Union of Concerned Scientists

FACT SHEET

THE U.S. NUCLEAR WEAPONS COMPLEX

Pantex Plant

TODAY'S COMPLEX

The U.S. nuclear weapons complex—the laboratories and facilities that research, design, produce, maintain, and dismantle such weapons—must ensure that the arsenal is reliable, safe from accidents, secure from unauthorized use, and no larger than needed to maintain national security. To fulfill those goals, the complex needs resources and facilities to extend the life of nuclear warheads, assess their reliability and safety, understand how aging and modifications affect weapons, and retain employees with essential expertise. It also requires the capacity to dismantle retired weapons in a timely fashion, and methods for verifying further reductions in nuclear weapons. Additionally, the complex must minimize security risks of storing, transporting, and disposing of weapons-usable materials.

The administration and Congress will make important decisions over the next few years on how the complex can use limited resources to best meet these challenges. Doing so requires smart choices based on strict attention to priorities.

Pantex Plant, located near Amarillo, TX, was originally a World War II Army site for loading and packing artillery shells and building bombs. Pantex, short for "panhandle of Texas," closed after the war, reopening in 1951 as a facility to handle nuclear weapons, high explosives (HE), and non-nuclear component assembly operations. Since the 1975 closure of the Burlington Atomic Energy Commission Plant in Iowa, Pantex has been the only facility in the United States where nuclear weapons are assembled and disassembled. With the closure of Colorado's Rocky Flats plutonium plant in 1989, Pantex also became the interim storage site for plutonium pits.

Like the other sites in the nuclear weapons complex, Pantex is overseen by the National Nuclear Security Administration (NNSA), a semi-autonomous agency within the Department of Energy (DOE).

Pantex Today

After the United States halted production of nuclear weapons in 1991, Pantex's major responsibilities shifted from assembling nuclear weapons to refurbishing existing warheads to extend their lifetimes and disassembling retired weapons. Under the Stockpile Stewardship Program (SSP), Pantex is responsible for assembly, disassembly, maintenance, and surveillance of nuclear weapons and weapons

NNSA News

Pantex Plant, 2007

components in the stockpile to ensure their safety, reliability, and military effectiveness.

As part of the SSP, Pantex conducts life extension programs (LEPs) on existing weapons. This involves replacing components affected by aging with newly manufactured and sometimes modernized components. One of its tasks is limited-life component exchange, in which warhead components that age in predictable ways (e.g., power sources, neutron generators) are replaced at regular intervals before their deterioration affects weapons' performance.

Pantex has conducted LEPs on W87 warheads and some types of B61 bombs so far, and is currently conducting an LEP on the W76. Additional LEPs, some more far-reaching than those done to date, are planned for the rest of the warheads in the stockpile. More complex LEPs may be problematic since making significant changes to the warhead may reduce confidence in the weapon's performance.

In addition to its SSP work, Pantex's missions include:

- Dismantling retired warheads by separating the HE from the plutonium pit
- Interim storage of components from dismantled warheads, including the pits
- "Sanitizing" (removing classified information) and disposing of dismantled weapons components
- HE research and development
- Producing and testing the HE components for nuclear weapons

To carry out its missions, Pantex maintains Category I/II quantities of special nuclear materials (SNM), which can be used to make nuclear weapons and require the highest level of security.[1]

In August 2011, Pantex broke ground on a new High Explosive Pressing Facility (HEPF), where HE will be pressed into hemispheres that surround the fissile core of a nuclear weapon. When these are exploded, it compresses the plutonium in the pit, leading to nuclear detonation. The facility is expected to cost $142 million and take two-and-a-half years to complete.

The HE produced in the new facility would support projected needs for LEPs for the W76, W78, and W88 warheads over the next 10 years. Pantex can currently produce 1,000 pounds of HE per year; the new HEPF will increase its capacity to 2,500 pounds per year. Pantex also plans to add a second press, increasing its hemisphere production capacity from 300 to up to 500 per year.

During much of the 1990s Pantex dismantled more than 1,000 warheads per year. Since 1999, the average has been about 300 per year.

The NNSA also proposes a new Weapons Surveillance Facility (WSF) for non-destructive weapon and pit surveillance to supplement the existing Weapons Evaluation Test Laboratory. By relocating some testing now done at Lawrence Livermore National Laboratory, the NNSA says the new WSF would help consolidate non-destructive testing facilities and reduce the number of sites in the nuclear weapons complex with Category I/II SNM. Since all significant quantities of Cat I/II SNM have now been removed from Livermore, the NNSA must either find another location for the environmental testing carried out there, or seek special authorization to allow Livermore to continue working with SNM for limited periods. The WSF could also free up some Pantex bays now used for evaluation to return to use for assembly/disassembly operations.

The plant has about 3,600 employees, and is managed by a limited liability company formed solely for this purpose, Babcock and Wilcox Technical Services Pantex (B&W Pantex). The company is made up of BWX Technologies, Honeywell International, and Bechtel National.

Budget

Pantex's overall budget for FY 2013 is $587 million, virtually all of which comes from the NNSA for weapons activities work. Within this category, 34 percent of Pantex's funding is for directed stockpile work (which includes both LEPs and dismantlement of retired weapons); 39 percent for readiness in technical base and facilities (that is, operation and maintenance of NNSA facilities); and 22 percent for defense nuclear security (for protection of the site).

Information about funding for Pantex was not included in the FY 2014 Laboratory Tables put out by the NNSA. However, the overall NNSA budget request includes $604 million

1 These include plutonium-239, uranium-233, and uranium enriched in the isotopes uranium-233 or uranium-235. Materials are classified as Category I to IV depending on how much is present and their ease of use for making nuclear weapons.

in funding for Pantex under the NNSA Production Office, with $602 million of this for weapons activities. Because the request is not broken down further, it is not possible at this point to determine how much funding will go to specific weapons activities programs in FY 2014.

Current Issues

DISMANTLEMENT VS. STOCKPILE MAINTENANCE

During much of the 1990s Pantex dismantled more than 1,000 warheads per year. Since 1999, the average has been about 300 per year. One reason for the slowdown is an increased emphasis on LEPs in recent years. Both dismantlement and LEP operations take place in special protective structures called bays and cells. Limited bay and cell availability means that an increase in LEP operations leaves fewer spaces available for disassembly and dismantlement of retired warheads.

A 2013 report by the DOE's inspector general found that Pantex had met or exceeded its goals for dismantlement in FY10 and FY11. It expressed concern, however, that the plant's aging infrastructure presented safety and security challenges that might undermine its ability to fulfill its missions in the future. In March 2013, a Pantex official said that unplanned maintenance had put the plant behind schedule on all of its work for the year.

PIT STORAGE

Pantex is authorized to store up to 20,000 plutonium pits; as of 2010 it had about 14,000 in storage. According to public estimates, more than 10,000 of these pits are awaiting either reuse in future weapons or shipment to a disposal facility. The remaining 4,000 are strategic reserve (or "hedge") pits.

The NNSA predicts that pit storage facilities at Pantex will reach their planned maximum capacity beginning in 2014 and remain over planned capacity until 2022, by which time enough pits should have been reused or transferred offsite to reduce the number remaining at Pantex to a more manageable level. The NNSA's plans to deal with this problem originally called for construction of a new underground storage facility for plutonium pits that it stated would also improve safety and security by consolidating SNM at the plant. A 2008 study, however, showed that it was unlikely a new facility would be completed in time to solve the storage crunch, and advised

DOE

As part of the dismantlement of warheads at the Pantex plant in Texas, copper, aluminum, silver, gold, plutonium, and non-nuclear weapons parts are separated for recycling, 1992.

against investing in a new, permanent, facility to meet a temporary need. Instead, it recommended modifications to existing facilities and procedures to provide additional interim storage capacity.

PIT REUSE

The DOE has authorized Pantex to reuse up to 350 pits per year in support of its SSP mission. These pits would be recertified or requalified (a more extensive procedure for pits that have been in the active stockpile for more than 30 years), and a small number of them may be non-intrusively modified before they are returned to the stockpile. Non-intrusive modifications are changes to the external surface and features of a pit (such as adding safety features like fire-resistant cladding) that do not require handling or processing of the plutonium inside.

The capacity for pit reuse is significant in light of questions around the potential need to produce new plutonium pits. Currently New Mexico's Los Alamos National Laboratory (LANL) can produce 10 to 20 new pits per year and the NNSA is seeking to increase that capacity. Producing new pits is only required if life extension programs entail replacing existing pits with ones from a different warhead design.

CONTRACT DISPUTES

In early 2010, the NNSA announced plans to consolidate the management contracts for Pantex and the Y-12 National Security Complex in Oak Ridge, TN. The consolidation is intended to increase efficiency across the sites; the NNSA estimates it will save $895 million to more than $1 billion over ten years. Proposals were submitted in March 2012, and in January 2013, the NNSA selected Consolidated Nuclear Security LLC, a team headed by Bechtel and Lockheed Martin, as the winner.

Two rival teams protested the award, saying that the NNSA had not followed its established criteria in evaluating the cost savings promised by the winning bidders, among other problems. The protest was partially upheld by the Government Accountability Office (GAO), and the NNSA reopened procurement, requesting additional information from all teams. One of the protesting teams filed a further protest, citing problems with the revised request. In September 2013, the GAO denied the second protest, but the NNSA still has not announced whether it will uphold its original decision or award the final contract to a different bidder based on the additional information it received. Depending on the outcome, it is also possible that further protests may be filed, delaying the contract transition further.

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