

Donald H. Roy
President, DEEM Group, Ltd. Technical Consultant Services - Nuclear
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NASA's Nuclear Systems Initiative - The Next Generation in Space?

In 2002 NASA announced that the President's FY2003 budget request to Congress would propose a new program, the Nuclear Systems Initiative, to make possible significantly enhanced, science-driven solar system exploration missions. The press reported a total projection of about \$2B for the ten-year program, with \$950M being requested for the first five years. The size of this request got the attention of everyone knowledgeable about the subject.

Dr. Roy will review the most likely drivers for the Nuclear Systems Initiative and describe the two principal thrusts of the Initiative. He will review the 56-year history of space nuclear power and propulsion system work in the U.S. and describe BWX Technologies, Inc.'s involvement with the Star Wars Program in the late 1980s. This included nuclear reactors for thermal rocket propulsion and for electricity generation in space. He will close with some personal observations on general principles which help to make a fission energy system program successful.

Dr. Roy retired in 2000 from Babcock & Wilcox in Lynchburg, Virginia after a 41-year career in nuclear and fossil power. He is presently providing consulting services to several companies including B&W, a division of McDermott, Inc., and recently prepared a presentation to the McDermott CEO on the subject of NASA's current Nuclear Systems Initiative, which began in 2001.

Don progressed within B&W from engineering of commercial nuclear power systems to senior management responsibilities in commercial and nuclear fossil power system design and manufacturing, development of new domestic and international business in the government sector, and management of specialty programs in the government sector. His most recent responsibility was the management of B&W's program to process surplus U.S. highly enriched uranium, which included the design, construction, and operation of purification, downblending, and conversion capital facilities.

During the Reagan Administration's Strategic Defense Initiative (commonly known as "Star Wars") from 1987 to 1991, Don was B&W's Manager of Space & Nuclear Systems Business Segment. He was responsible for the supply of compact nuclear reactors for space and defense applications. This included: the development and manufacturing of high temperature fuel for nuclear rocket applications; the design, construction, and operation of the related critical experiment facility; and work with Russian institutes and ministries for related technology exchange.

Don earned a BS in Nuclear Engineering from N.C. State University in 1958, an MS in Nuclear Engineering from MIT in 1959, and a Ph.D. in Nuclear Engineering from N.C. State in 1963. He received a Distinguished Engineering Alumnus Award from N.C. State in 1986, and the Lomonosov Foundation Award by the Academy of Sciences of the Russian Federation in 1996.

He is the author or co-author of numerous technical papers, dealing with such subjects as the neutronics of nuclear steam supply systems, in-pile performance of nuclear fuel, emergency core cooling systems for commercial nuclear power reactors, and system analysis of a particle bed reactor for nuclear rocket engines.