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U.S. Department of Energy to Invest up to \$7.3 Million for “Deep-Burn” Gas-Reactor Technology R&D

The U.S. Department of Energy today announced a Funding Opportunity Announcement (FOA) valued at \$7.3 million for universities, commercial entities, National Laboratories with expertise in the concept of nuclear fuel “Deep-Burn” in which plutonium and higher transuranics recycled from spent nuclear fuel are destroyed. The funding opportunity seeks to establish the technological foundations that will support the role of the very-high-temperature, gas-cooled reactor (VHTR) in the nuclear fuel cycle -- which is one of the prototype reactors being researched/developed under the Department’s Generation IV Nuclear power program. The work under this FOA will be carried out in two parts requiring separate proposals: Advanced Modeling and Simulation Capability for VHTR Development and Design; and Transuranic Management Capabilities of the Deep-Burn VHTR.

“The Deep-Burn concept is particularly attractive because it employs the reactor design that is used for the Next Generation Nuclear Plant program, with the potential for highly efficient electricity and process heat production,” Assistant Secretary for Nuclear Energy Dennis Spurgeon said. “We are eager to see how this concept can add to the mix of advanced nuclear technologies.”

The transuranic elements are the hottest and most radiotoxic chemical elements in used nuclear fuel that require disposal in a waste repository. In Deep-Burn, the transuranics from used light water reactor fuel are recycled into coated-particle fuel and “burned” in a VHTR while producing energy in the form of process heat and electricity. The term “Deep-Burn” is used because of the VHTR’s ability to reach very high fuel burnups (up to 65 percent of initial fuel), resulting in very efficient use of the fuel and a high degree of destruction of the transuranics.

The primary mission of the NGNP is production of high-temperature heat, for use as a source of process heat or generation of electricity. A further goal of this FOA is to enable a quantitative assessment of the scope, cost and schedule implications of extending the NGNP mission in the future to destruction of plutonium and other transuranics. The Deep-Burn R&D effort will be

coordinated with the ongoing Global Nuclear Energy Partnership (GNEP) programs to ensure synergism and to avoid duplication of efforts. The R&D that will be carried out is a part of DOE's Generation IV program which aims to further the fundamental R&D to ensure the viability of the next-generation of nuclear energy systems. Developing advanced nuclear generation technologies is a priority of the President's Advanced Energy Initiative, which advocates the increased use of nuclear energy to help meet our nation's growing need for a safe, reliable, and clean energy supply.

Responses to the FOA are due to DOE **May 22, 2008**. DOE anticipates announcing the selection later this year. Applications must be submitted through <http://www.grants.gov/> to be considered for award. To read the full contents of the FOA, please [click here](#).

For additional information on this announcement, NGNP, GNEP, and nuclear R&D programs, please visit: <http://www.nuclear.gov/>.