

May 12, 2003

MEMORANDUM TO: John A. Zwolinski, Director  
Division of Licensing and Project Management  
Office of Nuclear Reactor Regulation

FROM: Scott F. Newberry, Director /RA/  
Division of Risk Analysis and Applications  
Office of Nuclear Regulatory Research

SUBJECT: REQUEST FOR REVIEW OF MITIGATING SYSTEMS  
PERFORMANCE INDICES WHITE PAPER

Attached for your information and review is a draft white paper documenting development efforts for the Mitigating Systems Performance Indices (MSPI) for potential use in NRR's Reactor Oversight Process (ROP). We would appreciate receiving your comments by 60 days from the receipt of this memorandum.

As background, in a user need letter of December 14, 2001, the Inspection Program Branch (IIPB) of NRR requested RES support in enhancing the current set of ROP performance indicators (PIs). This was to be accomplished by continued development of selected PIs from the RES risk-based performance indicator (RBPI) program as described in NUREG-1753, and by developing plant-specific, risk-informed thresholds. Specifically, the user need requested the Operating Experience Risk Analysis Branch (OERAB) of RES, among other items, to:

- Support a pilot program for unreliability/Safety System Unavailability (SSU) indicators - this task will allow development of additional PIs that would supplement ROP to address industry concerns on the use of fault exposure hours for the current unavailability PIs.
- Develop risk-informed, plant-specific thresholds for all performance bands for the unreliability and unavailability indicators for all plants - this task will enhance the ROP PI thresholds by making the thresholds plant-specific.

We have worked closely with IIPB staff in meeting the above two objectives through the development and piloting of the MSPI. We have mutually worked together in the formulation of the MSPI as described in NRC Regulatory Issue Summary 2002-14, Supplement 1, proposed changes to the Safety System Unavailability Performance Indicators, dated September 30, 2002. OERAB and IIPB have jointly sponsored working group meetings of the MSPI in conjunction with monthly ROP meetings. On January 21, 2003, a Public Workshop was held in Two White Flint to identify on-going issues with the MSPI, and to provide an opportunity for a mid-course correction of the Pilot Program.

As a result of the extensive interaction between NRR and RES, monthly ROP meetings with industry, and the activities we have supported to undertake the MSPI pilot, we believe that the concepts and issues presented in this paper are well known by those involved in MSPI pilot program. This paper provides the vehicle for documenting this information and will allow for proper dissemination to other stakeholders and interested parties. Specifically, the attached draft white paper describes:

- Formulation of MSPI,
- Approximation on which the MSPIs are based,
- Benefits of MSPIs,
- Limitations of MSPIs, including scope limitations,
- Key issues in MSPI development to be addressed in near-term work.

The white paper describes how the MSPIs provide reasonable estimates of changes in core damage frequency that are caused by performance changes that affect unreliability and unavailability of risk-significant equipment within the scope of the calculation. Certain performance issues are not amendable to being tracked with the MSPI, and would continue to be addressed separately.

Finally, the white paper addresses questions posed by the ACRS Subcommittee on Reliability and PRA in May 2002 regarding how the MSPI provides the appropriate risk categorization of performance degradation. The white paper will provide background material for a briefing of the ACRS Subcommittee scheduled for July 8, 2003.

While we are principally interested in submitting the paper for ACRS review, we also wish to offer the opportunity for review and comment to NRR and the region, nuclear industry representatives, MSPI pilot program participants, other licensees, and the public. We understand that John Thompson of the Inspection Program Branch will make this paper available to various stakeholders through the ROP improvement process. If you have any questions regarding this report, please contact Dr. Donald Dube (301- 415-5472, [DAD3@nrc.gov](mailto:DAD3@nrc.gov)) of my staff.

Attachment: As stated

MEMORANDUM DATED: 5/12/03

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Accession No.: ML031350208

RES File Code: 2C-3

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REQUEST FOR REVIEW OF MITIGATING SYSTEMS PERFORMANCE INDICES WHITE PAPER

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