



BREN Tower

Introduction

At 1,527 feet, the BREN (Bare Reactor Experiment -- Nevada) Tower was the largest free-standing structure west of the Mississippi River. It was also one of the best known and most visible landmarks at the Nevada Test Site, now known at the Nevada National Security Site (NNSS). It was taller than the Empire State Building (1,454 feet, to top of lightning rod) and almost twice as tall as the Eiffel Tower (1,063 feet, with antenna).



Japanese-style houses are shown in the foreground with the BREN Tower on Yucca Flat.

It was constructed of 51 thirty-foot sections of high tensile steel and anchored with five and one-half miles of steel cables. The tower was designed to withstand winds greater than 120 miles per hour, and was equipped with a two-man elevator which operated at a speed of 100-feet per minute.

BREN Tower was demolished on May, 23, 2012. In its place remains the concrete foundation and a single leg, commemorating the tower's storied history. Many items were salvaged, such as the U.S. flag which flew at the top and a board on which all who ascended BREN Tower signed their names. These items are now on display at the Atomic Testing Museum in Las Vegas.

In the Beginning

The BREN Tower got its name from the initials of a 1962 experiment for which it was constructed: Bare Reactor Experiment - Nevada. BREN was a major project within the Civil Effects Test Operation of the Atomic Energy Commission's (AEC) Division of Biology and Medicine. Its primary purpose was to provide a method for accurately estimating radiation doses received by survivors of the atomic bombings of Hiroshima and Nagasaki. The tower's height was determined by the altitude at which "Little Boy" was detonated over Hiroshima.

A small unshielded (bare) reactor was mounted on an outside hoist car to move to various levels of the tower. For realism, a mock Japanese village was built near the base of the tower (only some of the original village structures remain today) so the shielding effects of various types of housing styles and materials could be studied in estimating human radiation doses. This vast effort became a cornerstone of modern radiation estimates.

Since the 1962 experiment, the tower had been used for many other scientific purposes: to study data on shielding against radiation, neutron activation in soil, and radiation measuring techniques. Both the U.S. Weather Bureau and Sandia National Laboratories instrumented the tower to record information on winds, temperature, and air pressures which were transmitted electronically to distant receiving stations. Additional programs and experiments using the tower were proposed, and it became apparent that its usefulness could be extended for many years. However, continued and expanded programs at BREN Tower would hinder the Nevada Test Site's primary program of underground nuclear testing. Location of the tower on Yucca Flat - the main testing area - was a limiting factor both in placement and the yield of the underground tests. It was decided to move the tower to Jackass Flats.

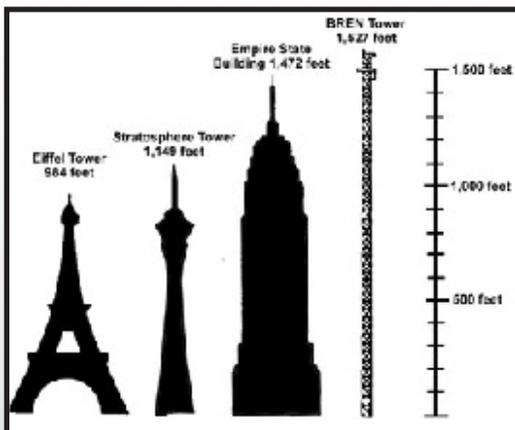


BREN Moves to Jackass Flats

In 1966, a \$380,000 contract was awarded to the Dresser-Ideco Company, Columbus, Ohio, to dismantle the tower and move it to its final location in Jackass Flats. This was the same company that erected the tower in 1962.

Operation HENRE

Operation HENRE (High Energy Neutron Reactions Experiment) began in September 1966. Its primary purpose was to develop information for biological research programs of the AEC and the Armed Forces Radiobiology Research Institute in Bethesda, Maryland.



A small accelerator was mounted to the tower. Instruments measured a variety of effects, including the long-term medical effects of radiation. The project was jointly funded by the AEC and the U.S. Department of Defense.

Measurements were taken many distances from the accelerator by radiation dosimetry instruments to determine the distribution of neutrons and of energetic gamma rays produced when neutrons collide with atoms in the air. In addition, scientists conducted radiation scattering and applied shielding experiments. The linear accelerator was designed and fabricated by Oak Ridge National Laboratory in cooperation with the Armed Forces Radiobiology Research Institute and the AEC's controlled thermonuclear research program. The fusion reaction was used to obtain 14 million-electron-volt neutrons. The accelerator was installed on the tower in much the same manner as was the BREN unshielded research reactor and large cobalt-60 gamma radiation source.

HENRE, as in the case of BREN, was part of a long-term AEC program for evaluating the effects of radiation doses received as a result of nuclear explosions. The knowledge gained from the two dose radiation measurement research programs was correlated with the medical studies of the Atomic Bomb Casualty Commission in Japan. This commission was a research agency of the National Academy of Sciences-National Research Council which was funded by the AEC and operated in conjunction with the National Institute of Health of Japan.

End of an Era

An explosives-demolition contractor performed the demolition of BREN Tower, using highly controlled demolition techniques for use on extremely tall structures. Requirements of the demolition for the subcontractor included safe operations; controlling and minimizing damage to cultural resources and the environment and effective clean up.

The tower was demolished by removing a small section of one leg at ground level and then severing the tensioned guy wires and the anchor/stanchions on the opposite side. The guy wires were released from the southwesterly two pair of stanchions. The final leg section removal and severing of the guy wires were performed with explosives. The tower fell essentially vertically, almost directly on its footprint, impacting none of the native habitat surrounding the tower.

Upon demolition, the tower was immediately surveyed and was determined to have no radiological hazards and to be appropriate for release to the public. The tower and all accompanying materials were completely recycled: over 365 tons of steel and copper were shipped to recycling centers.

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