High Flux Isotope Reactor named Nuclear Historic Landmark

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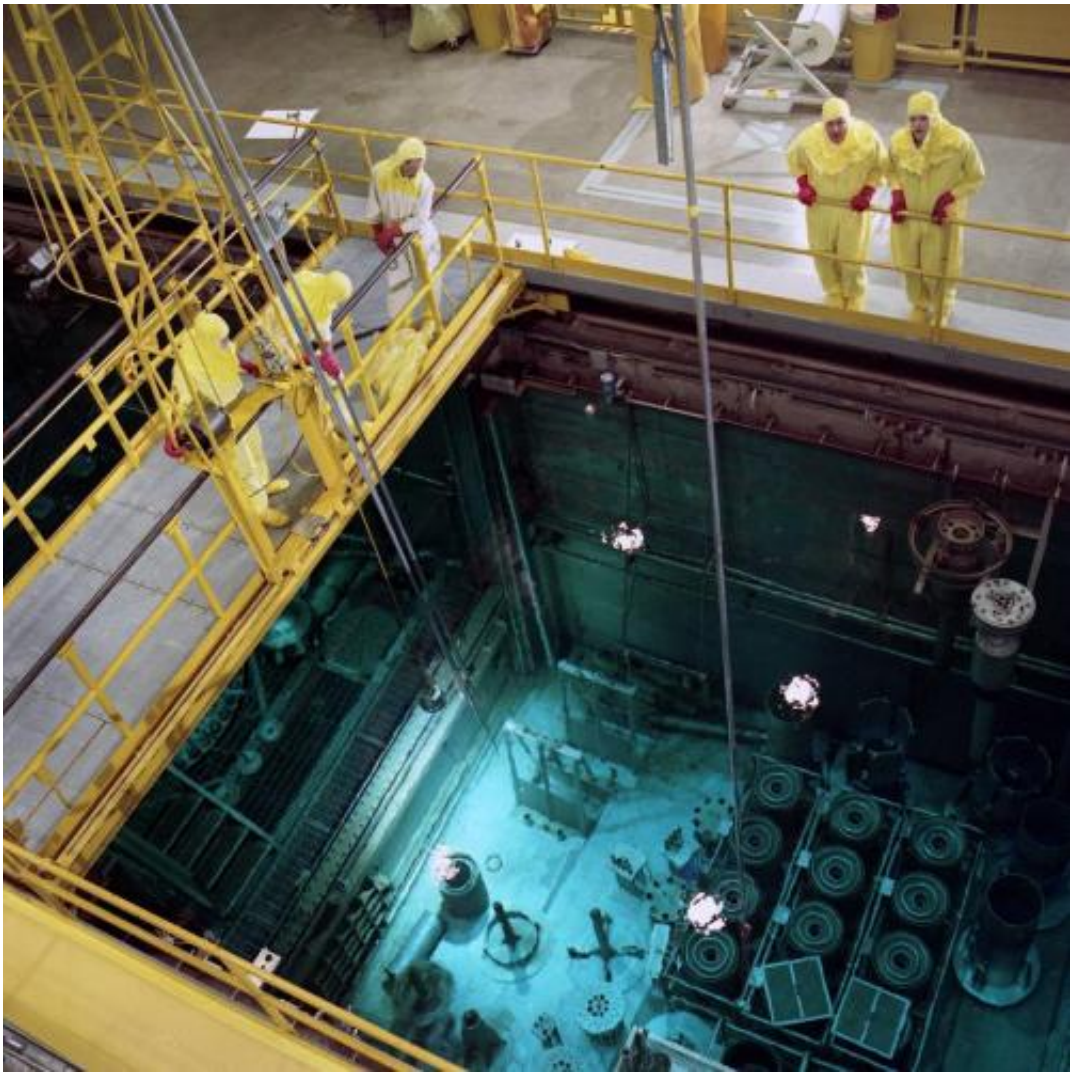

The High Flux Isotope Reactor vessel at Oak Ridge National Laboratory resides in a pool of water illuminated by the blue glow of the Cherenkov radiation effect.

The High Flux Isotope Reactor, or HFIR, now in its 48th year of providing neutrons for research and isotope production at the Department of Energy's Oak Ridge National Laboratory, has been designated a Nuclear Historic Landmark by the American Nuclear Society (ANS).

"This designation from the ANS recognizes HFIR's role in the history of the nuclear age, but it also speaks to the excellence of its design and operation," ORNL Director Thom Mason said. "HFIR remains one of the world's most capable reactor-based neutron science, radioisotope production and materials irradiation facilities, and we expect that to continue for many years."

The designation was proposed by the ANS honors and awards committee and approved on initial ballot by the board of directors.

"The ANS Nuclear Historic Landmark signifies that a nuclear facility has played an important role in nuclear science and engineering," ANS President Michaele C. Brady Raap said. "HFIR, with its preeminent role in isotope production and neutron science, certainly meets that criteria."

The reactor was conceived in the late 1950s as a production reactor to meet anticipated demand for transuranic isotopes ("heavy" elements such as plutonium and curium). HFIR today is a DOE Office of Science User Facility and one of the world's sole sources of the radioisotope californium-252, used in industry and medicine.

Researchers also use the reactor's neutron production for neutron scattering analysis, a technique pioneered at its predecessor ORNL reactors, the Graphite Reactor and the Oak Ridge Research Reactor. A major upgrade to HFIR in 2007 provided improved beam lines, new instruments and a cold source that expanded its research capabilities by literally chilling, or removing energy from, the neutrons.

HFIR has been a key contributor to four decades of research into materials for use in all types of nuclear reactors. HFIR provides researchers around the world with unique irradiation capabilities for studies that range from basic materials research to the development of advanced alloys for fusion or space reactor applications.

HFIR and the Spallation Neutron Source, an accelerator-based neutron facility that is the world's most powerful pulsed neutron source, make ORNL a leading center for neutron research. The reactor and its suite of instruments support basic research and analysis of a host of materials with applications that range from higher temperature superconductors and advanced batteries to pharmaceuticals and biofuels.

HFIR also has a historical role. Neutron analysis performed at HFIR was used in the investigation of the assassination of President John F. Kennedy and also helped prove that nineteenth century President Zachary Taylor died of natural causes. More recently the radioisotope berkelium-249 produced at HFIR was used to discover and then confirm the existence of element 117.

The reactor, operating at 85 megawatts of power, is currently in its 455th fuel cycle since the first cycle in 1966. HFIR joins the Graphite Reactor, Tower Shielding Reactor, Oak Ridge Electron Linear Accelerator, the Molten Salt Reactor and the Radiochemical Processing Plant as ANS Nuclear Historic Landmarks at ORNL, a multiprogram research lab begun during the Manhattan Project.

Provided by Oak Ridge National Laboratory

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