



## The U.S. Nuclear Security Enterprise/Nuclear Weapons Complex

The U.S. [Nuclear Security Enterprise](#), formerly known as the nuclear weapons complex, encompasses nine government-owned, contractor-operated sites across seven states. Additionally, it includes a Tennessee Valley Authority ([TVA](#)) nuclear reactor facility dedicated to tritium production. Across these nine sites, the facilities comprise three laboratories, five plants for component fabrication and materials production, an assembly and disassembly facility, a geologic waste repository, and a research testing site previously utilized for underground nuclear tests.

### Key Components

#### *National Laboratories*

- The U.S. Department of Energy (DOE) oversees three primary national laboratories responsible for nuclear weapons research and development:
  - Los Alamos National Laboratory ([LANL](#)) in New Mexico
  - Lawrence Livermore National Laboratory ([LLNL](#)) in California
  - Sandia National Laboratories ([SNL](#)) with sites in New Mexico and California
  - These laboratories conduct a wide range of activities, including nuclear weapon design, simulation, testing and stockpile stewardship.
  - Additionally, the national labs undertake actions to bolster the international nuclear explosions monitoring and verification regime established by the [Comprehensive Nuclear Test Ban Treaty](#)

#### *Production Facilities*

- DOE operates several production facilities involved in manufacturing and maintaining nuclear weapons components.
- Key facilities include the [Y-12 National Security Complex](#) in Tennessee, responsible for uranium component production, and the [Kansas City National Security Campus](#) in Missouri, which manufactures non-nuclear components.

#### *Nuclear Weapons Plants*

The National Nuclear Security Administration (NNSA), a semi-autonomous agency within DOE, oversees the management and operation of two primary nuclear weapons plants:

- [Pantex Plant](#), Texas: responsible for assembly, disassembly, and maintenance of nuclear weapons.
- [Savannah River Site](#), South Carolina: responsible for supporting various nuclear materials activities, including tritium production.

#### *Research and Testing Sites*

In addition to the national laboratories, there is the [Nevada National Security Site](#) (formerly the Nevada Test Site), where nuclear weapons testing occurred between the 1950s and 1990s.

- The site is now primarily used for experimental research, training, and sub-critical testing activities.
- Additionally, the site provides capacity-building programs to support the [Comprehensive Nuclear Test Ban Treaty Organization](#)'s efforts to train personnel from member states in the use of monitoring and verification technologies.



## Functions and Activities

### *Weapon Design and Development*

- Scientists and engineers within the national laboratories work on advanced modeling and simulation techniques to design and refine nuclear weapon designs.
- These designs undergo rigorous testing and evaluation to ensure reliability, safety, and effectiveness.

### *Stockpile Stewardship*

The United States ceased nuclear testing in 1992. Since then, the [Stockpile Stewardship Program](#) has been implemented to maintain the reliability and safety of the nuclear stockpile through scientific assessment, surveillance and refurbishment without nuclear testing.

### *Safety and Security*

Ensuring the safety and security of nuclear weapons and materials is paramount. Stringent protocols and safeguards are in place at all facilities to prevent unauthorized access, theft, or accidents.

### *Non-proliferation and Arms Control*

The U.S. nuclear weapons complex also plays a role in non-proliferation efforts by securing and eliminating excess nuclear materials and supporting international agreements aimed at reducing the spread of nuclear weapons.