

November 5, 2016

Mr. John Kotek
Assistant Secretary, Office of Nuclear Energy
U.S. Department of Energy 1000 Independence Ave., SW
Washington, DC 20585

RE: Expression of Support for a Fast Spectrum Test Reactor/Facility

Dear Mr. Kotek

We applaud your efforts to address the need for a new test reactor in support of developers of advanced nuclear technology. A fast-spectrum test reactor could be very important to support future efforts of our company, Advanced Reactor Concepts LLC (ARC), and we strongly encourage your consideration toward pursuing it. A fast-spectrum test reactor fills an important gap for fuel development in the U.S. and is versatile in its ability to support other technologies as well. It is possible to moderate neutron flux in a fast reactor to meet thermal reactor needs but impossible to create fast flux of sufficient intensity in a thermal-spectrum reactor to meet our needs.

ARC is developing a small modular fast reactor, the ARC-100 that is a fast-spectrum reactor based upon decades of research in the U.S. We consider this to be an important return on investment for the U.S. and believe that we have sufficient information to develop the initial design. However, a fast-spectrum test reactor would add important capability to our efforts.

The first would be licensing, both educating the regulator about the technology and demonstrating that it can be successfully licensed. Uncertainty in licensing has been a major impediment for private financing and success with the test reactor would remove that uncertainty.

Second, we have identified several improvements to the fuel design, extending life, reducing waste and enhancing reliability that we could develop in the new test reactor. This would make the ARC-100 more competitive in international markets, improving both reliability and waste management.

Third, a sodium-cooled fast reactor represents a unique environment for instrumentation given the opacity of sodium. Further development and demonstration of systems for under-sodium viewing and in-service inspection would be a use to us and could be effectively demonstrated in the test reactor.

Fourth, because of the secondary-sodium loop in a fast test reactor, there are options to develop and test advanced power conversion systems at scale, such as a super-critical CO₂ Brayton cycle. The accessibility of the secondary sodium loop and the fact that it will likely not be a safety-system in the new test reactor makes this option very attractive.

The ARC-100 reactor promises many advantages that do not exist with most current reactors such as extremely long fuel life (20 years), enhanced security (no fuel handling, below grade placement), enhanced safety (self-protecting against all ATWS events) and enhanced waste management (lower actinide inventory). We feel that the advantages of our reactor and those of other advanced reactor systems will be of great benefit to the U.S. in meeting emission and economic goals; a fast-spectrum test reactor is a smart investment in that future.

We are pursuing our initial design and construction on a schedule that would precede construction of the test reactor, but nonetheless feel that it would be quite useful for improvements in the subsequent fleet as described.

If you have questions about our plans, schedule or testing needs, please feel free to contact me.

Sincerely,



Donald M. Wolf
Chairman & CEO,
Advanced Reactor Concepts, LLC