

Experimental Breeder Reactor-I

A Groundbreaking Nuclear Reactor

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EBR-I Testing Facility, near Idaho Falls, ID.

The Experimental Breeder Reactor-I (EBR-I) was the first nuclear reactor in the world to produce useable quantities of electric power. On December 20, 1951, a successful experiment at EBR-I conclusively proved that it was possible to harness the energy produced by a nuclear reactor as the reactor successfully generated enough electricity to power four light bulbs. A second experiment the next day produced enough power to run the entire EBR-I. The first steps had been taken to realize the enormous potential for nuclear power for peaceful purposes.

During World War II, young physicists and engineers such as Walter Zinn, Kirby Whitham, Reid Cameron, Harold Lichtenberger, and others were recruited to work on the Manhattan Project, the top-secret effort in World War II to build a bomb before Hitler could.

After the war, these scientists and engineers became "Nuclear Pioneers," lured to the frontiers of Idaho and the opportunity to design and build the world's first nuclear reactors for peaceful uses. Walter Zinn had been with Enrico Fermi when the first controlled nuclear reaction had taken place at the University of Chicago less than ten years earlier and spent most of the next decade working on military development. When they began designing the Experiment Breeder Reactor-I, little was known about how to build reactors to produce useable quantities of electricity. Because of the post-war shortage of available uranium, the Atomic Energy Commission wanted to test whether a reactor could "breed" more fuel than it consumed while still serving as a source of power. This objective led to many "firsts" in the development of the EBR-I.

Construction of the EBR-I began in May 1949, and the first critical reaction was achieved two years later in December 1951. The story of the design, construction, and experimental life of the EBR-I illustrates the daunting problems faced by the team of scientists, engineers, machinists and administrators and how they worked together to solve them. Their success provided the foundation for the nation's atomic energy program, leading the Atomic Energy Commission to invest in an expansive reactor development program over the next two decades.

EBR-I was decommissioned in 1964. President Lyndon B. Johnson dedicated the Experimental Breeder Reactor-I as a National Historic Landmark on August 26, 1966 in recognition of the role it played in the development of nuclear power. In just twelve years of operation, the reactor achieved many firsts: it was the first breeder reactor, the first to generate usable quantities of electricity from atomic energy, the first to use liquid-metal as a coolant, and the first plutonium-fueled reactor. With fewer than 2,500 National Historic Landmarks throughout the country, the EBR-I is one of just ten in Idaho. Since 1975, EBR-I has been open to the public for tours and exploration.