Nevada Test Site

Icecap

Introduction

The gray tower rises 157 feet above the desert floor - a visible, well-known landmark at the Nevada Test Site (NTS). It was to be the emplacement tower for Icecap, a joint United States (U.S.) -United Kingdom (U.K.) underground nuclear test planned for 1993. Preparation for Icecap, which would have been the 929th nuclear test at the NTS, came to a halt when the U.S. entered the Underground Nuclear Testing Moratorium on October 3, 1992.

Diagnostic cables snake their way across the desert landscape towards the Icecap tower in the back-ground, which houses the diagnostic cannister.One of three ground zeros planned for 1993 (the others were Gabbs in Area 2 and Greenwater in Area 19) that still remain in place.

Background

The 157-foot Icecap tower covers a 1,625 foot deep hole 96 inches in diameter. A 110-foot by 86-inch diameter 500,000-pound diagnostic canister is suspended from the top of the tower. This canister was designed to hold the diagnostic equipment needed to assess the performance of Icecap during the test.

The Icecap rack would have weighed 350,000 pounds at the beginning of descent down the shaft. As the diagnostic cables attached to the diagnostic cannister were lowered down the shaft, the rack would have increased in weight to 500,000 pounds at the depth of burial. A special crane would have lowered the canister down into the ground and was originally rated to lift 750,000 tons (the equivalent of a 747 jumbo-jet).

The Icecap equipment rack includes an ice box (left) for dry ice to cool the nuclear device.

The test

The nuclear device would have been attached near the bottom of the rack and kept cold with dry ice, hence the name Icecap. Subzero-degree air from the dry ice would have chilled the nuclear device to minus 42 degrees --simulating the same climate a missile system would encounter in space.

Icecap was scheduled in the 20 to150 kiloton range (Hiroshima was 15 kilotons). The blast would have vaporized the diagnostic rack and melted the rock around it. Scientists predicted that the seismic wave generated by Icecap would have been felt 22 seconds later in Las Vegas.

Underground nuclear tests

During an underground nuclear test, the test device was placed at the lower end of a long (up to 200 feet) cylindrical canister, housed aboveground by a tall emplacement tower which also contained diagnostic instruments. Miles of electrical cables connected the canister to firing and recording stations on the surface.

After the canister was lowered down the shaft, the hole was closed by filling it with sand and gravel and sealing it with either coal tar epoxy plugs (used by Los Alamos National Laboratory) or grout plugs (used by Lawrence Livermore National Laboratory). When the device was detonated at the bottom of the vertical drill hole, data from the tests were transmitted through electrical and fiber-optic cables to the data trailers containing recording equipment.

The Icecap emplacement tower, as it appears today, in Area 1 at the Nevada Test Site.

Joint U.S.-U.K. underground testing at the NTS

The first joint U.S.-U.K. underground test, *Pampas*, at the NTS was conducted on March 1, 1962. By the time of the last joint test, *Bristol* (named after a Nevada ghost town), on November 26, 1991, there had been a total of 24 joint tests.

Courser, one of the 24 joint tests conducted on September 25, 1964, did not proceed as planned and did not produce a nuclear yield. Nuclear tests at the NTS were conducted under the terms of a United Kingdom/United States agreement signed in 1958 on the uses of atomic energy for mutual defense purposes.

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