

POLICY ISSUE **(Information)**

November 7, 2013

SECY-13-0118

FOR: The Commissioners

FROM: Brian W. Sheron, Director
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SUBJECT: ANNUAL UPDATE OF THE RISK-INFORMED ACTIVITIES PUBLIC
WEB SITE

PURPOSE:

This paper provides the Commission with an annual update on activities contained in the Risk-Informed Activities public Web site, including a summary of recent accomplishments and accomplishments anticipated in the near term. This paper does not address any new commitments or associated resource implications.

BACKGROUND:

On June 1, 2006, the Commission issued a staff requirements memorandum (SRM) (Agencywide Documents Access and Management System (ADAMS) Accession No. ML061520304) that directed the U.S. Nuclear Regulatory Commission (NRC) staff to improve on the Risk-Informed Regulation Implementation Plan (RIRIP) by developing an integrated master plan for activities designed to help the NRC achieve its goal of a holistic, risk-informed, and performance-based regulatory structure. The Commission also directed the staff to seek ways to communicate more transparently to the public and stakeholders on the purpose and use of Probabilistic Risk Assessment (PRA) in the agency's reactor, materials, and waste regulatory programs. SECY-07-0074, "Update on the Improvements to the Risk-Informed Regulation Implementation Plan," dated April 26, 2007 (ADAMS Accession No. ML070890396), conveyed that plan, which the staff retitled as the "Risk-Informed and Performance-Based Plan."

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To meet the Commission's expectations for both a risk-informed and a performance-based regulatory structure, Enclosure 1 to SECY-07-0074 included explicit criteria for the staff's review and consideration of performance-based approaches to determine which initiatives should be both risk-informed and performance based. SECY-07-0191, "Implementation and Update of the Risk-Informed and Performance-Based Plan (RPP)," dated October 31, 2007 (ADAMS Accession No. ML072700587), discussed the staff's progress in implementing the RPP and included an updated set of objectives, bases, and goals for the reactor, materials, and waste regulatory arenas. In November 2007, the staff completed its commitment to make all aspects of the RPP available to the general public through the agency's public Web site. The most recent version of the public Web site list of risk-informed activities changed the format from the previous plan and was provided as SECY-12-0149, "Annual Update of the Risk-Informed and Performance-Based Plan," dated October 31, 2012 (ADAMS Accession No. ML12270A313).

DISCUSSION:

This Commission paper contains summary information on risk-informed and performance-based activities in the Reactor Safety arena. More comprehensive and detailed information appears on the NRC's public Web site at <http://www.nrc.gov/about-nrc/regulatory/risk-informed/rpp.html>, for the Reactor Safety, Materials Safety and Waste Management arenas. The Web site provides a readily accessible overview and current status of the agency's risk-informed and performance-based regulatory activities, updated at least annually coincident with this paper.

The following regulatory initiatives are highlighted here, with more details in the enclosure:

- A. Workshop on Probabilistic Flood Hazard –
A recent workshop was held with federal agency partners to share information on probabilistic flood-hazard assessments for extreme events such as: flood-induced dam and levee failures; tsunami flooding; riverine flooding, local intense precipitation flooding and storm surges. NUREG/CP-0302 documented the proceedings including recommendations that will be considered during the development of a NRC research plan on flooding.
- B. Enhance Regulatory Framework for Extended Storage and Transportation of Spent Nuclear Fuel –
Staff will use risk information and performance-based approaches in the gap assessments to identify technical and regulatory needs to expand the basis for regulating the extended storage and transportation of spent nuclear fuel.
- C. Publish the Glossary of Risk-Related Terms –
A glossary of risk-related terms has been completed and provides a single source to reduce ambiguity and facilitate communication on risk-informed activities.
- D. Develop Methods, Tools and Guidance for Including Digital Systems in Nuclear Plant PRAs –
Staff continues to develop methods and analytical tools for including models of digital systems in nuclear plant PRAs. Recent efforts have focused on performing statistical testing of a pilot digital I&C system and development of a network model for estimating software reliability.

- E. Apply Risk Assessment Methodology for Reprocessing Facilities –
Staff will identify changes to existing regulatory requirements that are necessary to license a reprocessing facility using risk insights for the variety of chemical-radiological operations associated with the radiological risks for fission product and actinide separations.
- F. Assess Debris Accumulation on PWR Sump Performance, Generic Issue (GI)-191 –
The generic issues program and 10CFR50.46c rulemaking is considering debris accumulation on the Emergency Core Cooling (ECC) sump screen that might restrict water flow to the pumps, following a LOCA. Licensees calculate the portions of core damage frequency and large early release frequency attributable to debris and compare them to the risk acceptance guidelines in Regulatory Guide 1.174.
- G. Emergency Core-Cooling System Redefined Loss Of Coolant Accident (LOCA) Large Break Size –
Proposed Rulemaking is designed to redefine the large-break loss-of coolant accident requirements to provide a risk-informed alternative maximum break size. In April of 2012, the staff requested withdrawal of the final rule from Commission consideration so that the staff could review the rule and ensure its compatibility with the ongoing regulatory framework activities under Recommendation 1 of the Fukushima Near-Term Task Force (NTTF) report.
- H. Apply Level 3 PRA Consequence Analysis Methods to Emergency Preparedness Oversight and SPAR Models to Emergency Action Levels –
Staff quantified the protection provided by Emergency Planning using SPAR models for the Emergency Action Levels (EALs). Conditional core-damage probability used as the risk metric showed that the current EAL schemes appropriately reflect plant risk increases as the severity of the emergency classification increases.
- I. Develop Standardized Plant Analysis Risk (SPAR) Models –
The staff will maintain and improve models that cover accident progression from systems, components and operator actions to assess risk of events and degraded conditions.
- J. Improve Human Reliability Analysis (HRA) Methods and Practices –
HRA efforts address the suitability of methods for NRC applications, striving to improve consistency among practitioners by providing improved methods and guidance for quantifying human reliability.
- K. Develop Improvements to Standard Technical Specifications (TS) –
Three initiatives to risk-inform TS are: to allow hot shutdown repairs, modify technical specification completion times, and add actions to preclude entry into Limiting Condition for Operation (LCO) 3.0.3, (times to shutdown modes when LCO and associated actions are not met).

- L. Review and Implement Fire Protection Standard 805 –
Staff is reviewing 18 licensee applications to change their licensing basis to National Fire Protection Association (NFPA) 805, a risk informed, performance based standard endorsed via 10CFR50.48(c), to use Probabilistic Risk Assessment (PRA) to transition from existing deterministic fire protection programs. Fire PRA is an integral part of the new licensing basis, and includes both quantitative evaluations of base risk and changes to base risk in accordance with RG 1.174.
- M. Revise the Fuel Cycle Oversight Process (RFCOP) –
The RFCOP Project Plan will develop an approach to use risk information in making risk significance determinations in oversight of fuel cycle facilities.
- N. Develop a Full-Scope Site Level 3 Probabilistic Risk Assessment (PRA) –
Staff is conducting a full-scope site level 3 PRA that addresses all internal and external hazards; all plant operating modes; and all reactor units, spent fuel pools, and dry cask storage. In May of 2013, the staff completed a preliminary version of the Level 1, at-power, internal events and internal flood model.
- O. Develop Approach for Special Treatment Requirements Categorizing Structures, Systems and Components (SSCs) According to Safety Significance –
Under a Vogtle pilot license amendment, while implementing 10 CFR 50.69, safety significance of SSCs will be used to revise industry guidance, Regulatory Guide (RG) 1.201, and inspection procedures. During the pilot application review, the staff expects to continue to work with the industry and pilot licensees to modify the inspection procedure to reflect lessons learned.
- P. Risk Informed Regulatory Framework for New Reactors –
The staff will give additional consideration to relative risk metrics, or other options that would provide a more risk-informed approach to the significance of inspection findings. A recent series of public meetings have been held in addition to briefing of the ACRS in preparation to respond to the Commission on risk metrics for new reactor inspection findings.

Two activities from the Generic Issues program: Generic Issue (GI)-199, “Implications of Updated Probabilistic Seismic Hazards Estimates in Central and Eastern US on Existing Plants” and GI-204, “Flooding of Nuclear Power Plant Sites Following Upstream Dam Failure”, have been subsumed into the Fukushima Lessons Learned activities, Recommendation 2.1, Flooding and Seismic Reassessment.

Two additional risk-informed performance-based staff activities are noted here without further elaboration because they have been and will be more extensively described elsewhere. In SRM-SECY-11-0093, “Near-Term Report and Recommendations for Agency Actions Following the Events in Japan,” dated August 19, 2011 (ADAMS Accession No. ML112310021), the staff plans to provide the Commission a notation vote paper in December 2013 on Near-Term Task Force (NTTF) Recommendation 1, “Establish a Logical, Systematic, and Coherent Regulatory Framework for Adequate Protection That Appropriately Balances Defense-in-Depth and Risk Considerations”. Second, as directed by the Chairman’s Memorandum, “Evaluating Options Proposed for a More Holistic Risk-Informed, Performance-Based Regulatory Approach,” dated June 14, 2012 (ADAMS Accession No. ML121660102), the staff is developing a response to the recommendations in NUREG-2150, “A Proposed Risk Management Regulatory Framework”.

Both these activities are being closely coordinated as will be described in the forthcoming NTTF Recommendation 1 notation vote paper.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection.

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Brian W. Sheron, Director
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Enclosure:

Recent Accomplishments and Near-Term
Anticipated Accomplishments—2013

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Enclosure:
Recent Accomplishments and Near-Term
Anticipated Accomplishments—2013

ADAMS Accession No.: ML13273A030

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