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Hanford's N-Reactor

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Description

N-Reactor was the last of nine plutonium production reactors built at Hanford. It was a "dual purpose" reactor producing both plutonium and electricity. Completed in 1963, it was the only reactor of its kind in the nation. President John F. Kennedy visited Hanford to commemorate the opening of the new facility. At the time of its inauguration, N-Reactor was celebrated as an engineering marvel, a necessary and critical tool for America's ongoing cold war with the Soviet Union, and a model of the Atoms for Peace initiative. N-Reactor, it was believed, would help the nation keep pace with Soviet nuclear production, better protect human and environmental health, and conserve federal defense dollars. Twenty-three years after its completion, however, N-Reactor became an object of fear and scorn. The April 1986 disaster at the Chernobyl Nuclear Power Plant, along with steadily increasing pressure from anti-nuclear peace and environmental organizations, and the end of the cold war all became catalysts for N-Reactor's demise.

Credits

Lee Ann Powell

Sections

[Opening Day](#)

On September 26, 1963 the Atomic Energy Commission and General Electric hosted a ceremony to commemorate the opening of N-Reactor.

[About N](#)

N-Reactor was the nation's first and only "dual-purpose" reactor.

[Chernobyl](#)

The disaster at the Chernobyl Nuclear Power Plant near Pripjat, Ukraine (Ukrainian Soviet Social Republic) was a turning point for public perception of N-Reactor. In April of 1986, one of Chernobyl's reactors suffered a cataclysmic failure resulting in the worst nuclear power accident in history. Quickly following the disaster, allegations surfaced that Hanford's N Reactor, because it was similar in design to the one at Chernobyl, could cause a similar type of catastrophe. A full scale investigation was launched to determine any potential threats posed by the reactor. Ultimately, N-Reactor was placed on "cold stand by" in 1988 and with it came the end of plutonium production at Hanford.

[Clean-up](#)

N-Reactor was decommissioned in 1989 and "cocooning" of the facility for short-term storage began in 2009.

[Source List](#)

This section contains sources used in the creation of this exhibit.

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JFK Visit

President Kennedy attended the opening ceremonies as part of a twelve state tour in 1963. He gave a short speech and then using a "magic" wand (a walnut handled wand with a Lucite encased piece of Uranium from Hanford's first operating reactor) activated a 60-foot clam shell that broke ground on the steam generating plant at the reactor. In his speech, a segment of which you can view in the window on your right, he noted that N-Reactor was both sword and plowshare. He proclaimed that energy development was necessary for economic growth and stressed the need to stay ahead of the Soviet Union in energy production. On the podium that day with the President was Governor Albert D. Rossellini, Senators Henry M. Jackson and Warren G. Magnuson, and Secretary of the Interior Stewart Udall.

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Design

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The Accident

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Cocooning N

At the time of its shut sown the reactor contained about 1 million gallons of contaminated water that was removed for disposal. It also housed a large quantity of irradiated fuel rods which are stored at Hanford waiting for shipment to a permanent high level waste repository. This photpgraph shows clean-up crews removing some of the 108 auxillary buildings at the N-campus.

N-Reactor is currently undergoing the cocooning process. This photograph show Hanford's H-Reactor already entombed. During this process all auxiliary building and equipment are removed from the site, all openings are sealed and loose contaminants stabilized. Crews install temperature and moisture sensors and cover the facility with a new roof. The reactor building will be demolished down to the 4 foot thick shield walls surrounding the core and radioactive steam generators. The reactor will be left in this condition for 75 years (short-term storage). During this time the core will cool to more manageable levels. The Department of Energy will inspect the cocooned reactor every five years and continually monitor conditions inside the building. They speculate that after 75 years the core will be transferred to a long-term storage facility.

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Visitors

Some 30,000 people attended the opening ceremonies for N-Reactor. They were drawn both by the chance to see President Kennedy and the opportunity to visit the site. For the first time in Hanford history the gates were opened and the public was allowed on to the site. The Richland school district closed school early that day so the city's children and teachers could attend the event. Those who arrived early that day were treated to a tour of the new facility.

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Operation

This photograph shows the gate at the entrance to the N-Reactor campus. The reactor operated for 22 years producing a total of about 8,173kg of fuel grade plutonium. Along with its closed loop cooling system, the reactor also featured a confinement system to limit radioactive release in case of an accident and advancements in materials and instrumentation. The reactor began plutonium production in 1964 and electricity generation in 1966. By the mid-1960s America had amassed considerable nuclear weapons stockpiles and production at the Hanford site slowed. By 1969 all production reactors, except for N, were shut down. Plutonium production slumped and N-Reactor was primarily used to produce power. In 1982, Cold War tensions renewed and the federal called for N-Reactor to again produce plutonium. N-Reactors revitalization was short lived.

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