

January 27, 2017

MEMORANDUM TO: Joseph G. Giitter, Director
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Office of Nuclear Reactor Regulation

FROM: Christopher J. Fong, Team Lead **/RA/**
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SUBJECT: STATUS OF DRAFT REGULATORY GUIDE (RG) 1.229, "RISK-INFORMED APPROACH FOR ADDRESSING THE EFFECTS OF DEBRIS ON POST-ACCIDENT LONG-TERM CORE COOLING"

The purpose of this memo is to provide you and other stakeholders a publicly-available status update of draft Regulatory Guide (RG) 1.229, "Risk-Informed Approach for Addressing the Effects of Debris on Post-Accident Long-Term Core Cooling." This RG will provide guidance on implementing 10 CFR 50.46c(e), "Alternate risk-informed approach for addressing the effects of debris on long-term core cooling," if that rule is approved by the Commission. RG 1.229 is referenced in SECY 16-0033, "Final Draft Rulemaking - 10 CFR 50.46c: Emergency Core Cooling Systems Performance during Loss-of-Coolant Accidents" (Agencywide Documents and Management System (ADAMS) package Accession No. ML15238A947). The Commission must vote on the rule before the RG can be published and, at the time of this memo, that has not occurred. The official version of draft RG 1.229 (ADAMS Accession No. ML15252A125) has completed office-level concurrence and received "no legal objection" from the Office of General Council (OGC).

While awaiting Commission direction, the staff has considered two sets of changes to RG 1.229. First, the staff has prepared draft language to address the recommendations contained in the Advisory Committee on Reactor Safeguards (ACRS's) April 19, 2016 letter (ML16102A163). These changes provide additional clarification but do not alter the technical aspects of the RG. A redline-strikeout version of affected sections of RG 1.229 that includes draft language to address the ACRS recommendations is contained in Enclosure 1 to this memo. A comparison matrix is also included to highlight how the draft language addresses the ACRS recommendations.

Second, staff in the Office of Nuclear Reactor Regulation (NRR), working with the Office of Nuclear Regulatory Research (RES), have continued work on alternate, more realistic methods

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for partitioning plant-wide loss-of-coolant-accident (LOCA) frequencies. At the request of NRR, The Center for Nuclear Waste Regulatory Analysis (CNWRA) performed an independent assessment of how RG 1.229, Appendix C addressed two key technical areas:

- Loss-of-coolant-accident break size intervals
- The relative likelihood of partial vs. complete breaks

CNWRA's report concluded that the approaches used in Appendix C to address these issues were "appropriate" and "reasonable" but could be further refined. This report is dated July 27, 2016. (ADAMS Accession No. ML16207A518)

On July 28, 2016 NRR also solicited formal input from RES using the research assistance request (RAR) process (ADAMS Accession No. ML16207A485). A response to the RAR, dated October 27, 2016 identified "a number of concerns" and stated, "we are unable to identify any acceptable refinements to the proposed approach described in Method 2 of Appendix C to draft RG 1.229." (ADAMS Accession No. ML16299A316)

An updated version of Appendix C that incorporates feedback from the CNWRA report and the response to the RAR is included in Enclosure 2. It has not been shared with stakeholders outside of NRR and does not represent a consensus position. A detailed assessment of the RAR response is contained in Enclosure 3.

The Commission is still deliberating on 10 CFR 50.46c. Therefore, NRC staff members and first line supervisors from the offices involved in the development of RG 1.229 (the Office of New Reactors (NRO), NRO, and RES) have held a series of internal meetings to determine the most appropriate path forward for incorporating planned revisions to RG 1.229. OGC supported these discussions.

We do not recommend updating the RG prior to a Commission vote. Doing so could create the need for yet another revision to the RG if the Commission approves 50.46c but directs the staff to make changes to those portions of the rule covered by RG 1.229. Furthermore, substantive changes to the RG now could be viewed as by the Commission as reducing their direction and control over the rulemaking. If the Commission approves 50.46c, the complete set of changes can be made in an integrated and holistic fashion and can be included in the next revision of the RG. Depending on the scope of these changes, an additional public comment period may be necessary.

Enclosures:

1. Changed Text to Resolve ACRS Comments
2. Updated Version of Appendix C
3. Assessment of RAR Response **(non-publically available)**

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