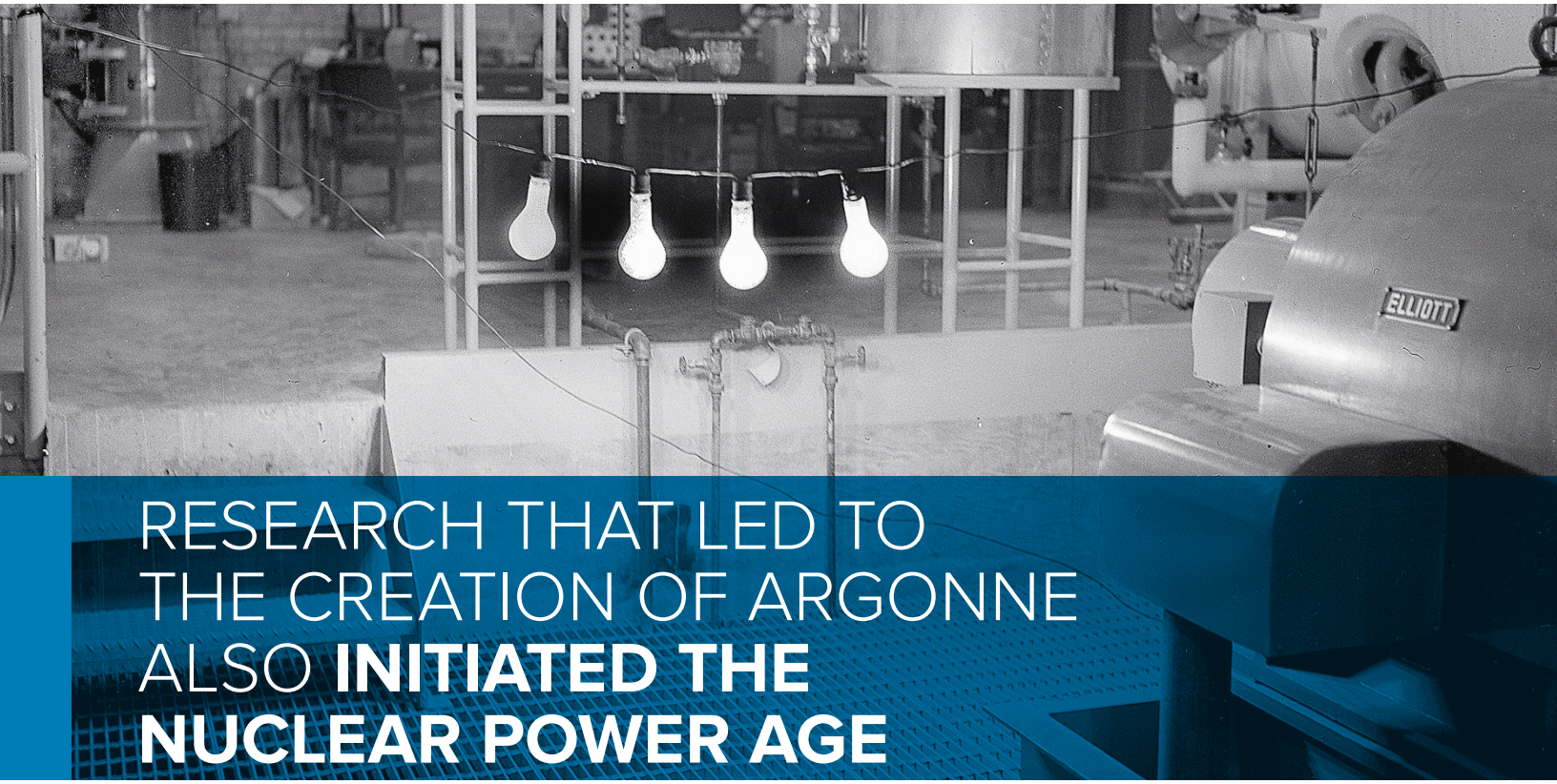
Argonne NATIONAL LABORATORY



RESEARCH THAT LED TO THE CREATION OF ARGONNE ALSO **INITIATED THE NUCLEAR POWER AGE**

On December 20, 1951, Argonne's Experimental Breeder Reactor-I lit a string of four light bulbs, thus providing the world's first observable amount of nuclear-powered electricity.

THE FOUNDATIONAL DISCOVERY

On December 2, 1942 — with the U.S. in the midst of World War II — physicist Enrico Fermi and his team at the Metallurgical Laboratory at the University of Chicago gathered in a room that contained a pile of graphite brick, uranium oxide and uranium metal.

The arrangement — dubbed Chicago Pile-1 — was precisely designed to enable a self-sustained, controlled nuclear chain reaction, where uranium atoms split apart and left loose neutrons to shoot off and split apart other atoms. Just before 4 p.m., the reactor reached criticality, thus ushering in the nuclear power age.

After the war ended, Fermi and team's work was moved west of Chicago and evolved into the nation's first national laboratory — Argonne National Laboratory — which was focused on creating new ways to produce inexpensive, carbon-free, nuclear-based electricity.

THE ADVANCEMENTS

In order to effectively create electricity from nuclear power, Argonne — collaborating with other national laboratories — developed the theoretical physics for making materials strong enough to withstand the reaction. A new reactor — known as the National Reactor Testing Station — was established at Argonne National Laboratory West in Idaho.

On December 20, 1951, Argonne's Experimental Breeder Reactor-I lit a string of four light bulbs, thus providing the world's first observable amount of nuclear-powered electricity. From there, Argonne helped the U.S. Navy build the reactor for the first nuclear-powered submarine. Argonne also contributed to the 1955 powering of Arco, Idaho — a town of 1,200 and the first nuclear-powered community.

THE IMPACT

- Today, more than 400 nuclear reactors — most stemming from Argonne's foundational research — provide 11% of the world's electrical power. In Chicago, nuclear power provides 85% of the city's electricity.
- Argonne's research led to the construction of the USS Nautilus, the first nuclear-powered submarine, which ran for 50,000 miles without refueling and instantly transformed worldwide submarine and anti-submarine tactics.

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U.S. DEPARTMENT OF ENERGY
Argonne National Laboratory is a U.S. Department of Energy laboratory managed by UChicago Argonne, LLC.

September 2022