



U.S. DEPARTMENT OF STATE

DIPLOMACY IN ACTION

Maintaining the U.S. Nuclear Weapons Stockpile in the Absence of Nuclear Explosive Testing

Bureau of Arms Control, Verification and Compliance
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Key Point: In the absence of underground nuclear explosive testing, the United States employs a number of programs to maintain a safe, secure, and effective nuclear weapons stockpile.

The leading methods used to maintain the United States nuclear weapons stockpile include:

- The **Stockpile Stewardship Program (SSP)**, run by the National Nuclear Security Administration (NNSA), maintains the continued safety, security and reliability of the nation's nuclear weapons in the absence of nuclear explosive testing. A key goal of the SSP is to increase scientific understanding of nuclear device performance, as well as the aging behavior of weapon materials and components to ensure a safe and effective nuclear deterrent.
- **Life Extension Programs (LEPs)** extend the service life of the current weapons in the stockpile by using only nuclear components based on previously tested designs thereby minimizing the possibility of requiring nuclear explosive tests. NNSA, in coordination with the Department of Defense (DoD), also performs alterations and modifications to the stockpile in order to sustain the warheads that underpin the U.S. nuclear deterrent.
- **Advanced Simulation and Computing** capabilities provide confidence in the ability to model and evaluate the performance and safety of nuclear weapons without nuclear explosive testing. Computers have become at least a hundred-thousand times more powerful since the end of U.S. nuclear explosive testing in 1992, and modern integrated design codes now more realistically capture the behavior of real nuclear devices.
- **Enhanced Surveillance** tools and models play critical roles in providing information essential to assessing weapon safety, security, and performance changes that would affect military effectiveness. The use of data from surveillance of our nuclear weapons enables us to better predict how the weapons will perform over time without performing underground nuclear explosive testing.
- The **Annual Assessment** process of the U.S. Nuclear Weapons Stockpile is the authoritative method for the DoD and NNSA to evaluate the safety, reliability, performance and military effectiveness of the nuclear weapons stockpile, and it is a principal factor in our ability to maintain a credible nuclear deterrent without nuclear explosive testing.



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- **Infrastructure Modernization** is in accordance with the Nuclear Posture Review; NNSA has identified a path for sustaining the nuclear deterrent without nuclear explosive testing while modernizing the supporting infrastructure. This modernization is implemented by focusing on recapitalization and refurbishment of existing infrastructure for plutonium, uranium, tritium, high-explosive production, non-nuclear component production, high-fidelity testing and waste disposition.