

July 9, 2013

Dr. John E. Kelly
Deputy Assistant Secretary for Nuclear
Reactor Technologies
Office of Nuclear Energy
U.S. Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

SUBJECT: INITIATIVE REGARDING U.S. NUCLEAR REGULATORY COMMISSION
LICENSING STRATEGY FOR ADVANCED REACTOR TECHNOLOGIES

Dear Dr. Kelly:

This letter is to affirm previous discussions between staff of the U.S. Nuclear Regulatory Commission (NRC), Office of New Reactors (NRO), and representatives of the U.S. Department of Energy (DOE), Office of Nuclear Energy (NE), regarding NRC's licensing framework for advanced reactor technologies and to establish a joint NRC and DOE initiative on this topic. As described further below, DOE would provide its expertise on technical issues relating to advanced reactor technologies, and the NRC would follow its normal public process should the NRC decide to modify any guidance or requirement to better apply to these technologies.

At the request of the U.S. Congress, the NRC prepared a report to address the overall strategy for and approach to preparing for the licensing of advanced reactors over the next 20-plus years (*Report to Congress: Advanced Reactor Licensing (August 2012)*, <http://pbadupws.nrc.gov/docs/ML1215/ML12153A014.pdf>). The report, in part, identified the strategy for enhanced regulatory predictability and stability for advanced technologies. Although the current licensing requirements and processes set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 and Part 52 could be used for licensing advanced reactor designs, enhancements to the regulatory framework to address potential policy, licensing, and technical issues presented by advanced designs would contribute to improvements in the effectiveness and efficiency of future licensing. To this end, NRO staff and NE representatives have planned a joint initiative.

The initiative will address consideration of the "General Design Criteria (GDC) for Nuclear Power Plants," Appendix A to 10 CFR Part 50, relative to licensing advanced reactor designs. The requirements at 10 CFR §§ 50.34(a)(3), 52.47(a)(3)(i), and 52.79(a)(4) state that an application for a construction permit, design certification, or combined license, respectively, must include the principal design criteria for the facility. The GDC establish the minimum requirements for the principal design criteria, but were specifically directed to light-water reactor (LWR) designs. The need for clarification of the applicability of the GDC to reactor types other than LWRs has been identified by the nuclear industry and varied stakeholders, acknowledged

by the NRC staff and, additionally, is reflected in the introductory statements contained in Appendix A:

These General Design Criteria establish minimum requirements for the principal design criteria for water-cooled nuclear power plants similar in design and location to plants for which construction permits have been issued by the Commission. The General Design Criteria are also considered to be generally applicable to other types of nuclear power units and are intended to provide guidance in establishing the principal design criteria for such other units.

The intended outcome of this initiative is NRC-issued regulatory guidance related to the requirements of 10 CFR §§ 50.34, 52.47, and 52.79 pertaining to principal design criteria for advanced reactor designs. Guidance may be issued for use by applicants in preparing licensing applications or for use by NRC staff for application review. It is anticipated that DOE efforts will include research, analysis, and recommendations and deliverables in the form of technical reports for submission to the NRC as input for staff's development of the regulatory guidance.

To achieve the intended outcome, the initiative scope must include extensive review of applicable regulatory requirements and Commission policy from the perspective of several different advanced reactor technologies and, additionally, review of information pertaining to prior non-LWR licensing-related activities. The Commission's "Policy Statement on the Regulation of Advanced Reactors" ([73 Fed. Reg. 60612, October 14, 2008](#)) which presents "attributes that could assist in establishing the acceptability or licensability of a proposed advanced reactor design" is central to the overall review as is the Commission Policy Statement on the "Use of Probabilistic Risk Assessment Methods in Nuclear Regulatory Activities" ([60 FR 42622; August 16, 1995](#)). Results of reviews, analyses, and evaluations would document, for example:

1. The GDC in Appendix A which are generic (i.e., applicable to all reactor technologies and designs).
2. The proposed technology-specific GDC (e.g., those applied to sodium-cooled fast reactors (SFRs)) which, when combined with the generic GDC, represent a comprehensive set of criteria for that technology from which the principal design criteria can be derived. "Technology-specific GDC" would likely consist of a) revised LWR-specific GDC from Appendix A (e.g., re-worded for applicability to SFRs); and, b) any additional criteria needed to adequately address technical characteristics (e.g., fuel type, coolant chemical properties) and safety considerations for the particular technology.

The initiative comprises multiple tasks and includes participation by technical experts from national laboratories and various stakeholders and will provide for participation by the public. Activities will encompass various working group sessions, closed meetings to address proprietary information, and public workshops. The requisite planning and scheduling will be a coordinated effort among NRC staff and DOE representatives.

In carrying out this initiative, NRC staff will be mindful of and sensitive to the necessity for maintaining independence and avoidance of conflict of interest in interactions with industry and other stakeholders. Further, the staff will remain mindful of Commission direction and on-going

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staff activities regarding regulatory framework initiatives such as Fukushima-related activities (e.g., Near Term Task Force Recommendation 1) and the “Proposed Risk Management Regulatory Framework” (NUREG-2150). I consider this initiative to be mutually beneficial and an important element of the NRC’s licensing strategy for advanced reactor technologies.

Mr. Michael Mayfield, Director, Division of Advanced Reactors and Rulemaking is the NRC lead for this initiative. He can be reached at Michael.Mayfield@nrc.gov, or by phone at 301-415-0561.

Sincerely,

/RA/ Gary Holahan for

Glenn M. Tracy, Director
Office of New Reactors

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