplish two primary objectives essential to the health of the nuclear deterrent: (1) ensuring that the deployed warhead remains safe, secure, and effective into the future and (2) ensuring that the workforce responsible for the nuclear deterrent is trained, exercised, and assessed sufficiently to trust their capabilities and judgements.

Budget and Schedule

In light of the lessons learned from previous LEPs, and the recommendations of multiple enterprise reviews, NNSA has made considerable improvements to its program management processes, implementing industry best practices where appropriate. These industry practices include a tailored Earned Value Management System and an NNSA Integrated Master Schedule, to ensure more accurate cost estimation and timely delivery of LEPs through the 6.X process. Moreover, at the onset of Phase 6.3, *Development Engineering*, NNSA LEPs undertake extensive accountability measures, including publishing quarterly Selected Acquisition Reports (SARs). These reports, which are provided to Congress, contain detailed information on the progress, cost, scope and schedule for the LEP. At the conclusion of Phase 6.3, the LEP program office will prepare a Baseline Cost Report (BCR), which will include a more mature and precise estimate of the total program cost. In addition to the LEP program office's work on the BCR, the NNSA Office of Defense Programs will develop a separate, rigorous cost estimate. Finally, NNSA's Cost Estimating and Program Evaluation (CEPE) office will conduct detailed independent cost analyses of the program throughout its lifecycle, including an Independent Cost Review at the conclusion of Phase 6.2; a full Independent Cost Estimate (ICE) in parallel to the Program's work on the WDCR in Phase 6.2A; a second ICE prior to the end of Phase 6.3; and a final ICE prior to entry into Phase 6.5, *First Production*. These processes, reports, and estimates are only a few examples of the rigorous procedures the NNSA employs in managing its programs.

By continuing to build on the success of management practices being used in executing the B61-12 LEP, NNSA is committed to delivering a W80-4 FPU in FY 2025 and ensuring that the program enters Phase 6.6, *Full Scale Production*, in FY 2027. Moreover, the complexities of concurrently designing a new missile and extending the life of the warhead demand complete integration between NNSA and the Air Force. NNSA is committed to fully supporting the Air Force in managing design interfaces between the W80-4 warhead and the LRSO cruise missile to ensure that all coupled requirements are met and that both the LEP and missile development program make maximum use of scheduled flight tests.

Finally, the W80-4 LEP requires full and consistent funding through the life of the program to meet the accelerated schedule developed by the NWC. Several continuing resolutions during the first half of FY 2016 caused a nearly 6-month delay in funding necessary to accelerate the program as NNSA intended. Consequently, the President's FY 2017 budget request of $220.3 million is a $92 million reduction from the FY 2016 Budget Request Future Years Nuclear Security Program estimate for FY 2017. This reduction was a fact-of-life reaction to the delay in FY 2016 funding and will result in approximately $50 million of carryover from FY 2016 to FY2017. Despite this challenge and due to the program's quality risk mitigation efforts, the NNSA remains on track to deliver the W80-4 FPU in FY 2025 on time and within budget.

The NNSA's work on the W80-4 LEP is fully consistent with the President's goals as set forth in the NPR and reaffirmed in PPD-24 to maintain a safe, secure, and effective nuclear stockpile, while reducing its size and role in nuclear strategy, even as they continue to play an essential role in deterring potential adversaries and reassuring allies and partners around the world.

Thank you and I look forward to answering your questions.