

# Nuclear Reactors and the Idaho National Laboratory

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**Abstract:** The Idaho National Laboratory (INL) is the lead Department of Energy (DOE) nuclear energy laboratory in the United States. Located on the Snake River Plain in eastern Idaho, the Idaho National Laboratory has a long history in the research, development, and deployment of nuclear reactors and facilities for the civilian and defense sectors, where 52 different reactors were built and operated over its 75-year history. This includes one-of-a-kind research and test reactors, like the Advanced Test Reactor (ATR) and the Transient Reactor Test (TREAT) facility. Achieving criticality in 1967, the Advanced Test Reactor is one of the longest operating nuclear reactors in the United States, and still plays a crucial role in the testing of materials and fuels for the current civilian nuclear fleet, the advanced reactor community, and the U.S. government, including the naval nuclear propulsion program. The Advanced Test Reactor also supports non-U.S. researchers and organizations from the U.K., France, the EU, Korea, Japan, etc. This seminar will cover some of the history of the Idaho National Laboratory, with a focus on the Advanced Test Reactor, its design, capabilities, and importance for the development of clean nuclear energy.

**Biography:** Dr. Weaver has spent much of his career in advanced reactor design and analysis, where he has initiated and executed complex test programs and contributed to various designs for advanced nuclear reactor concepts. His experience has allowed him to focus on some of the critical technical challenges facing advanced reactor concepts, such as the development, testing and qualification of advanced nuclear fuels and materials. Dr. Weaver re-joined the Idaho National Laboratory (INL) in the spring of 2018 where he is the Chief Technical Officer for the Advanced Test Reactor (ATR); was the technical lead/PI for all INL work supporting the Westinghouse eVinci microreactor; supported the Pele mobile microreactor project; served as Director of Experimental Capabilities for the Versatile Test Reactor (VTR); and supported the effort for integrated transient testing of advanced reactor fuels. Before re-joining INL, Dr. Weaver worked at TerraPower from 2007 to 2018, holding various positions including Technical Fellow, Director of Technology Integration, and Director of Technology Development. In these capacities he was responsible for identifying, developing, and maintaining domestic and international joint programs and relationships that supported TerraPower technology development for their various advanced reactor programs. Previous to TerraPower, Dr. Weaver worked at the INL for more than nine years (1998-2007) in various capacities, all related to the development and use of advanced nuclear reactor concepts. Dr. Weaver is the author/co-author of more than 90 publications and technical reports in nuclear science and engineering and is a co-author of a textbook on fast spectrum reactors. He holds a BS degree in physics, and PhD degree in nuclear engineering.