

Nuclear Power Overview, History and Technologies

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With Lecturer J. Stephen Herring, Ph.D.

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Abstract:

Nuclear fission is a major and mature source of carbon-free energy both in the United States and worldwide. This overview will introduce a series of six biweekly seminars at the Naval Postgraduate School this fall. Topics discussed include the laboratories, regulators, reactor vendors, enrichment facilities, fuel suppliers and utilities that make up the nuclear enterprise.

The resource adequacy of uranium and thorium, skilled labor and critical materials will be described, as will the global distribution of present reactors and of on-going construction. The various reactor and fuel cycle technologies will be introduced and covered in detail in future seminars.

Finally, the issues facing nuclear energy such as cost, safety, weapons' proliferation and waste management will be addressed.

Biography:

Dr. Herring retired 30 September as chairman of the nine Laboratory Fellows at the Idaho National Laboratory and Deputy Director for Nuclear Systems Analysis and Design. He is a Fellow of the American Nuclear Society and in 2004 received its Mishima Award for contributions to the development of thorium-uranium fuels. In 2011-12 he served a one-year assignment as technical advisor to the DOE Office of Nuclear Energy in Washington. Immediately prior to that assignment, he was responsible for the development of solid oxide cells for the efficient electrolytic production of hydrogen and synthetic transportation fuels using nuclear energy. He has been active in nuclear engineering at the INL since 1979.

Dr. Herring holds BS degrees in mechanical and electrical engineering from Iowa State University (1971), and a PhD in nuclear engineering from the Massachusetts Institute of Technology (1979). He was a Rotary Foundation Fellow at the Eidgenössische Technische Hochschule in Zürich, 1974-75, and a Visiting Scientist at the Kernforschungszentrum Karlsruhe in 1987.



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