



March 24, 2023

## 2022 Nuclear Posture Review: Selected Programmatic Issues

### Background

The unclassified 2022 Nuclear Posture Review (NPR), a legislatively mandated document (10 U.S.C., Ch. 24), describes the Biden Administration's plans to continue to modernize U.S. nuclear forces and infrastructure. That modernization process began under the Obama and Trump Administrations. The NPR reaffirms the continued deployment of nuclear warheads deliverable by a triad of aircraft and land- and submarine-based missiles. Proposed policy changes include cancellation of the nuclear-armed sea-launched cruise missile (SLCM-N) and retirement of the B83-1 gravity bomb. The NPR also outlines the Administration's plans for revitalizing the U.S. nuclear weapons complex and delivery systems industrial base.

### Conceptual Changes and Updates

The 2022 NPR introduces a country-specific approach to deterrence, in which nuclear weapons capabilities "further strengthen regional deterrence" and assure allies. The NPR does not specify whether a country-specific approach would require additional modifications to the program of record, which is the official nuclear acquisition plan. See CRS In Focus IF12266, *2022 Nuclear Posture Review*, for greater detail on NPR policy changes.

The NPR also calls for integrated deterrence, which entails seamless work across all instruments of U.S. national power to incentivize restraint for opponents. This aligns with the 2022 National Defense Strategy (NDS), the broader strategy document of which the NPR is a part. The NDS calls for the United States to employ "tailored deterrence approaches," but does not explain this concept in detail, according to some critics, including former Trump and Obama Administration officials.

### Program Cancellations

#### B83-1 Gravity Bomb Retirement

The United States originally deployed the B83-1 gravity bomb during the 1980s for use against hard and deeply buried targets (HDBTs, e.g., underground bunkers), and it remains the largest-yield bomb in the U.S. nuclear arsenal. The 2022 NPR found that the B83-1 has "increasing limitations on its capabilities and rising maintenance costs." Department of Defense (DOD) leadership called for a follow-on study, which began in late 2022, of methods for managing potential future threats that have been targeted with HDBT.

#### Nuclear-Armed SLCM Cancellation

The 2018 NPR directed DOD to develop a modern nuclear-capable sea-launched cruise missile (SLCM-N), stating a need for a nuclear weapon that could provide a "non-

strategic regional presence," without reference to any specific region, and an "arms control-compliant response" to "destabilizing" Russian behaviors. The Navy started its Analysis of Alternatives (AoA) for such a program in 2019.

The 2022 NPR, which supersedes the guidance from the 2018 NPR, announced the program's cancellation, asserting that the SLCM-N was "no longer necessary," given the existence of the low-yield W76-2 warhead, uncertainty about leverage it could provide in arms control negotiation, and cost.

In its FY2023 budget request, the Navy eliminated research and development funding for the SLCM-N, indicating that the program was "cost prohibitive and the acquisition schedule would have delivered capability late to need." According to Navy FY2023 budget documents, this cancellation would save \$199.2 million in FY2023 and \$2.1 billion over the next five years.

### Triad Modernization

Since the end of the Cold War, DOD and the National Nuclear Security Administration (NNSA) have focused on life extension programs (LEPs), including sustainment of and improvements to existing weapons or delivery systems instead of making new capabilities. The 2022 NPR argues that most of the U.S. nuclear deterrent systems are "operating beyond their original design life" and "full-scope" replacement of the triad, including nuclear command, control, and communications (NC3) systems.

The 2022 NPR emphasizes a limited window for deploying replacements for many current nuclear capabilities to "avoid any gaps in our ability to field a credible and effective deterrent." The 2022 NPR endorses the following programs, as reflected in the FY2023 President's Defense Budget Request:

- Full funding for the Sentinel ICBM replacement program, which would replace the Minuteman III and maintain 400 ICBMs on alert. Sentinel will field the W87-0/Mk21 and W87-1/Mk21A replacement warhead and reentry vehicle (RV);
- Full funding for Columbia-class ballistic missile submarines, including the delivery of "a minimum of 12 boats" beginning in 2030. The NPR also calls for "near-term investments in the submarine construction industrial base." In addition, the review recommends that DOD "prioritize near-term investment" in the Trident II D5 Strategic Weapons System second life extension and continue the W93/Mk7 replacement warhead and aeroshell program;

- Modernizing the B-52H Stratofortress bomber fleet through 2050 and full funding for acquiring a “minimum of 100” B-21 Raider bombers, which are to replace the B2A Spirit fleet;
- Full funding for the Long-Range Standoff (LRSO) weapon and associated W80-4 life extension program (LEP);
- Continuing nuclear certification of the F35-A Dual-Capable Aircraft (DCA) and transition from the F-15E to the F-35A; and
- Replacing B61-3/4/7 gravity bombs with the B61-12 LEP.

### NC3 Systems

The 2022 NPR reiterates prior NPRs concerning the need to modernize many systems that make up U.S. NC3 architecture and its support infrastructure, including satellites, aircraft, and communications centers. The NPR calls for an “optimized mix of resilience approaches to protect the next-generation NC3 architecture.” The approaches include improved command post and communication links, advanced decision support, and protection from competitor capabilities.

### Nuclear Complex “Production and Support Infrastructure”

The NPR also discusses broader issues concerning the nuclear production complex. The National Nuclear Security Administration (NNSA), a separately organized agency within the Department of Energy, maintains and modernizes the U.S. nuclear weapons stockpile in coordination with DOD.

The 2022 NPR states that NNSA’s Stockpile Stewardship Program (SSP) has maintained life-extended nuclear warheads that are safe, secure, and effective, with a focus on maintenance and science-based assessment capabilities that do not require nuclear explosive testing. Noting that a strategy of “partial refurbishment” of the U.S. nuclear stockpile “no longer serves our interests,” the 2022 NPR endorses full-scale NNSA production capacity modernization.

The 2022 NPR argues that the coming decades will bring a need for NNSA development of a Production-Based Resilience Program (PRP). This program calls for NNSA to develop “full-scope production” capabilities, with an emphasis on flexibility, supply-chain security and resilience, and production capacity margin. Supplementing the NNSA’s sustainment-focused SSP, the PRP includes increased production capabilities, new weapons designs, and modernized nuclear enterprise infrastructure.

Finally, the NPR defines the following as major NNSA production priorities requiring significant investment:

- Primary explosion production: Some in Congress and DOD have questioned NNSA’s ability to produce the congressionally mandated 80 plutonium pits per year (50 U.S.C. §2538a) as well as the planned schedule and

cost to produce 80 pits per year by 2030. The 2022 NPR describes pit production as the “highest priority for the next ten years,” and endorses NNSA’s 2-site production facility strategy at Los Alamos National Laboratory and Savannah River Production Facility to “eliminate single point failure and provide flexible capability options”;

- Secondary explosion production: The 2022 NPR endorses completion of the Uranium Processing Facility (UPF) and lithium processing facility, and modernization of depleted uranium facilities. The UPF and lithium processing facility are located at the Y-12 National Security Complex in Oakridge, TN, and the depleted uranium facilities are located at the Portsmouth Site;
- High explosives and energetic materials production capabilities, with special attention to “eliminat[ing] single points of failure”; and
- Nonnuclear component production, including strategic radiation-hardened microelectronics.

Additionally, the NPR tasks NNSA with establishing a “Science and Technology Initiative” to improve science and technology (S&T) integration throughout its programs as it modernizes its production capabilities.

The NPR says that the United States continues to observe a moratorium on nuclear explosive testing. NNSA conducts subcritical (i.e., those that do not produce a nuclear yield) experiments and uses other tools to maintain stockpile reliability. The 2018 NPR stated that “the United States will not resume nuclear explosive testing unless necessary to ensure the safety and effectiveness of the U.S. nuclear arsenal.” The 2022 NPR notes that the United States “maintains a nuclear explosive test readiness program in the event it is required to resolve technical uncertainties,” but “does not envision or desire a return to nuclear testing.”

The 2018 NPR introduced a “hedging strategy” to “meet future risks and challenges.” This strategy called for establishing a “robust nuclear weapon production infrastructure” allowing for rapid production, as well as maintaining a “significant non-deployed inventory of weapons.” The 2022 NPR eliminates the hedging strategy as a “formal role of nuclear weapons,” but notes that DOD and NNSA will address potential risks “through a resilient and adaptive nuclear enterprise.” This indicates a change in strategy to address risk by focusing on production capacity instead of focusing on maintaining an inventory of non-deployed weapons. The review does not mention any non-deployed inventory of nuclear weapons as a risk mitigation option, as the 2018 NPR does.

For additional information about warhead funding and development, see CRS Report R46857, *Energy and Water Development: FY2022 Appropriations*, by Mark Holt, Corrie E. Clark, and Anna E. Normand.

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