

UNEARTHED

TRINITY

July 16, 1945, 20 kilotons
located in the Jornada del Muerto, NM
This was the first atomic bomb detonated on the planet. "The mountain that grows above the clouds took the form of a fleeting instant of a giant Statue of Liberty, its arm raised to the sky, symbolizing a new freedom for man."
- William L. Laurence for the New York Times, eyewitness account

BROKEN ARROW

May 27, 1957, 15 megatons (equivalent to 1,000 Hiroshima sized bombs), near Albuquerque International Airport
A Mark 17 hydrogen bomb fell from a B-36. It contaminated the area with plutonium and created a crater 12 deep and 25 feet wide. According to the Department of Defense there have been 32 Broken Arrows worldwide. At the unexpected release of the bomb, the crewman in the bomb bay yelled, "I didn't touch anything! I didn't touch anything!"
- Albuquerque Tribune

PROJECT SHOAL

October 26, 1963, 12 kilotons detonated at a depth of 1,211 ft. near Bravo 17 Bombing Range, NV
Shoal was sponsored by the Department of Defense to help the military distinguish between earthquakes and underground nuclear explosions. "Because there is no known technology to remediate the remaining subsurface radioactivity ... a model was developed to estimate a containment boundary ... surrounding the nuclear detonation." - U.S. Department of Energy Office of Legacy Management Fact Sheet

PROJECT FAULTLESS

January 19, 1968, 1 megaton (1000 kilotons) detonated at a depth of 3,200 ft. near Lunar Crater National Natural Landmark, NV
Faultless was conducted to "determine the suitability of using sites in central Nevada for testing high-yield nuclear explosives. Due to the apparent inability of the geologic formations of Hot Creek Valley to contain high-yield detonations, the Central Nevada Test Site was closed down." - CLUI archive

GASBUGGY

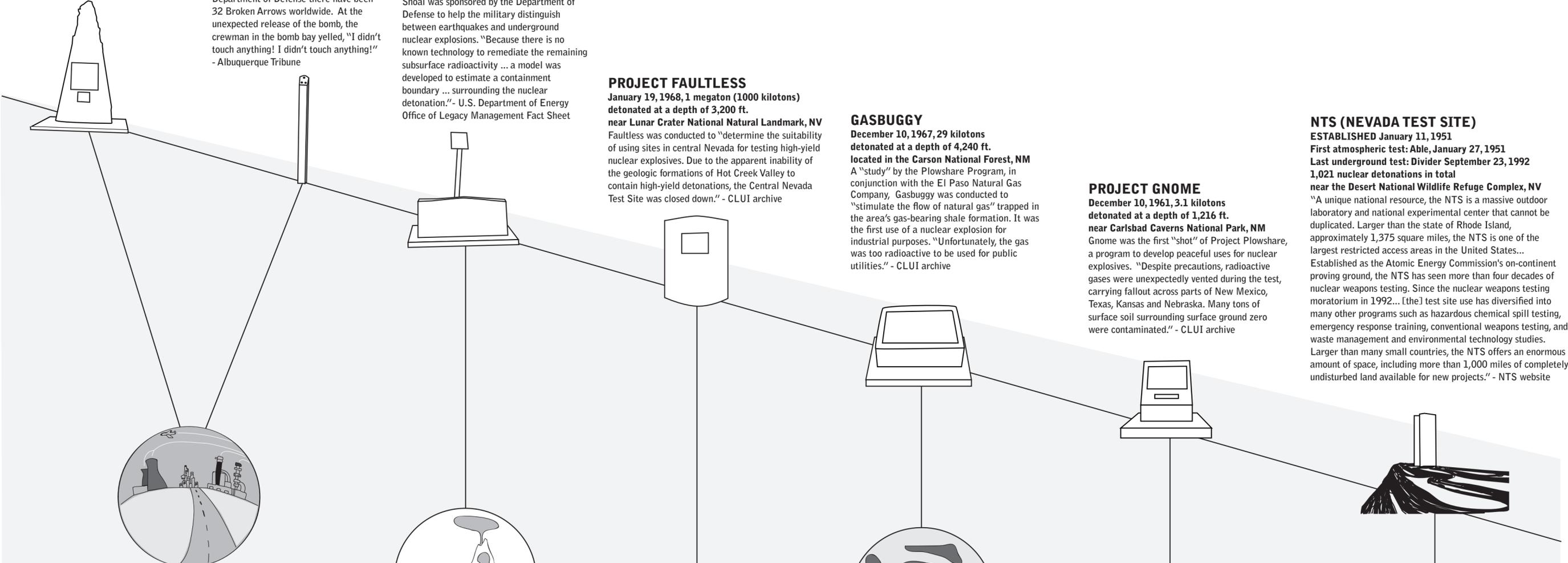
December 10, 1967, 29 kilotons detonated at a depth of 4,240 ft. located in the Carson National Forest, NM
A "study" by the Plowshare Program, in conjunction with the El Paso Natural Gas Company, Gasbuggy was conducted to "stimulate the flow of natural gas" trapped in the area's gas-bearing shale formation. It was the first use of a nuclear explosion for industrial purposes. "Unfortunately, the gas was too radioactive to be used for public utilities." - CLUI archive

PROJECT GNOME

December 10, 1961, 3.1 kilotons detonated at a depth of 1,216 ft. near Carlsbad Caverns National Park, NM
Gnome was the first "shot" of Project Plowshare, a program to develop peaceful uses for nuclear explosives. "Despite precautions, radioactive gases were unexpectedly vented during the test, carrying fallout across parts of New Mexico, Texas, Kansas and Nebraska. Many tons of surface soil surrounding surface ground zero were contaminated." - CLUI archive

NTS (NEVADA TEST SITE)

ESTABLISHED January 11, 1951
First atmospheric test: Able, January 27, 1951
Last underground test: Divider September 23, 1992
1,021 nuclear detonations in total near the Desert National Wildlife Refuge Complex, NV
"A unique national resource, the NTS is a massive outdoor laboratory and national experimental center that cannot be duplicated. Larger than the state of Rhode Island, approximately 1,375 square miles, the NTS is one of the largest restricted access areas in the United States...
Established as the Atomic Energy Commission's on-continent proving ground, the NTS has seen more than four decades of nuclear weapons testing. Since the nuclear weapons testing moratorium in 1992... [the] test site use has diversified into many other programs such as hazardous chemical spill testing, emergency response training, conventional weapons testing, and waste management and environmental technology studies. Larger than many small countries, the NTS offers an enormous amount of space, including more than 1,000 miles of completely undisturbed land available for new projects." - NTS website



IMPACT: THE ANTHROPOCENE (LAST 60-200 YEARS)

The anthropocene constitutes a new geological era. Its global stratigraphic signature contains human induced levels of carbon, decomposed plastic and atomic fallout. Trinity and Broken Arrow contributed material to this newest geologic stratum because they occurred at and made contact with the surface of the earth.

DETONATED IN: CRETACEOUS GRANITE (APPROX. 28 MILLION YEARS OLD)

Granite forms when two tectonic plates collide and one is subducted and partially melted by the intense pressure of the plate above (subduction: descent of oceanic crust into the mantle). The melted crust forms rising magma that becomes granite when cooled. "The area surrounding the Project Shoal Area is seismically active, and future earthquakes could cause rearrangement of the rubble in the test chimney and further collapse of the ceiling. However, with more than 244 m (800 ft.) of granite between the top of the chimney and the land surface, a complete collapse of the chimney resulting in release of radioactivity to the surface is unlikely." - DRI (Desert Research Institute)

DETONATED IN: TERTIARY VOLCANIC ROCK (APPROX. 30 MILLION YEARS OLD)

The Tertiary was a time of great volcanism: violent explosions, creeping molten lava, roaring volcanic mud flows, and wrenching paroxysms of sudden earthquakes. The Hot Creek Valley area of Nevada, where Faultless was detonated, is composed of this material.

DETONATED IN: THE LEWIS SHALE FORMATION (APPROX. 90 MILLION YEARS OLD)

The Lewis Shale Formation is 1,000 to 1,500 ft. thick and composed of shale, siltstone, and minor sandstone. This formation contains reserves of natural gas. During the Cretaceous period, New Mexico was covered by the Western Interior Seaway. This seaway created the deposits of the Lewis Shale Formation. Throughout the Cretaceous, sea levels were an average of 100 meters higher than today.

DETONATED IN: THE SALADO FORMATION PERMIAN (250 MILLION YEARS OLD)

250 million years ago, just as Pangaea was coming into final formation, a shallow ancient sea existed in what is now western Texas and southeastern New Mexico (the Permian Basin). The resulting Salado formation (Spanish: "salty") is a 3000 ft. salt formation, a remnant of this ancient Permian sea. Both Project Gnome and WIPP (The Waste Isolation Pilot Plant) are located within the Salado formation.

1,021 NUCLEAR DETONATIONS: THE OB-CENE PALEOZOIC TO THE ANTHROPOCENE (500 MILLION YEARS TO THE PRESENT)

Underground nuclear detonations at the Nevada Test Site have been conducted in numerous geologic formations, some dating to the Paleozoic (500 million years ago). At the start of the Paleozoic the only forms of life were bacteria, algae, and sponges and the supercontinent of Pangaea had not yet formed.