April 26, 2010

MEMORANDUM TO: Brian W. Sheron, Director
Office of Nuclear Regulatory Research

FROM: Eric J. Leeds, Director ***/RA/***
Office of Nuclear Reactor Regulation

SUBJECT: USER NEED REQUEST FOR TECHNICAL ANALYSIS OF PETITION FOR RULEMAKING ON 10 CFR 50.46

This memorandum describes the Office of Nuclear Reactor Regulation (NRR) user need request for a technical analysis of a petition for rulemaking [reference 1] that addresses emergency core cooling system (ECCS) performance requirements.

This new request was discussed with Dr. Stephen Bajorek of your staff. We understand from these discussions that the scope and schedule of the tasks described below are achievable. In addition, the Directors of the lead divisions in each of our Offices, William Ruland and Jennifer Uhle, have discussed and agree with the scope and schedules of the tasks in this request. We have also discussed this request with staff from the Office of New Reactors (NRO). The NRR contact responsible for this request is Timothy Collins from the Division Safety Systems (DSS).

It is important that the staff in NRR and the Office of Nuclear Regulatory Research (RES) communicate frequently through periodic meetings and conference calls to ensure the efforts related to this request are meeting NRR's identified needs and schedules.

Background

The petitioner is requesting revisions to §10 CFR 50.46 "Acceptance Criteria for Emergency Core Cooling systems for Light Water Nuclear Power Reactors" and to 10 CFR Part 50, Appendix K "ECCS Evaluation Models" as well as associated regulatory guidance. The petitioner proposes that several aspects of the existing regulations are non-conservative. Specifically, the petitioner claims that 1) the peak cladding temperature limit of 2200 degrees F in 10 CFR 50.46(b) is non-conservative; 2) the Baker Just reaction rate correlation specified in Appendix K, and the Cathcart Pawel reaction rate correlation specified in Regulatory Guide 1.157, are both non-conservative for metal water reaction rate evaluations under LOCA conditions; and 3) a minimum reflood rate should be specified in the regulations.

CONTACT: Timothy E. Collins, NRR/DSS
(301) 415-3261

Technical Issue, Regulatory Application, Deliverables and Schedule

As noted above, the petitioner asserts that several aspects of the existing regulations are non conservative. The petitioner cites extensive data from numerous multi-rod experiments as the basis for his assertions. We therefore request that RES perform a technical analysis of the cited experimental data and assess the relevance and validity of the petitioner's interpretation and conclusions relative to the proposed rulemaking. We will use your technical assessment to prepare the agency decision on the petition.

The requested deliverable for this user need is a technical letter report. Your office provided an outstanding technical analysis [reference 2] of a similar rulemaking petition, and we request the final deliverable for this user need be in this same format. We also request that a draft of your report be provided for comment by August 31, 2010 and the final report by September 30, 2010. We will provide comments on the draft within one week of receipt.

Priority

NRR has ranked this user need request according to the Planning, Budgeting, and Performance Management process. The priority of this request for assistance was determined to be a high priority. My staff has used this priority value in their discussions with members of your staff to determine whether your office can support our schedule requirements. These discussions indicate that RES can support the scope and proposed schedule identified in this user need request.

Points of Contact

The NRR technical contact for this research is Timothy Collins in the DSS. The RES technical contact Dr. Stephen Bajorek in the Division of Systems Analysis.

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ADAMS Accession Number: ML100770117 NRR106

OFFICE	NRR/DSS	NRR/DPR	NRR/DSS: D	NRR: D
NAME	TCollins	HCruz	WRuland	ELeeds
DATE	03/18/10	03/18/10	03/19/10	04/26/10

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References:

[1] Petition for Rulemaking from M. E. Leyse dated November 17, 2009 (Docketed as PRM 50-93) Accession ML093290250

[2] Memorandum from F. Eltawila to D. Matthews and S. Black “TECHNICAL SAFETY ANALYSIS OF PRM-50-76, A PETITION FOR RULEMAKING TO AMEND APPENDIX K TO 10 CFR PART 50 AND REGULATORY GUIDE 1.157”, dated April 29, 2004, Accession ML041210109