



## White Sands Missile Range and Trinity Site



*For some people, the name White Sands conjures up images of rolling white dunes, a great place to spend time with family; for others, it is an expansive missile range and the site of the world's first atomic bomb explosion. Both White Sands National Monument and the White Sands Missile Range lie within the Tularosa Basin and share the brilliant white dunefield that gives us our names. But the monument and the missile range have very distinct histories and purposes. White Sands National Monument protects the singular landscapes and flora and fauna of the world's largest gypsum dunefield. White Sands Missile Range is a proving ground for the U.S. military. This is a short history of the White Sands Missile Range, including Trinity Site.*

### White Sands Missile Range

White Sands Missile Range (WSMR) is one of six national ranges that support missile development and test-related programs for the Army, Navy, Air Force, NASA, and other government agencies. The range, established in 1945, is operated by the Army and surrounds White Sands National Monument on all sides. Each year researchers at WSMR fire approximately 900 missiles for testing.

WSMR is the largest all-land military reservation in the United States. The New Mexico desert was selected as the nation's first rocket facility for a number of reasons: the land was cheap and much of it was already government owned; the weather is mostly clear year-round, allowing for good visibility; and the area was sparsely populated at the time.

### Birth of Nuclear Physics

During the late 1930s, scientists from all over the world rushed to develop

the first atomic bomb. Fearing that Nazi-governed Germany would be the first to construct such a dangerous weapon, Albert Einstein wrote a letter to warn President Roosevelt of the possible dangers. In response, the U.S. began modest nuclear research. After the Japanese attack on Pearl Harbor in Hawaii, the plan to build a bomb really went into action.

### The Manhattan Project to Los Alamos

The headquarters to develop the bomb was first in New York City and was named the Manhattan Project. Under the command of General Leslie R. Groves, engineers began work to produce a uranium ore, while also researching possible test sites for an explosion.

J. Robert Oppenheimer, a theoretical physicist, and others on the scientific panel decided to detonate the test bomb 100 feet over the Jornada del Muerto—the Journey of the Dead in Spanish—in southern New Mexico.

The remote, government-owned land provided safety and secrecy for the test, code-named Project Trinity.

Oppenheimer reorganized the Los Alamos Laboratory in the summer of 1944 to focus on imploding a ball of plutonium to create a nuclear explosion. This solution was new and untried, and would need to be tested.



*J. Robert Oppenheimer (right) and Leslie Groves (left)*

## Trinity Site

On July 16, 1945, one week after WSMR was established, the world's first atomic bomb was detonated in the north-central portion of the missile range, approximately 60 miles north of White Sands National Monument.

For the Project Trinity test, the bomb was placed atop a 100-foot steel tower that was designated Zero. Ground Zero was at the foot of the tower. Equipment, instruments, and observation points were established at varying distances from Ground Zero. The wooden observation shelters were protected by concrete and earthen barricades, and the nearest observation point was 5.7 miles from Ground Zero.

At 5:30 am on July 16, the nuclear device known as "Gadget" was successfully detonated. To most observers—watching through dark glasses—the brilliance of the light from the explosion overshadowed the shock wave and sound that arrived some seconds later. A multi-colored cloud surged 38,000 feet into the air within seven minutes. Where the tower had been was a crater one-half mile across and eight feet deep. Sand in the crater was fused by intense heat into a glass-like solid the color of green jade; it was given the name

trinitite. The explosion point was named Trinity Site.

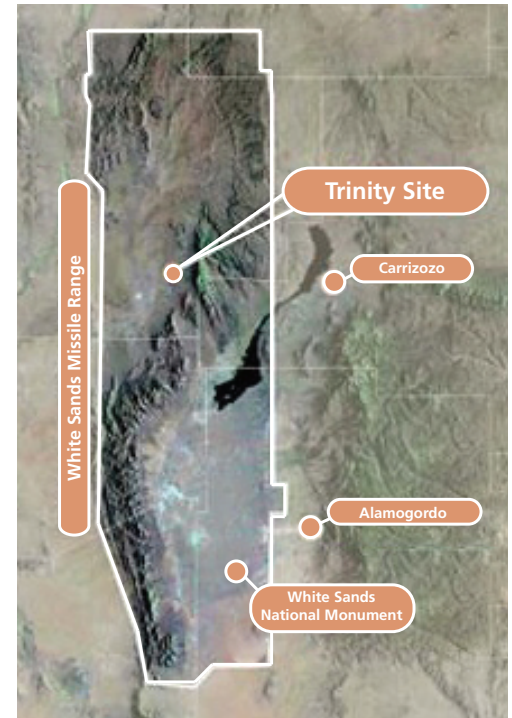
Although no information on the test was released until after the atomic bomb had been used as a weapon, the flash of light and shock wave made a vivid impression over an area with a radius of at least 160 miles.

The world's second atomic bomb, codenamed "Little Boy," was exploded over Hiroshima, Japan, on August 6, 1945. Three days later, a third bomb codenamed "Fat Man," devastated the city of Nagasaki. The Hiroshima bombing was the second artificial nuclear explosion in history, after the Trinity test, and the first uranium-based detonation. The bombs exploded at Trinity Site and Nagasaki had plutonium cores. A "Fat Man" bomb casing is on display in front of the WSMR visitor center.

After the explosion, Trinity Site was encircled with more than a mile of chain-link fencing, and signs were posted warning of radioactivity. The site was closed to the public as well as to WSMR personnel. By 1953, much of the radioactivity had subsided, and the first Trinity Site open house was held in September of that year.

In 1965, Army officials erected a monument on Ground Zero. In 1975, the National Park Service designated

Trinity Site a National Historic Landmark. The landmark includes base camp, where the scientists and support group lived; the McDonald ranch house, where the plutonium core was assembled; as well as Ground Zero.

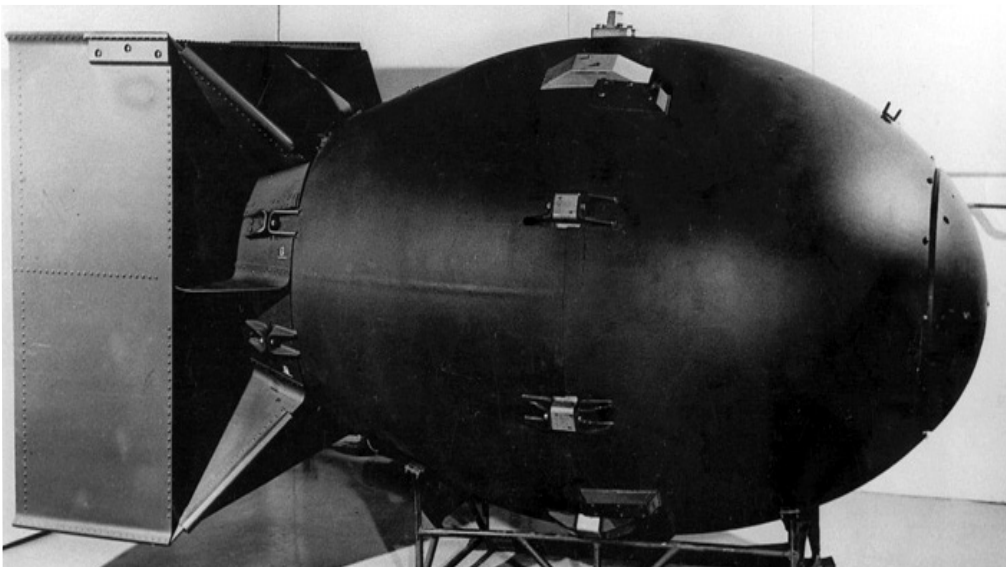


*White Sands Missile Range and Trinity Site*

Today, visits to the site are sponsored by the Alamogordo Chamber of Commerce and WSMR on the first Saturdays of April and October. The rest of the year the site is closed to the public because it lies within the impact zone for missiles fired into the northern part of WSMR.

For more information on Trinity Site tours, call the Alamogordo Chamber of Commerce at 1-800-826-0294 or visit the White Sands Missile Range Public Affairs website at: <http://www.wsmr.army.mil/PAO/Trinity/Pages/default.aspx>.

For more information on WSMR, contact the White Sands Missile Range Museum at (575) 678-8824. A display of various missiles and rockets is located at the Missile Park, just inside the WSMR entrance gate, approximately four miles south of the WSMR exit on Highway 70.



*"Fat Man" bomb*