

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

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**NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORM**

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC

Trinity Site

AND/OR COMMON

Trinity Site

2 LOCATION

STREET & NUMBER

State Route 7

__NOT FOR PUBLICATION

CITY, TOWN

CONGRESSIONAL DISTRICT

White Sands Missile Range __ VICINITY OF

2

STATE

CODE

COUNTY

CODE

New Mexico

35

Socorro

53

3 CLASSIFICATION

CATEGORY

OWNERSHIP

STATUS

PRESENT USE

DISTRICT

PUBLIC

OCCUPIED

AGRICULTURE

MUSEUM

BUILDING(S)

PRIVATE

UNOCCUPIED

COMMERCIAL

PARK

STRUCTURE

BOTH

WORK IN PROGRESS

EDUCATIONAL

PRIVATE RESIDENCE

SITE

PUBLIC ACQUISITION

ACCESSIBLE

ENTERTAINMENT

RELIGIOUS

OBJECT

IN PROCESS

YES: RESTRICTED

GOVERNMENT

SCIENTIFIC

BEING CONSIDERED

YES: UNRESTRICTED

INDUSTRIAL

TRANSPORTATION

NO

MILITARY

OTHER:

4 OWNER OF PROPERTY

NAME

U.S. Army and Private Owners

STREET & NUMBER

U.S. Route 70-82

CITY, TOWN

STATE

White Sands Missile Range __ VICINITY OF

New Mexico

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE,
REGISTRY OF DEEDS, ETC.

Registry of Deeds

STREET & NUMBER

Socorro County Courthouse

CITY, TOWN

STATE

Socorro

New Mexico

6 REPRESENTATION IN EXISTING SURVEYS

TITLE

None

DATE

FEDERAL STATE COUNTY LOCAL

DEPOSITORY FOR
SURVEY RECORDS

CITY, TOWN

STATE

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> UNALTERED	<input checked="" type="checkbox"/> ORIGINAL SITE
<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> RUINS	<input checked="" type="checkbox"/> ALTERED	<input type="checkbox"/> MOVED DATE _____
<input type="checkbox"/> FAIR	<input type="checkbox"/> UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The Trinity Site, on the White Sands Missile Range, is located 8-1/2 miles north of Mockingbird Gap, in a basin formed by the San Andres Mountains to the west and the Sierra Oscura to the east. The terrain is flat and semiarid, with a covering of creosote, mesquite, and other scrub brush, as it was in 1944-45. In the Trinity Site area, the presence of the Army is notable largely in terms of new roads, paved and unpaved, new power lines, mobile units on the roads, and missile detonations. With the exception of these factors and a small missile range base some miles to the west, there have been no substantial intrusions in the Trinity area.

The historical features associated with the Trinity Site are: Ground Zero, the control and instrumentation bunkers to the north, west, and south of Ground Zero, the MacDonald Ranch, 2 miles to the southeast of Ground Zero, and Camp Trinity, 11 miles to the south of Ground Zero.

Ground Zero is marked by a stone obelisk bearing the national historic landmark plaque near the remains of the four concrete piers which supported the bomb tower. The barely noticeable depression caused by the blast is 800 feet in radius, 8 feet deep at the point of explosion, and is littered with particles of trinitite (sand fused into glass by the blast). Shortly after the explosion, a wooden shelter was erected over a portion of Ground Zero to preserve the trinitite covering on the soil. Currently, Ground Zero is contained in a 1,100 yards diameter circle of cyclone fencing, within a larger cyclone fence. Between the two fences ten portable toilets are located for the convenience of the annual visitors. Six hundred yards to the northwest of Ground Zero is Jumbo, the massive iron cylinder that was designed to contain the radioactive elements in the event of an imperfect detonation. The structure supporting Jumbo was destroyed, but Jumbo remains, lying in a small depression. Its hemispherical ends have been removed.

Between Jumbo and Ground Zero is the closest remaining instrumentation bunker, a small concrete structure resembling a truncated pyramid, or trapezoid, built on an earth mound. This bunker housed instruments recording the blast and was unmanned. As with the other remaining bunkers this one is largely intact but gradually deteriorating. There are three other similar instrumentation bunkers, North 800 and North 1000, 800 yards and 1000 yards from Ground Zero, respectively, and West 800, 800 yards west of Ground Zero.

In addition to the instrumentation bunkers, there were four control bunkers, South 10,000, the command center where Oppenheimer pushed the button, North 10,000, and two at West 10,000. These bunkers were all 10,000 yards from Ground Zero, in their respective directions. Today only North 10,000 and one of the West 10,000 bunkers remain. They are square concrete structures, approximately nine by nine by nine, with no rear walls, and with several observation apertures in the sides facing Ground Zero. The South 10,000 and second West 10,000 were wooden structures with concrete roofs. They were later deemed safety hazards and burned, and only their concrete roofs, set in the ground, mark their sites.

Running from the Ground Zero area to the various bunkers were several power lines, running between poles with tree branches for crossbars. Several of these lines and

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
<input type="checkbox"/> PREHISTORIC	<input type="checkbox"/> ARCHEOLOGY-PREHISTORIC	<input type="checkbox"/> COMMUNITY PLANNING	<input type="checkbox"/> LANDSCAPE ARCHITECTURE	<input type="checkbox"/> RELIGION
<input type="checkbox"/> 1400-1499	<input type="checkbox"/> ARCHEOLOGY-HISTORIC	<input type="checkbox"/> CONSERVATION	<input type="checkbox"/> LAW	<input checked="" type="checkbox"/> SCIENCE
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> AGRICULTURE	<input type="checkbox"/> ECONOMICS	<input type="checkbox"/> LITERATURE	<input type="checkbox"/> SCULPTURE
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> ARCHITECTURE	<input type="checkbox"/> EDUCATION	<input checked="" type="checkbox"/> MILITARY	<input type="checkbox"/> SOCIAL/HUMANITARIAN
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> ART	<input type="checkbox"/> ENGINEERING	<input type="checkbox"/> MUSIC	<input type="checkbox"/> THEATER
<input type="checkbox"/> 1800-1899	<input type="checkbox"/> COMMERCE	<input type="checkbox"/> EXPLORATION/SETTLEMENT	<input type="checkbox"/> PHILOSOPHY	<input type="checkbox"/> TRANSPORTATION
<input checked="" type="checkbox"/> 1900-	<input type="checkbox"/> COMMUNICATIONS	<input type="checkbox"/> INDUSTRY	<input type="checkbox"/> POLITICS/GOVERNMENT	<input type="checkbox"/> OTHER (SPECIFY)
		<input checked="" type="checkbox"/> INVENTION		

SPECIFIC DATES July 16, 1945

BUILDER/ARCHITECT

STATEMENT OF SIGNIFICANCE

On the White Sands Missile Range the world's first nuclear device was exploded on July 16, 1945.

When the Manhattan Engineer District was formed to develop an atomic bomb in the shortest possible time, the problems confronting its scientists and engineers were seemingly almost insurmountable. As the project moved closer to fulfillment, it became obvious that the device would have to be tested before it was tried in combat.

The site chosen for the test was a portion of the Alamogordo Bombing Range in the bleak and barren Jornada del Muerto in Socorro County. The code name "Trinity," was chosen for the test by Dr. J. Robert Oppenheimer, director of the Manhattan project. Work at the site began late in 1944, and, by May 1945, preparations were completed for a test shot of 100 tons of high explosive--its purposes being to provide data for the calibration of instruments for blast and shock measurements and to serve as a dress rehearsal for functioning of the test organization. The test was held on May 7, resulting in a memorable sight eclipsed only by the atomic explosion two months later.

The final test was set for 4 a.m. on Monday, July 16. The bomb was assembled and placed on a 100-foot tower, and observers took their places in bunkers 10,000 yards to the south, west, and north of Ground Zero. Rain delayed the detonation for one and one-half hours, but at 5:29:45 a.m. the blast came. The world had entered the new era.

The Ground Zero area at the Trinity Site is marked by a lava stone monument enclosed in a large fence circle. Six of the concrete bunkers and structures at the MacDonald Farm, where scientists assembled the bomb, and at Camp Trinity, the base camp, still remain. The site is closed to the public, as it is still within the White Sands Missile Range.

History

The Los Alamos Project of the Manhattan Engineer District of the War Department began in 1943 with its purpose the development and final manufacture of a nuclear instrument of war. Among the projects the Los Alamos scientists developed, the implosion method, in which a subcritical mass of plutonium is compressed to supercriticality by high explosives, had reached the stage by late 1943 where a test of an implosion device was essential for further progress, even though it meant the depletion of the Nation's entire supply of plutonium.

The first step in the test explosion was to develop a means of preserving the invaluable plutonium in the case of an unsuccessful test. The result of this work was "Jumbo," a

9 MAJOR BIBLIOGRAPHICAL REFERENCES

- Richard Hewlett, The New World, 1939-1946: A History of the United States Atomic Energy Commission, vol. 1 (Pennsylvania State University Press, 1962).
- Los Alamos Scientific Laboratory, The First Twenty Years at Los Alamos (Los Alamos, 1963).
- John Savage and Barbara Stoms, The Atom, vol. 2, No. 8 (Los Alamos, 1965).

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY 36,480

UTM REFERENCES Not contained on U.S.G.S map - see continuation sheet item 10.

A	_____	_____	_____	B	_____	_____	_____
ZONE	EASTING	NORTHING		ZONE	EASTING	NORTHING	
C	_____	_____	_____	D	_____	_____	_____

VERBAL BOUNDARY DESCRIPTION

Beginning at North 10,000, proceed straight north 1,625' and begin: proceed S. 59°E for 9 miles, thence S. 46°W for 9.25 miles, thence N. 75°W for 6.875 miles, then N. 66°E for 8.75 miles to the point of beginning. This diamond-shaped quadrilateral has been designed to enclose the historic features of the Trinity Test as well as the distinctive features of the terrain which lie between the historic points.

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE Richard Greenwood, Historian, Landmark Review Task Force

ORGANIZATION National Park Service, Historic Sites Survey DATE 1/14/75

STREET & NUMBER _____ TELEPHONE _____

CITY OR TOWN Washington STATE D.C.

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS: Landmark
 Designated: 12/21/65 date
 NATIONAL _____ STATE _____ LOCAL _____

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the... criteria and procedures set forth by the National Park Service.

FEDERAL REPRESENTATIVE SIGNATURE _____ DATE _____

TITLE _____

FOR NPS USE ONLY	Director, OASHP	DATE
I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER	<u>11/18/77</u>	date
DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION	<u>4/13/77</u>	DATE
ATTEST: _____		
KEEPER OF THE NATIONAL REGISTER		

(NATIONAL HISTORIC LANDMARKS)

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Trinity Site

CONTINUATION SHEET Description ITEM NUMBER 7 PAGE 2

poles still exist, some still erect, but mostly they have fallen and lie on the ground.

The MacDonald Ranch, consisting of a one-story stone farmhouse with a sheet metal hip roof, two stone outbuildings, a stone barn, a corral, and a windmill and well, is still extant, but in a bad state of disrepair. The farmhouse is the only structure still possessing its roof, and it lacks windows, doors, and much of its floor. The Army is reportedly planning a stabilization of the ranch properties.

Camp Trinity is in a deteriorated state as well. Of the facilities that housed the 200 men working on the Trinity test, only one one-story frame and one one-story adobe building are still standing in bad states of repair. The original windmill has been replaced with a similar model which still maintains the small reservoir. Between the two buildings, the concrete floor of the generator house can be seen, and behind that are the concrete floors of a latrine and a garage.

GEOGRAPHICAL DATA

Item Number 10

Corner	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
A	33°	45'	34"	106°	30'	42"
B	33°	38'	46"	106°	25'	56"
C	33°	33'	02"	106°	32'	34" ✓ 30"
D	33°	38'	46"	106°	34'	16"

LEBOVICH
4.5.77

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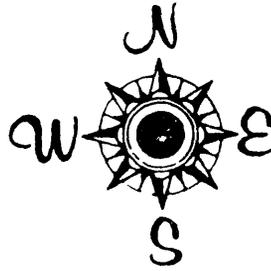
DATE ENTERED

Trinity Site
CONTINUATION SHEET Significance ITEM NUMBER 8 PAGE 2

25 feet long, 214 ton steel vessel which was designed to contain the blast. Although the availability of plutonium increased, and confidence in the bomb increased as well, Jumbo was transported to the test site on the Alamogordo Bombing Range in an unprecedented succession of engineering feats, but the vessel was never used.

Through the spring and summer of 1944, the search went on for a suitable test site. By late summer, the choice was narrowed down to the part of the bombing range just to the north of Mockingbird Gap. This site already in the possession of the Government was suitably flat and dry, although windy, and was close enough (300 miles) to Los Alamos but far enough from the nearest town (27 miles). In 1944, the Trinity base camp was built by the Army and occupied by a detachment of military police. By the summer it was housing more than 200 scientists, soldiers, and technicians. Through the spring and summer of 1945 the men at Trinity were feverishly involved in necessary preparations, such as stringing the hundreds of miles of communication wires, building the instrumentation and control bunkers, and assembling the apparatus for the trial blast. This trial blast of 100 tons of high explosives was necessary for the calibration of recording instruments, and was carried out successfully on May 7, 1945.

On July 13, the final components of the atomic bomb, "the Fat Man," were delivered from Los Alamos to the assembly site at the deserted MacDonald Ranch, which had been converted into the assembly laboratory. The bomb was assembled without its detonators by late afternoon, and early the next morning, it was raised to its position on the top of the 100-foot steel tower. The detonators were added that afternoon, and for the next day the preparatory instrumentation was carried out. By pre-dawn of July 16, all was ready. However, the ominous thunder and lightning of a coming storm necessitated a 90 minute postponement. Near 4 a.m., the light rain stopped and the weather cleared. At 5:29:45 a.m. there occurred the detonation of the world's first nuclear fission bomb, with an estimated force equivalent to 20,000 tons of TNT, far more powerful than was expected. Through the day of July 16, cars of weary, excited men headed back to Los Alamos to prepare for the new Fat Man which was dropped on Nagasaki, Japan, on August 9. Japan surrendered five days later.



To U.S. Highway 380 (5 miles)

Highway 380 connects with U.S. Highway 54 and Carrizozo (53 miles) to the east. It connects with Interstate 25 and San Antonio (12 miles) to the west.

Stallion Range Center (gate is open from 9 a.m. to 2 p.m. for the Trinity Site Open House)
---NO PUBLIC FACILITIES---

17 miles from Stallion gate to Trinity Site

Ground Zero (point of bomb detonation)

- *parking and buses to McDonald Ranch
- *photo and "fat man" displays
- *Jumbo
- *toilets, water and first aid
- *information booth

McDonald Ranch (plutonium assembly)

- *photo display
- *ranch house restoration

Range Road 7---85 miles from Alamogordo to Trinity Site
(visitors entering or leaving via Alamogordo must travel in the escorted caravan)

MCDONALD RANCH HOUSE FLOOR PLAN

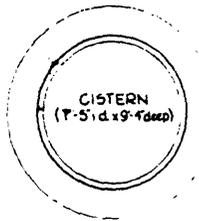
The plutonium hemispheres were brought to Trinity Site from Los Alamos on July 11. The men who delivered the precious material demanded a signed receipt. Brigadier General T.F. Farrell, Groves' deputy, signed for the plutonium at the ranch house. It was then turned over to the Pit Assembly Crew or G-1. These men put the two hemispheres together for the first time. The men assigned to the team were:

M.G. Holloway
 R.F. Bacher
 H.K. Daghlian
 C.S. Smith
 B.T. Feld

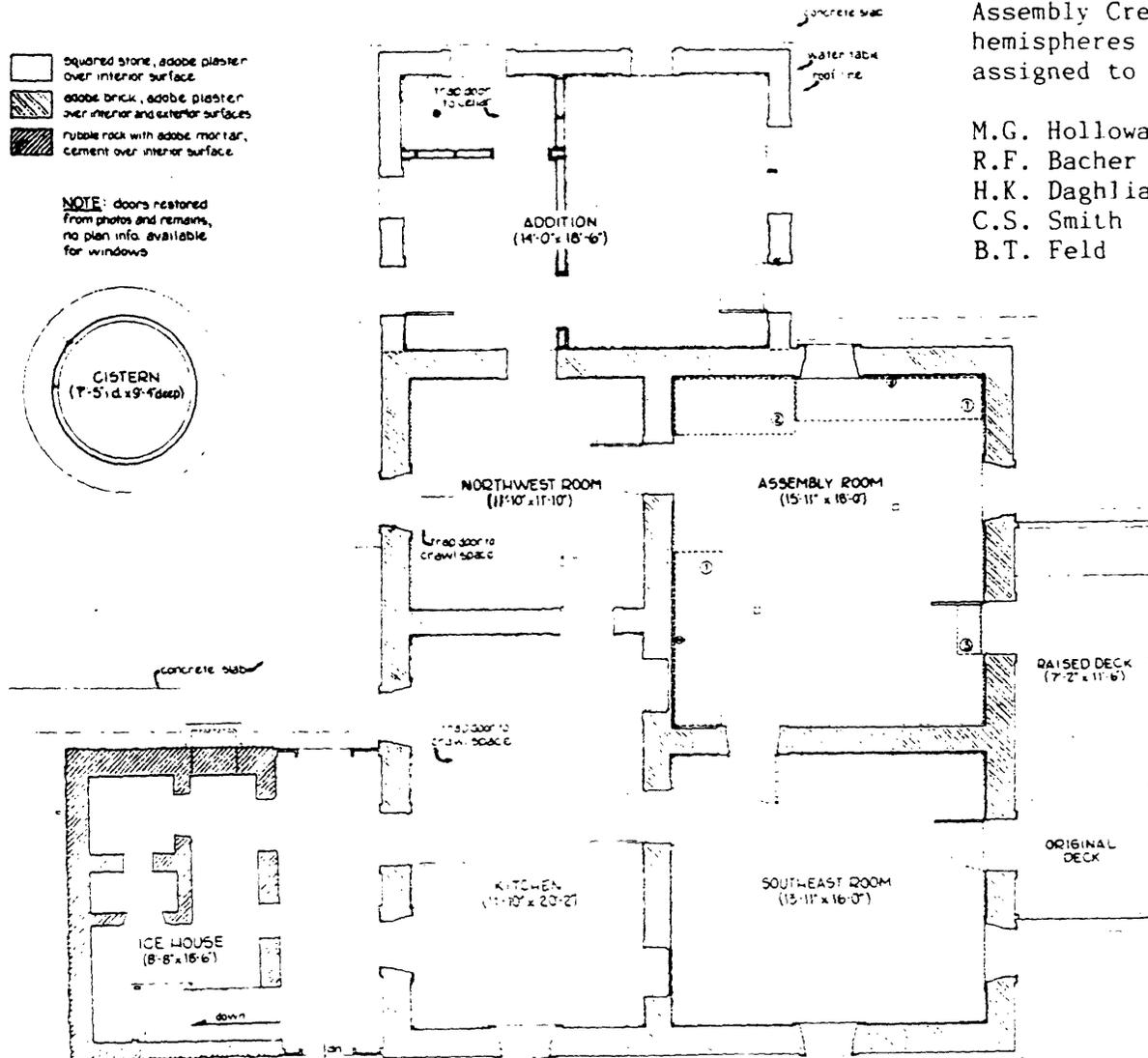
P. Morrison
 R.E. Schreiber
 B.D. McDaniel
 L. Slotin
 Sgt. H. Lehr

-  squared stone, adobe plaster over interior surface
-  adobe brick, adobe plaster over interior and exterior surfaces
-  rubble rock with adobe mortar, cement over interior surface

NOTE: doors restored from photos and remains, no plan info. available for windows



(6)



Assembly Room modified in 1945 as follows:
 ① BENCH - 9'-6" x 2'-3" x 3'-4" high
 ② CLOSET - present prior to assembly
 ③ RAMP - 1'-3" x 2'-6" x 0'-2"
 ④ SWITCH - pullcord for 100 watt bulb
 — OUTLET - 4 plug, 110 volts A.C.
 (equipment later removed, information obtained from archives at Los Alamos)

RAMP
 (4.5° slope)

Ramp and raised deck installed in 1945 (both still in place)

Floor Plan

