Department of Energy
Washington, DC 20585

June 28, 2007

Chris Lui

Mr. Brian Sheron
Director
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Sheron:

Thank you for your invitation to provide input to the draft report, "U.S. Nuclear Regulatory Commission Long-Term Research: Fiscal Year 2009 Activities," dated March 2007. We find the draft report quite comprehensive in its identification of general research topics involving reactor operation beyond 60 years and the Global Nuclear Energy Partnership (GNEP). The Department of Energy (DOE) has undertaken several efforts directly applicable to the draft report.

In February 2004, DOE, in cooperation with the nuclear industry, developed a strategic plan, "U.S. DOE/Industry Strategic Plan for Light Water Reactor Research & Development," for research and development (R&D), which targets common goals that are shared by industry and the Government for the future of nuclear energy. This attached document was developed by a joint DOE-industry team and was reviewed and approved by DOE management and the Chairmen of the two senior nuclear utility advisory bodies, the Nuclear Energy Institute's (NEI) Nuclear Strategic Issues Advisory Committee and the Electric Power Reactor Institute's Nuclear Power Council. The plan includes a set of objectives focusing on improving and expanding current plant performance and achieving the longest safe and economic operating life possible. While the nuclear industry has made great strides in improving the reliability and efficiency of the existing plants, new technologies are needed to further expand and modernize existing systems while ensuring continued high degrees of reliability and operating predictability. Advanced technologies are needed to increase generating output, optimize plant performance, and assure long-term safe and secure operation. A specific R&D objective focuses on developing cost-effective security technologies to enhance the capability of existing nuclear power plants to meet newly emerging threats following the September 11, 2001, terrorist attacks. In addition to these advanced technologies, R&D is also needed to improve fuel reliability, achieve higher fuel burnups to better optimize today's longer reactor fuel cycles, and improve cost-effective management of spent fuel storage and transportation.

The Office of Light Water Reactor Deployment, together with DOE's Office of Science led by Under Secretary Orbach, is now working with the Nuclear Regulatory Commission's (NRC) Office of Research to identify long-term research activities needed to address reactor license renewal beyond 60 years. In the near term, it is our wish to hold a joint NRC/DOE workshop with appropriate stakeholders to further refine research needs to address reactor operation beyond 60 years. We hope that this effort will produce long-term research activities that will enhance NRC and DOE respective missions as well as guide the use of our research resources.

Cooperative efforts are also underway between NRC and DOE to identify research and development activities needed to facilitate the formation of a regulatory framework for licensing the prototype Next Generation Nuclear Plant (NGNP). In May 2007, we concluded a series of joint DOE-NRC workshops aimed at identifying and ranking important safety-related phenomenon for gas-cooled reactors. These workshop results will factor into an upcoming evaluation of regulatory standards and analytical codes and methods that will be included in the NGNP licensing strategy report due to Congress in August 2008.

Along with these cooperative efforts, I strongly encourage similar cooperation for GNEP, the subject of our memorandum of understanding that we expect will be in place later this year. More specifically, cooperation and coordination may be possible in a number of long-term research areas identified by NRC including:

- Planned new test facilities (e.g., GNEP has a need for a sodium test loop, transient fuel test capability, and a fast neutron source for materials and fuels testing).
- Advanced analytical capabilities (e.g., potential collaboration in the development of analytical tools, including advanced modeling/simulation techniques to test passive system designs and other operational parameters).
- Advanced fabrication and construction techniques (e.g., DOE is interested in this area for its potential to reduce costs in the construction of reactors and at the same time conform to NRC's regulatory processes).
- Extended in-situ and real-time inspection and monitoring capabilities.

Areas that appear to be missing from the draft plan are:

- Transportation of spent transuranic fuel.
- Recycling of spent transuranic fuel.
- Qualification of advanced transuranic fuels (grouped transuranic waste with americium and/or curium).

NE believes that the above efforts, properly supported, will identify both ongoing and needed activities to address issues related to "reactor renewal beyond 60 years" and GNEP.

If you have any questions, please contact Rebecca Smith-Kevern of my staff at (301) 903-5791.

Sincerely,

Dennis R. Spurgeon, Assistant Secretary
for Nuclear Energy

Attachment

cc: Christiana Lui, NRC

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