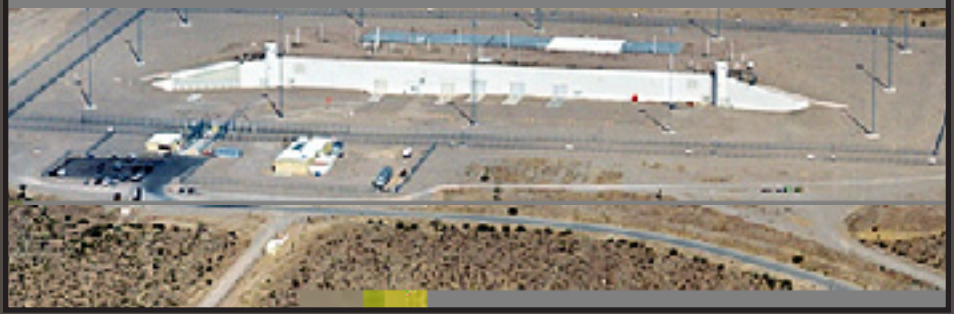
Device Assembly Facility (DAF)

Introduction

Construction began on the Device Assembly Facility (DAF) in the mid-1980s to support underground nuclear testing. DAF was designed and built to consolidate all nuclear explosive assembly functions, to provide safe structures for high explosive and nuclear explosive assembly operations, and to provide a state-of-the-art safeguards and security environment. Now that the United States is under a continuing nuclear testing moratorium, the DAF now supports diverse users such as Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL) and external entities.



In addition to its physical isolation, two gun turrets at either end of the facility provide extended security at the DAF.

History

For 41 years, nuclear weapons testing was the primary mission at the Nevada Test Site, now known as the Nevada National Security Site (NNSS), during which nuclear testing operations occurred in a safe, remote, and secure environment. These operations included assembly, disassembly, modification, staging, transportation, maintenance, repair, retrofit, and testing of nuclear devices. The mission of the DAF continues evolving since the nuclear weapons testing moratorium began in October 1992. Current missions are an integral part of the U.S. Department of Energy National Nuclear Security Administration's Stockpile Stewardship Program, which includes work to support subcritical and criticality experiments.

Facility Design

The DAF is a collection of more than 30 individual steel-reinforced concrete buildings connected by a rectangular common corridor. The entire complex, covered by compacted earth, spans an area of 100,000 square feet.

Safety systems include fire detection and suppression, electrical grounding, independent heating, ventilation and air-conditioning systems with high-efficiency particulate air filters, alarm systems, and warning lights. In operational areas, pairs of blast doors, designed to mitigate the effects of an explosion, are interlocked so that only one door may open at a time.

The operational buildings in the DAF include assembly cells; high bays; assembly bays; one of which houses a glove box, and one of which houses a down draft table; and radiography bays. Staging bunkers provide space for staging nuclear components and high explosives. All materials packages arrive or depart the DAF through one of two shipping and receiving bays. The support buildings include vaults for staging explosives, or special nuclear material; decontamination areas; and an administration area with office space, a conference area, personnel changing and shower rooms, and a machine shop. In addition, two buildings provide laboratory space, one for conducting instrumentation and

environmental testing and the other for observing operations in an adjacent assembly cell.

Assembly Cells (Gravel Gerties)

The assembly cells were named Gravel Gerties after a 1950s Dick Tracy comic-strip character. Modeled after the structure at Pantex Plant, these are where hands-on assembly and disassembly of U.S. nuclear weapons and devices takes place. They provide the maximum environmental and personnel protection in the event of an inadvertent high-explosive detonation. The cells are designed to absorb the blast pressure from a detonation of explosives equivalent to 250 kilograms (or 550 pounds) of TNT. Should a detonation occur, the Gravel Gertie would minimize release of nuclear material and its spread to other areas of the facility and to outside areas.

The DAF includes assembly bays for activities involving uncased conventional high explosives and special nuclear material.

A National Resource

The DAF is a national asset. The design of the facility and its safety features makes the DAF well-suited to address new national challenges - such as the addition of the Criticality Experiments Facility to the NNSS - in support of maintaining the nation's nuclear stockpile. Additionally, the DAF is used to prepare subcritical experiments and target chambers for the Joint Actinide Shock Physics Experimental Research facility experiments.

Currently the United States is not conducting nuclear tests. However, the President pledged to maintain an underground test readiness program in the event that nuclear testing resumes. The DAF plays a crucial role in achieving test readiness capability.

Location

The DAF is located in the interior of the NNSS and its remoteness provides a substantial safety zone for the general public, and adds to the security of the facility. In addition, activities at the DAF comply with the National Environmental Policy Act, and all applicable federal, state, and local regulations.

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