

January 30, 2014

MEMORANDUM TO: Chairman Macfarlane
Commissioner Svinicki
Commissioner Apostolakis
Commissioner Magwood
Commissioner Ostendorff

FROM: Glenn M. Tracy, Director */RA/*
Office of New Reactors

SUBJECT: UPDATE REGARDING RECOMMENDATIONS FOR USE OF RISK
INSIGHTS FOR SMALL MODULAR REACTOR REVIEWS

The purpose of this memorandum is to update the Commission on the staff's plans discussed in SECY-11-0024, "Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews," February 18, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML110110688). In SECY-11-0024, the staff responded to Staff Requirements Memorandum (SRM)-COMGBJ-10-0004/COMGEA-10-0001, "Use of Risk Insights to Enhance Safety Focus of Small Modular Reactor Reviews," August 31, 2010 (ADAMS Accession No. ML102510405) directing the staff to provide a policy paper to address development of a framework, implementation strategy, and plans and schedules to more fully integrate the use of risk insights into pre-application activities and the review of small modular reactor (SMR) applications with near-term focus on integral pressurized-water reactor (iPWR) designs.

In SRM-SECY-11-0024, "Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews," May 11, 2011 (ADAMS Accession No. ML111320551), the Commission approved: (1) the staff's recommended risk-informed and integrated review framework pertaining to SMRs with iPWR designs, and (2) the staff's plans for developing, over the longer term, a recommendation for a risk-informed and performance-based regulatory structure for SMRs with advanced designs (e.g., high-temperature gas-cooled reactors (HTGRs) and liquid-metal fast reactors (LMRs)). For SMRs with advanced designs, the staff's plans involved a multistep process, extending over several years, and included pilot studies in which the principles of a technology-neutral regulatory structure would be considered for an iPWR design application, the Next Generation Nuclear Plant (NGNP) project (an HTGR design) application activities, and the pre-application activities for LMR designs.

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SMRs with iPWR Designs

For iPWR and other light-water SMR designs, the staff has developed and implemented the risk-informed and integrated review framework recommended in SECY-11-0024 and approved by the Commission, for pre-application and application review activities. The staff issued the review framework in the form of a draft revision for public comment to the introduction to NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition." The staff developed a design-specific review standard (DSRS) for the mPower™ design consistent with the framework and issued the proposed mPower™ DSRS for public comment. The staff has made significant progress in that the review framework is being implemented and used by industry, including reactor vendors and potential applicants, varied stakeholders, and by the technical staff responsible for application reviews.

The staff anticipates the continued use of this review framework for light-water SMR application activities in both the near-term and longer-term. The staff will issue the final version of the introduction to NUREG-0800 in the near term. The staff will continue to support pre-application interactions with light-water SMR designers and potential applicants and, as appropriate, develop new DSRSs for future designs.

SMRs with Advanced Designs

Changes in the environment since 2011 affect the staff's plan discussed in SECY-11-0024 for development of a recommendation, over the longer term, related to a new risk-informed regulatory structure for advanced reactors. Several factors, including U.S. Department of Energy decisions regarding the NGNP project, updated industry plans and schedules, agency priorities and budgets, and current Commission-directed activities related to reactor regulations, including Near-Term Task Force (NTTF) Recommendation 1, resulted in the need to revise the plans discussed in SECY-11-0024.

In early 2011, the staff anticipated the receipt of several applications for non-light-water reactor (non-LWR) designs and intended to prepare by developing an advanced reactor regulatory structure for licensing these applications—a technology-neutral regulatory structure that would be "tested" via pilot studies. However, a NGNP application, at this time, is no longer anticipated and LMR pre-application activities have remained minimal. In addition, the agency is now operating in a government-wide environment of reduced financial resources, which mandates a reassessment of the priorities of previously-planned activities. Under these circumstances, the staff cannot justify further efforts to develop a technology-neutral regulatory structure as an agency priority. The staff is revising the plans discussed in SECY-11-0024 and will not conduct pilot studies in which a technology-neutral regulatory structure will be considered for iPWR and non-LWR application-related activities.

Path Forward

The staff will remain cognizant of ongoing agency activities, such as those related to NTTF Recommendation 1 and NUREG-2150, "A Proposed Risk Management Regulatory Framework." In addition, the staff will continue to maintain awareness of external factors that are relevant to the staff's plans, including planned industry activities and international initiatives, such as the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO).

Consistent with the Nuclear Regulatory Commission's (NRC's) "Report to Congress: Advanced Reactor Licensing," August 2012 (ADAMS Accession No. ML12158A390) and agency budget limitations, the staff intends to progressively increase engagement within the international regulatory community with respect to advanced reactors. As part of this engagement, the staff intends to consider the merits of international (e.g., International Atomic Energy Agency) standards and guidance.

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