ER Site No. 63: Balloon Test Area

ADS: 1333
Operable Unit: Canyons Test Area

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Site History

ER Site 63 was used for three distinctly different test series: (1) tests conducted for the Plutonium Dispersal Study Program (PDSP), (2) balloon/helicopter drop tests, and (3) tethered-rocket tests. Because the test types were conducted in separate areas of the site, ER Site 63 has been divided into two sub-units: ER Site 63A, PDSP Site; and ER Site 63B, Balloon/Helicopter Site.

ER Site 63A

According to interviewees, ten PDSP tests were conducted at ER Site 63A between 1983 and 1986. However, dates reported by the PDSP test engineer and test report dates fall within a 1985 to 1986 timeframe.

ER Site 63A is defined by a 500-ft-diameter circle centered on the reported ground-zero location for PDSP tests. The reported ground-zero for the tests is located approximately 100 ft west of the north-south road leading into the site and approximately 100 ft northwest of two 6-ft by 6-ft concrete pads. The site boundary is conservatively designated by the perimeter of a circle with a radius of 250 ft centered on ground-zero, although the PDSP test report states that the potential area impacted by the dispersed DU was primarily within a 100-ft radius of ground-zero. Based on review of available historical aerial photographs, the area in which PDSP tests were conducted was revegetated by 1987. There are no physical features associated with the PDSP tests remaining at ER Site 63A.

PDSP tests at ER Site 63A involved single-point detonations of HE (plastic bonded high explosive [PBX]-9501)and DU assemblies. The amount of DU and HE used in these tests varied from 0.042 to 2 kilograms (kg) and 0.042 to 7 kg, respectively. Test devices were suspended 3.3

ft above the ground by a 2- to 3-point stand and were detonated to determine how finely the DU could be fragmented in the generated aerosol. All tests were recorded by high- and low-speed cameras. The control point for the tests was stated as being a bunker on the high ground to the west. However, the bunker and its location have not been identified.

A declassified excerpt from a classified 1987 SNL/NM report states that ten tests were conducted at ER Site 63A and five were conducted at ER Site 81 (New Aerial Cable Site). The ten test units detonated at ER Site 63A resulted in the cumulative release to the environment of approximately 4.5 kg of DU within the ER Site 63A polygon. The total mass of explosives used in all 15 tests was 27.6 kg. Because HE is consumed in high-order detonations, it would not have been released to the environment during these tests.

The generated DU aerosol and particles ranged in size from less than 1 millimeter (mm) to 10 mm and were not large enough to retrieve from the ground surface. Although the exact locations of collection devices were not identified, the particles were collected by sample plates located over a distance of 239.5 ft from ground-zero and by air sample stations located over a distance of 88.59 ft above the ground surface. Two of the ten tests resulted in the deposition of particles up to 0.2 microns in size at a distance of 239.5 ft. The other eight tests had no detectable DU particles on the sample plates placed at 239.5 ft. No misfires are known to have occurred during the PDSP tests, but several small grass fires were inadvertently initiated within a 100-ft radius of ground-zero by ejected particles of burning DU.

Some current features within the perimeter of ER Site 63A are related to ER Site 63B activities; these include a test stand, metal scrap, the concrete pads in the southeast quadrant of ER Site 63B, and a soil berm. The remaining metal test stand and metal scrap do not fit the description of the 2- to 3-point stand arrangement used to set up the PDSP tests, and the detonation would have presumably destroyed such a stand. Two concrete pads in the southeastern quadrant of ER Site 63A are associated with former sheds that housed optical instruments that were used in the mid-1980s to detect the fly-by of various guided missiles. Grading ER Site 63A was not required prior to conducting the PDSP tests. Therefore, the soil berm north of ground-zero probably originated from grading activities associated with ER Site 63B.

ER Site 63B

Operations at ER Site 63B were designed to satisfy a demand to perform drop tests of antitank weapons from a height greater than the 600-ft drop provided by the facilities at ER Site 81 (New Aerial Cable Site). This was accomplished through the use of an unmanned hot-air balloon. The initial balloon drop tests were reportedly performed at ER Site 81 in 1982 to evaluate the feasibility of conducting the tests before moving the test location to ER Site 63B. In August and September of 1984, balloon drop tests were conducted at ER Site 63B. Balloon drop testing at ER Site 63B ceased when the balloon broke free of its tethers in a windstorm and crashed east of the site. After the destruction of the balloon, drop tests at ER Site 63B were performed from a helicopter. Tethered-rocket tests were also performed at ER Site 63B in 1989 and 1990.

Historical aerial photographs record no activity at ER Site 63B prior to 1983. Aerial photographs of the site location in 1982 and 1983 show three roads forming a triangular perimeter around the area that was to become ER Site 63B, but these roads appear to provide access to other areas.

Based on aerial photograph interpretation, ER Site 63B was active by September 1984. Site features at this time included a square-shaped graded area dissected by criss-crossing linear features and three tether-line roads separated by 120 degrees of azimuth that radiate outward from a point south of the graded area. The square-shaped, formerly graded area was used as the balloon drop test area and it is located north of the current helicopter drop area. The three tether-line roads are still present at the site. Concrete foundations are currently located near each corner of the balloon drop area, and are visible in the September 1984 aerial photograph. The foundations may have been the mounting points for the former wooden posts used to suspend a horizontal net over the area. A field inspection noted a September 1983 date engraved in one of the concrete foundations, possibly indicating the initial construction date of ER Site 63B.

The next phase of activities at ER Site 63B was the construction of the graded helicopter drop area south of the balloon drop area. The helicopter drop area is visible on a June 1987 aerial photograph and is still present at the site. Concrete foundations containing metal poles are located at each corner of the helicopter drop area and were used to suspend a horizontal net over the graded area. Dates engraved in these concrete foundations imply that construction took place from December 1984 to February 1985. The net height was adjusted with an electric winch assembly located approximately 50 ft south of the southeast corner of the graded area. South of the winch is a 200-ft-long soil berm that trends northeast-southwest. The origin of the soil berm is uncertain, but it may be related to grading activities at the site.

A May 1991 aerial photograph of ER Site 63B shows two features that are associated with the 1989 and 1990 tethered rocket tests: a swivel anchor and a rocket launch rail. These features were positively identified by field inspection and are currently at the site.
The balloon drop area at ER Site 63B was located north of the current helicopter drop area and was used for balloon drop tests conducted for the DoD. Interview records state that hundreds of drop tests took place at ER Site 63B between 1984 and 1990. Initial testing at ER Site 63B used a hot-air balloon to drop "smart" antitank weapons from heights of approximately 1000 to 1200 ft. The position of the balloon was controlled by tether lines attached to three vehicles that differentially moved along three tether-line roads until the balloon was stationed over the target. "Smart" antitank weapons were modified prior to testing by replacing the warhead with telemetry instruments that used visual recognition to look for targets. The balloon drop tests were conducted over a 6- to 8-week period in August and September 1984. This test series ended in September 1984, when the balloon broke free of its tethers during a wind storm and crashed east of the site. After the destruction of the balloon, a helicopter was used to conduct the drop tests.

Based on the December 1984 to February 1985 dates engraved into the concrete foundations located at the current helicopter drop area, it is assumed that the balloon drop area was succeeded by the current helicopter drop area in early 1985. There are no available records that discuss drop test activities that may have occurred between 1985 and 1987.

Test records do exist for 46 helicopter drop tests that were conducted between 1987 and 1990 to investigate the effectiveness of a parachute antitank weapon called the Sidearm. The Sidearm weapon, about the size of a coffee can, was made inert prior to testing by replacing the warhead with telemetry instruments. A vortex-ring parachute was used to slow the terminal velocity of the

unit to 70 ft per second and to make the unit spin and hang at an oblique angle to facilitate searching for targets (i.e., tanks) in a 500-ft diameter circle. This series of drop tests concluded in 1990.

Twelve tethered-rocket tests were conducted at the helicopter drop area in 1989 and 1990. These proof-of-concept tests were designed to study the high-velocity impact of steel and aluminum materials using high velocity aircraft rockets (HVAR) and Zuni rockets. The test unit was mounted on a steeply inclined rocket launch rail assembly and tethered to a swivel anchor located approximately 200 ft to the east. Tethered rockets were guided by the steeply inclined launch rail for the first 5 to 6 ft of flight and then followed an arcing path to the impact area in the northeast portion of the graded area. No hazardous or radioactive materials were reported to be associated with the tests.

Constituents of Concern

ER Site 63A
DU
HE

ER Site 63B
None

Current Hazards

There are no current hazards at this site related to contamination of the surface or subsurface soils. There are no structures or stored materials that remain at the site that could posepotential hazard.

Current Status of Work

Administrative no further action (NFA) proposals were submitted to the EPA in September 1995, but were deemed to be not appropriate without some data to confirm the conclusions. Confirmatory soil samples were collected in July 1997, in consultation with New Mexico Environmental Department (NMED) personnel, and Confirmatory NFA proposals were submitted to the NMED in September 1997. Site 63B was approved by NMED for NFA in June 1999. Site 63B was approved for removal from SNL's Hazardous and Solid Waste Act (HSWA) permit in July 2000. In December 1999, following review of SNLs response to a Request for Supplemental Information (RSI), NMED indicated that the site was acceptable for NFA. The NFA was approved by NMED in October 2000 after completing the public review and permit modification process.

Future Work Planned

No future work is planned.

Waste Volume Estimated/Generated

No waste has been generated at this site to date.

Information for ER Site 63 was last updated Jan 22, 2003.