

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
WASHINGTON, DC 20555-0001

August 28, 2002

**NRC REGULATORY ISSUE SUMMARY 2002-14  
PROPOSED CHANGES TO THE SAFETY SYSTEM UNAVAILABILITY  
PERFORMANCE INDICATORS**

**ADDRESSEES**

All holders of operating licenses for nuclear power reactors, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

**INTENT**

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to inform addressees that beginning on September 1, 2002, the agency will start a 6-month pilot program to evaluate changes to the safety system unavailability (SSU) performance indicators (PIs). The pilot program will be assessed midway through the test period to determine if more than six months are needed to obtain meaningful results. This RIS and its attachments provide guidance to participating addressees for submitting PI data to the NRC. Addressee participation in this pilot program is voluntary. Therefore, this RIS requires no action or written response on the part of an addressee.

**BACKGROUND**

The Reactor Oversight Process (ROP) is directly linked to the NRC's mission. That framework includes cornerstones of safety. Within each cornerstone, a broad sample of information on which to assess licensee performance in risk-significant areas is gathered from PI data submitted by the licensees and from the NRC's risk-informed baseline inspections. The PIs are not intended to provide complete coverage of every aspect of plant design and operation, but they are intended to be indicative of performance within related cornerstones. The data submitted by each licensee is used to calculate the PI values, which are then compared to risk-informed, objective thresholds.

NRC has established a formal process to (1) address questions and feedback from internal and external stakeholders, (2) make changes to existing PIs and thresholds based on lessons learned, and (3) develop new PIs and associated thresholds. NRC used this formal process (documented in NRC Inspection Manual Chapter 0608, "Performance Indicator Program") to evaluate the changes described in this RIS.

**Package: ML022390102**

## SUMMARY OF ISSUE

Results from the ROP Pilot Program (SECY-00-0049, dated February 24, 2000) gave the first indications that there were problems with the SSU PIs. Other feedback that confirmed this conclusion were stakeholder feedback from public workshops, NRC/Industry Working Group meetings, and the ROP feedback process. In response to these problems, NRC formed an ad hoc committee, the Safety System Unavailability Planning Committee. The Committee has identified the following major issues: (1) the use of risk-significant system functions versus design-basis functions, (2) the use of T/2 to estimate fault exposure time in the current SSU PI, (3) the evaluation of design and performance deficiencies that are not detected through regular surveillance tests, but rather through the significance determination process (SDP), and (4) the manner in which support systems (e.g., the component cooling water or service water system) unavailability should affect the availability of the monitored safety system.

Following the formal PI process, steps have been taken to modify the existing SSU PI. Numerous public meetings have been held since February 2000 to discuss and develop alternate SSU PIs and the NRC has agreed to pilot test a set of performance indicators under the mitigating systems cornerstone. These PIs will be referred to as the mitigating system performance index (MSPI). The MSPI monitors the performance of the risk-significant functions of selected systems as described in the guidance documents attached to this RIS. This index consists of system unavailability and system unreliability elements for the monitored system. Attachments 1 and 2 provide descriptions of the MSPI.

The following plants have volunteered to participate in the pilot test: Salem 1 and 2, Hope Creek, Limerick 1 and 2, Millstone 2 and 3, Prairie Island 1 and 2, Braidwood 1 and 2, Surry 1 and 2, Palo Verde 1, 2, and 3, San Onofre 2 and 3, and South Texas 1 and 2.

The purpose of the pilot program is to collect data to determine whether the MSPI is an improvement over the existing SSU PIs at indicating performance in the mitigating systems cornerstone, and does not introduce new unintended consequences.

The NRC will follow its standard practices in conducting the pilot test to determine the efficacy of the proposed MSPI. This includes considering:

1. differences between data collected for the current SSU PIs and the MSPI;
2. the comparability of the data reported for the SSU PI and the MSPI;
3. the ability of licensees to report the requested data accurately and with minimal need for clarification;
4. the ability of the MSPI to reduce the potential for unintended consequences

5. whether the MSPI will satisfy ROP objectives:
- Maintain safety: Can MSPI indicate significant departures from expected performance that warrant additional attention?
  - Increase public confidence: Is the MSPI at least as understandable as the current SSU PI?
  - Improve the efficiency and effectiveness of NRC processes: Are fewer NRC resources being spent on single-demand failure SDPs and fault exposure data issues?
  - Reduce unnecessary regulatory burden: Does the MSPI reduce licensee reporting burden and resource expenditure. For example, does the MSPI avoid duplication of records for the maintenance rule, probabilistic risk assessment, and the ROP and reduce resources allocated to single demand failure SDP evaluations?

Attachment 3 of this RIS provides additional success criteria which address the technical adequacy of the MSPI.

NRC will continue to use existing PIs to assess plants participating in the pilot program. Therefore, no thresholds will be applied to the data reported in the MSPI pilot.

Midway through the 6-month pilot program, the NRC will decide whether to extend the program to ensure that the test results are meaningful and adequate to gather insights. The reporting guidance in the attachments to this RIS may be modified during the pilot to reflect insights gained from table top exercises and the data received.

Based on the results of this pilot program and stakeholder feedback, the NRC will decide whether to replace current PIs with the MSPI.

### **VOLUNTARY ACTION**

Addressees that choose to participate in the pilot program should conform to the guidance in this RIS for the voluntary submission of PI data. Send the September 2002 PI data as an attachment to an e-mail message addressed to [pidata@nrc.gov](mailto:pidata@nrc.gov) on or before October 21, 2002, and by the 21<sup>st</sup> of each month thereafter for the preceding month. Include "MSPI Pilot-Test Data" in the subject line of the e-mail." The data reporting phase of the pilot test ends on March 21, 2003, with the submission of data for the preceding month.

All questions and comments generated by pilot plants and the nuclear industry should be sent to [tch@nei.org](mailto:tch@nei.org). Questions and comments from the NRC and the public should be sent to [reactoroversight@nrc.gov](mailto:reactoroversight@nrc.gov). Questions and comments submitted to this e-mail address will be discussed and evaluated during the next MSPI Working Group monthly meeting. Responses will be provided within 2 weeks of the monthly MSPI Working Group meeting.

An external NRC Web site, <http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/mspi.html>, has been set up for stakeholders to obtain updated guidance on conducting the pilot program. The updated guidance will be provided in the form of revisions to the attachments to this RIS, namely, Attachment 1, Section 2.2, "Mitigating Systems Cornerstone," of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline" (Draft); and Attachment 2, NEI 99-02, Appendix F, "Methodologies For Computing the Unavailability Index, the Unreliability Index and Determining Performance Index Validity" (Draft).

## **BACKFIT DISCUSSION**

This RIS requires no action or written response. Any action on the part of addressees to collect and transmit PI data in accordance with the guidance contained in this RIS is strictly voluntary and, therefore, is not a backfit under 10 CFR 50.109. Therefore, the staff did not perform a backfit analysis.

## **FEDERAL REGISTER NOTIFICATION**

A notice of opportunity for public comment on this RIS was not published in the *Federal Register* because the NRC has worked closely with NEI, industry representatives, members of the public, and other stakeholders since early 1998 on the development of NRC's Reactor Oversight Process, including the collection of PI data. The NRC has solicited public comment on its intent to collect PI data in five *Federal Register* notices (dated January 22, April 12, May 26, July 19, and August 11, 1999), four regulatory issue summaries (RIS 99-06 and RIS 2000-08, "Voluntary Submission of Performance Indicator Data"; RIS 2000-21, "Changes to the Unplanned Scram and Unplanned Scram with Loss of Normal Heat Removal Performance Indicators;" and RIS 2001-25, "NEI 99-02, Revision 2, Voluntary Submission of Performance Indicator Data"), and at numerous public meetings. The NRC will also issue a *Federal Register* notice soliciting public comment on the proposed PIs described in this RIS.

## **PAPERWORK REDUCTION ACT STATEMENT**

This regulatory issue summary contains voluntary information collections that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). These information collections were approved by the Office of Management and Budget, clearance number 3150-0195, which expires October 31, 2002.

The burden to the public for this voluntary information collection is estimated to average 240 hours per response for the initial response and 40 hours per response thereafter. This effort includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing the burden, to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet electronic mail to [INFOCOLLECTS@nrc.gov](mailto:INFOCOLLECTS@nrc.gov); and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0195), Office of Management and Budget, Washington, DC 20503.

### Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, an information collection unless the requesting document displays a currently valid OMB control number.

If you have any questions about this matter, contact the person listed below.

*/RA/*

William D. Beckner, Program Director  
Operating Reactor Improvements Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Technical Contact: Serita Sanders, NRR  
301-415-2956  
E-mail: [SXS5@nrc.gov](mailto:SXS5@nrc.gov)

#### Attachments:

1. Section 2.2, "Mitigating Systems Cornerstone," of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline" (draft)
2. NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Appendix F, "Methodologies For Computing the Unavailability Index, the Unreliability Index, and Determining Performance Index Validity" (draft)
3. Mitigating System Performance Index Pilot Program Success Criteria (draft)
4. List of Recently Issued NRC Regulatory Issue Summaries

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DATE	08/21/2002	08/21/2002	08/27/2002	08/28/2002	

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## Mitigating System Performance Index Pilot Program Success Criteria (Draft)

The Mitigating System Performance Index (MSPI) pilot program objectives and success criteria listed below will be considered to have been met if there is general agreement among the NRC staff, industry stakeholders, and public stakeholders that they have been met.

1. The occurrence of a single failure of an MSPI monitored component by itself, absent any other failures or unavailabilities, should rarely exceed the green/white MSPI threshold as measured from the baseline value. The term “rare” is defined as minimizing the inconsistencies across plants, within plants, and within systems such that there is no undue burden on resources, and the objective of having consistent publicly displayed results can be achieved.
2. False positive and false negative rates can be established for the chosen statistical method, and instances where the MSPI cannot meet the criteria are rare.
3. Instances where the results from the MSPI calculational methodology are not consistent with the SPAR-3 models are rare, and the differences are explainable.
4. The MSPI pilot plant participants can identify and compile the risk significant functions for the monitored systems in a readily inspectable format, and can compile a set of predetermined success criteria for those risk significant functions.
5. The active components in the monitored systems are appropriate for inclusion in the MSPI and are a manageable number of components under the MSPI.
6. By the end of the pilot program, inspection procedures and MSPI pilot guidelines are sufficiently detailed to minimize MSPI Questions and NRC feedback forms.
7. MSPI Questions and NRC feedback do not reveal any unresolvable issues.
8. Data collection inconsistencies between the maintenance rule and the MSPI can be reconciled in order to eliminate or significantly reduce separate reporting.
9. Differences between the linear approximation models generated by licensee probabilistic risk assessments and those generated by the NRC SPAR-3 models can be reconciled.

LIST OF RECENTLY ISSUED  
NRC REGULATORY ISSUE SUMMARIES

Regulatory Issue Summary No.	Subject	Date of Issuance	Issued to
2002-13	Confirmation of Employment Eligibility	08/27/2002	All holders of operating licenses for nuclear power reactors.
2002-12	NRC Threat Advisory and Protective Measures System	Various	Various
2002-11	Requalification Program Test Results for Okonite Okolon Single-Conductor Bonded-Jacket Cable (Followup to Regulatory Issue Summary 2000-25)	08/09/2002	All holders operating licenses for nuclear power reactors, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.
2002-10	Revision of the Skin Dose Limit in 10 CFR Part 20	07/09/2002	All U.S. Nuclear Regulatory Commission material licensees.
2002-09	Preparation and Scheduling of Operator Licensing Examinations	06/06/2002	All holders of operating licenses for nuclear power reactors, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.
2002-08	Availability of the Topical Report Program Description and Status of Staff Reviews on the NRC Web Site	05/22/2002	All holders of construction permits or operating licenses for nuclear power reactors (including those that have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel), formal nuclear industry groups, and nuclear steam supply system vendors.

**Note:** NRC generic communications may be received in electronic format shortly after they are issued by subscribing to the NRC listserver as follows:

To subscribe send an e-mail to <[listproc@nrc.gov](mailto:listproc@nrc.gov)>, no subject, and the following command in the message portion:

subscribe gc-nrr firstname lastname