

# Fact Sheet

## Defense Threat Reduction Agency



### Project TRINITY

**Note:** For information related to claims, call the Department of Veterans Affairs (VA) at 800-827-1000 or the Department of Justice (DOJ) at 800-729-7327. For all other information, call the Nuclear Test Personnel Review (NTPR) Program Helpline at 800-462-3683.

Project TRINITY, conducted by the Manhattan Engineer District (MED), was designed to test and assess the effects of a nuclear weapon. The TRINITY device was detonated on a 100-foot tower at the Alamogordo Bombing Range in south-central New Mexico at 5:30 a.m. on July 16, 1945. The yield of the detonation was equivalent to the energy released by detonating 21 kilotons of TNT. At shot time, the temperature was 71.2 degrees Fahrenheit, and surface air pressure was 850 millibars. The winds were nearly calm at the surface; at 10,300 feet above mean sea level, they were from the southwest at 10 knots. The winds blew the cloud resulting from the detonation to the northeast. From July 1945 through 1946, about 1,000 military and civilian personnel took part in Project TRINITY or visited the test site. The location of the test site and its major installations are shown in the accompanying figures.

#### Historical Background

All participants in Project TRINITY, both military and civilian, were under the authority of the MED. No military exercises were conducted. The Los Alamos Scientific Laboratory (LASL), which was staffed and administered by the University of California (under contract to the MED), conducted diagnostic projects. Before the detonation, civilian and military scientists and technicians, with assistance from other military personnel, placed gauges, detectors, and other instruments around ground zero before the detonation. Four offsite monitoring posts were established in the towns of Nogal, Roswell, Socorro, and Fort Sumner, New Mexico. An evacuation detachment consisting of approximately 300 personnel was established in case protective measures or evacuation of civilians living offsite became necessary. About one-third of these personnel were from the Provisional Detachment Number 1, Company "B," 9812th Technical Service Unit, Army Corps of Engineers. Military police cleared the test area and recorded the locations of all personnel before the detonation.

A radiological monitor was assigned to each of the three shelters, which were located to the north, west, and south of ground zero. Soon after the detonation, the monitors surveyed the area immediately around the shelters and then proceeded out the access road to its intersection with the main road. Personnel not essential to post-shot activities were transferred from the west and south shelters to the Base Camp, about 16 kilometers southwest of ground zero. Personnel at the north shelter were evacuated when a sudden rise in radiation levels was detected; it was later learned that the instrument had not been accurately calibrated and levels had not increased as much as the instrument indicated. Specially designated groups conducted onsite and offsite radiological surveys.

## Radiation Protection Standards

The safety criteria established for Project TRINITY were based on calculations of the anticipated dangers from blast pressure, thermal radiation, and ionizing radiation. The TR-7 Group, also known as the Medical Group, was responsible for radiological safety. An exposure limit of 5 rem\* during a 2-month period was established.

The Site and Offsite Monitoring Groups were both part of the Medical Group. The Site Monitoring Group was responsible for equipping personnel with protective clothing and instruments to measure radiation exposure, monitoring and recording personnel exposure according to film badge readings and time spent in the test area, and providing for personnel decontamination. The Offsite Monitoring Group surveyed areas surrounding the test site for radioactive fallout. In addition to these two monitoring groups, a small group of medical technicians provided radiation detection instruments and monitoring.

## Radiation Doses at Project TRINITY

Dosimetry information is available for about 800 of the approximately 1,000 individuals who either participated in Project TRINITY activities or visited the test site between July 16, 1945, and December 31, 1946. Fewer than 20 of these participants received doses greater than the 5-rem limit in any period. Most of the larger doses were accrued by personnel who made early approaches to ground zero or who monitored the fallout north of the test site on shot day.

The totals of reconstructed and film badge doses for TRINITY participants are depicted in Figure 1.

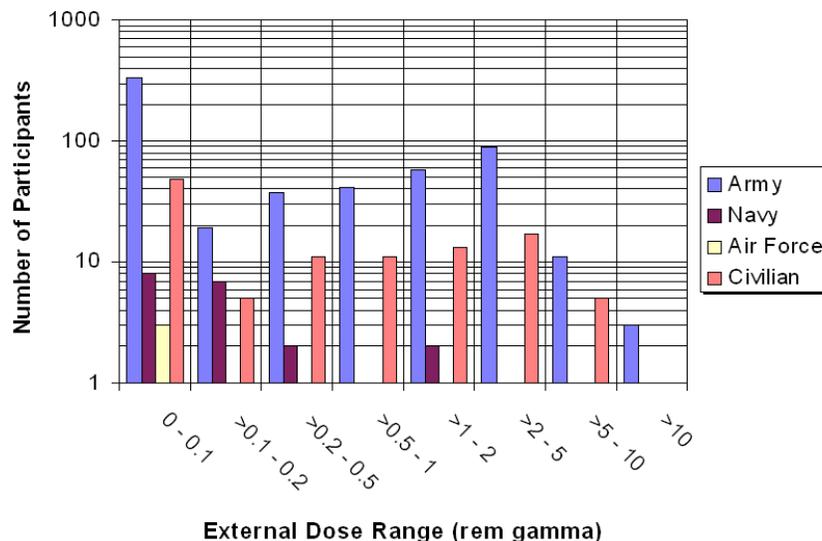


Figure 1. Doses accrued by TRINITY personnel

\*A rem is a radiation protection unit of measure that quantifies the risk of biological effects resulting from exposure to ionizing radiation. Ionizing radiation is any radiation (gamma, x-ray, beta, neutron, or alpha) capable of displacing electrons from atoms or molecules, thereby producing ions. According to the National Council on Radiation Protection and Measurements (NCRP, Report No. 160, Table 1.1), the general U.S. population receives about 0.62 rem per year from natural background radiation sources (radon, cosmic rays, and rocks) and man-made radiation sources (medical diagnostic x-rays and consumer products).

For more information, see the report "Project TRINITY 1945" (DNA 6028F), available online at <http://www.dtra.mil/DTRA-Mission/Reference-Documents/NTPR-info/>.

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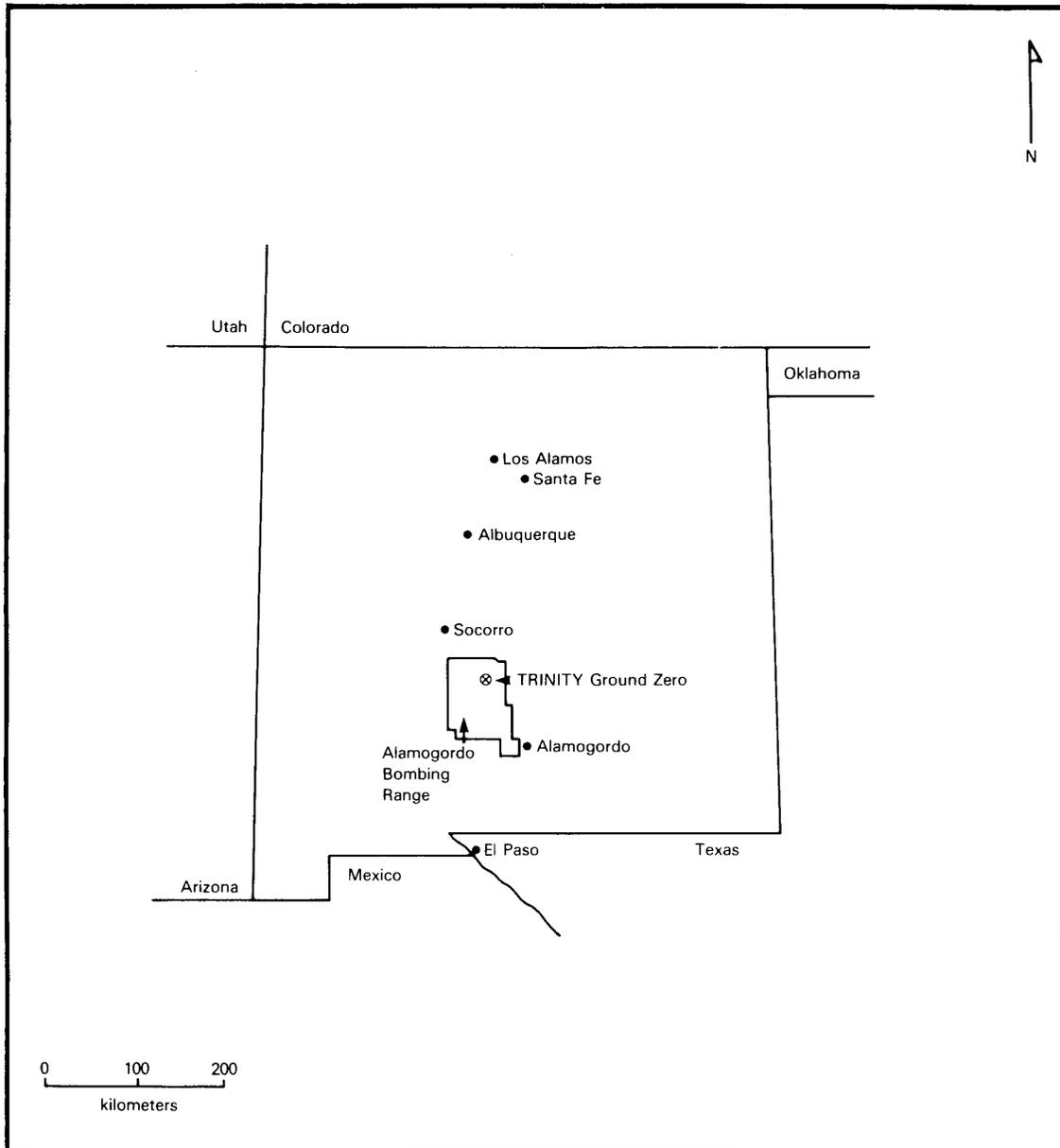


Figure 2. Location of Alamogordo Bombing Range

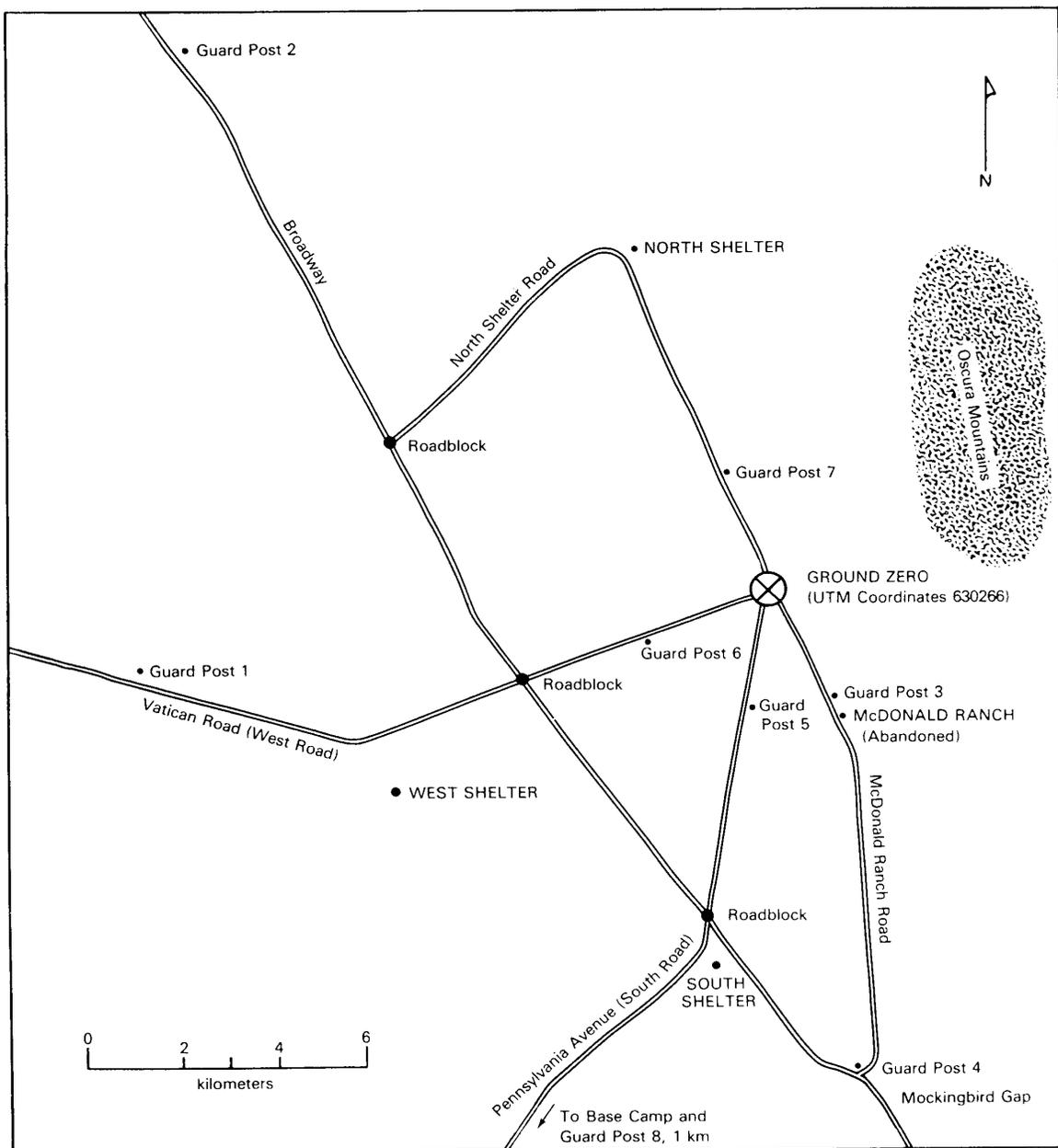


Figure 3. Trinity Site and Major Installations