

MEMORANDUM TO: Jon R. Johnson, Associate Director  
Associate Director for Inspection and Programs  
Office of Nuclear Reactor Regulation

FROM: Thomas L. King, Director  
Division of Risk Analysis and Applications  
Office of Nuclear Regulatory Research

SUBJECT: FEDERAL REGISTER NOTICE - REQUEST FOR PUBLIC COMMENT  
ON RESULTS OF PHASE-1 RISK-BASED PERFORMANCE  
INDICATOR DEVELOPMENT AND NOTICE OF TWO PUBLIC  
MEETINGS

Attached for your review and concurrence is a Federal Register Notice (FRN) to issue the report on the Phase-1 Risk-Based Performance Indicator (RBPI) development for external stakeholder review and comment. The FRN also includes notice of two public meetings. The purpose of the first public meeting is to brief external stakeholders on the results of the Phase-1 RBPI development. The purpose of the second public meeting is to discuss external stakeholder review comments on the Phase-1 RBPI report.

We issued the draft Phase-1 RBPI development report on September 20, 2000 for internal stakeholder review and comment. We had several meetings with the technical staff from NRR and the Regions. In addition, we briefed senior NRR management on November 29, 2000 on the RBPI development results and implementation issues. We also briefed Sam Collins on December 13, 2000. NRR issued a memorandum on December 1, 2000 summarizing their review comments. We have incorporated those comments as well as comments from the December 13 meeting in cooperation with your staff.

We plan to issue this FRN on January 26, 2001 in order to meet our Commission Tasking Memorandum schedule. Therefore, NRR concurrence is requested by January 24, 2001. If you have any questions on the attachment, please contact Patrick Baranowsky at 415-7493.

Attachment: As stated

cc w/att.:  
S. Collins, NRR  
R. Zimmerman, NRR  
B. Sheron, NRR  
A. Thadani, RES  
M. Federline, RES

MEMORANDUM DATED: / /01

SUBJECT: FEDERAL REGISTER NOTICE - REQUEST FOR PUBLIC COMMENT ON RESULTS OF PHASE-1 RISK-BASED PERFORMANCE INDICATOR DEVELOPMENT AND NOTICE OF TWO PUBLIC MEETINGS

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DOCUMENT NAME: A:\RBPI-FRNCOVERLTR.WPD

**\*see previous concurrence**

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<b>ROUTING AND TRANSMITTAL SLIP</b>	Date 1/12/2001
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<b>TO: (Name, office symbol, room #, building, agency/post)</b>	Initials	Date
1. H. Hamzehee - Concur		
2. S. Mays - Concur		
3. P. Baranowsky - Concur		
4. T. King - Signature		
5.		
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10.		

	Action		File		Note and Return
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	Circulate		For Your Information		See Me
	Comment		Investigate	X	Concurrence/Signature
	Coordination		Justify		

**REMARKS**

**Federal Register Notice - Request for Public Comment on Results of Phase-1 Risk-Based Performance Indicator Development and Notice of Two Public Meetings.**

<b>FROM: (Name, org. symbol, Agency/Post)</b>	Room # - Bldg.
	Phone #

NUCLEAR REGULATORY COMMISSION

Risk-Based Performance Indicators: Results of Phase-1 Development

AGENCY: Nuclear Regulatory Commission.

ACTION: Request for comment and notice of two public meetings

SUMMARY: The Nuclear Regulatory Commission is announcing the availability of the draft document entitled: "Risk-Based Performance Indicators: Results of Phase-1 Development," dated January 2001 for review and comment by external stakeholders. Interested individuals may obtain a copy of this document from the person identified under the caption: "For Further Information Contact."

DATES: Submit comments by April 16, 2001. Comments received after this date will be considered if it is practical to do so, but the Commission is able to ensure consideration only for comments received on or before this date.

Two public meetings will be held on February 21, 2001 from 8:30am to 12:30pm, and April 24, 2001 from 8:30am to 12:30pm.

ADDRESSES: Submit comments to: Chief, Rules and Directives Branch, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

Deliver comments to: 11545 Rockville Pike, Rockville, Maryland, between 7:30am and 4:15pm Federal workdays.

Two public meetings to be held at Two White Flint North, Room T-10A1 for the first meeting, and Two White Flint North Auditorium for the second meeting, 11545 Rockville Pike, Rockville, Maryland 20852.

The draft document and certain other documents related to this action, including

comments received, may be examined in the NRC Public Document Room, 11555 Rockville Pike, Rockville, Maryland.

FOR FURTHER INFORMATION CONTACT: Hossein G. Hamzehee, Division of Risk Analysis and Applications, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Telephone: 301-415-6228, e-mail: hgh@nrc.gov

#### SUPPLEMENTARY INFORMATION:

The Reactor Oversight Process (ROP) was recently revised to improve the NRC's regulatory oversight of licensee operation of commercial nuclear power plants. It is intended to better risk-inform agency actions and bring more objectivity to the regulatory process. The revised ROP is consistent with the goals of the Commission's PRA Policy Statement and the NRC's Strategic Plan (NUREG-1614), which include increased use of the PRA technology in ". . . regulatory matters to the extent supported by the state-of-the-art in PRA methods and data and in a manner that complements the NRC's deterministic approach and supports the NRC's traditional defense-in-depth philosophy." The ROP is reflective of the NRC's efforts to better risk-inform its core processes.

SECY-99-007 and 99-007A described the ROP. The ROP was implemented at all plants, except DC Cook, in April 2000 following a six-month pilot program conducted in 1999. The results of this pilot program were described in SECY-00-0049. A fundamental aspect of the ROP is the use of both performance indicators and inspection findings to determine whether the objectives of the ROP's cornerstones of safety are being met on a plant-specific basis.

In addition to these changes at the NRC, the industry is using more performance-based approaches to enhance its operations, including gathering and analyzing both plant-specific and

industry-wide data. Furthermore, technological advances such as the Internet and microcomputer use have resulted in improved capabilities to gather and share such data. Through such technological developments, both the industry and the NRC have expanded their capabilities to model and assess the risk-significance of plant operations.

In light of these evolving capabilities and the movement toward more risk-informed and performance-based oversight, the Risk-based Performance Indicators were developed to (1) address specific areas in the current ROP that were identified in SECY-00-0049 as possible enhancements and (2) potentially support any future development of performance indicators using improved risk analysis tools. This report discusses the technical feasibility of using currently available risk models and data to enhance the NRC's ability to monitor plant-specific safety performance of reactors in a risk-informed and performance-based manner. This development activity is designed to fit into the ROP concept for indicators, thresholds, and performance monitoring while continuing to move the NRC's programs forward in accordance with the PRA Policy Statement and the goals of the Strategic Plan.

There are several key implementation issues summarized below that should be considered prior to any integration of the RBPIs with the ROP. These issues are further explained in the Phase-1 RBPI development report, which is attached to this document. The potential integration of the RBPIs into the ROP would follow the guidelines in IMC0608, "Performance Indicator Program." This would likely include a pilot program prior to the full implementation of any of the RBPIs.

A white paper entitled "Development of Risk-based Performance Indicators: Program Overview" was issued for public comment in March 2000. This white paper described the concepts for the RBPI development. The development of the RBPI white paper was closely

coordinated with the Office of Nuclear Reactor Regulation (NRR) and the Regions. On April 28, 2000, a public meeting with external stakeholders was held to discuss their comments on the overall concept and technical approach outlined in the RBPI development white paper.

Attendees included representatives from the Nuclear Energy Institute (NEI), the Institute of Nuclear Power Operations (INPO), the Union of Concerned Scientists, and Public Citizen. The final version of the white paper was issued as part of SECY-00-0146.

The NRC staff is seeking external stakeholder comments on the draft Phase-1 report. Specifically, we are requesting comments regarding the technical adequacy of the proposed performance indicators, and the potential implementation issues. The white paper, “Development of Risk-based Performance Indicators: Program Overview,” and this report list the technical criteria for RBPI development. We are interested in comments regarding these key technical criteria as summarized below:

- The RBPIs are compatible with, and complementary to, the risk-informed inspection activities of the oversight process.
- The RBPIs cover all modes of plant operation.
- Within each mode, the RBPIs cover risk-important SSCs to the extent practical.
- To the extent practical, the RBPIs identify declining performance before performance becomes unacceptable, without incorrectly identifying normal variations as degradations (i.e., avoid false-positive indications and false-negative indications).
- The RBPIs are capable of implementation without excessive burdens to licensees or NRC in the areas of data collection and quantification.
- The RBPIs are amenable to establishment of plant-specific thresholds consistent with the ROP.

In addition, we are seeking comments on the key issues that affect the potential implementation of the results of the RBPI development in the ROP. These issues evolved out

of both the technical aspects of RBPI development as well as programmatic feedback from the ROP implementation. Each is discussed briefly below.

Are any additional performance indicators needed to enhance the ROP?

Interactions with stakeholders commenting on the White Paper indicated differing views on this subject. Industry representatives questioned whether NRC needed to have a broader coverage of risk measured in the ROP indicators, especially if it did not result in a corresponding reduction in the inspection program. Other external stakeholder comments favored more indicators as well as additional inspections. The ROP is in its first year of full implementation. The NRR staff will provide the Commission with its assessment of the process in June 2001. The RBPI development program is focused on demonstrating the technical feasibility of providing additional objective indicators that cover a broader spectrum of risk-significant plant performance.

Is the number of potential new indicators appropriate?/Which of the proposed indicators would be most beneficial?

The RBPI Phase-1 development identified 21 potential indicators for PWRs and 16 potential indicators for BWRs. If all of these performance indicators were implemented, they could potentially replace 8 (3 initiating event and 5 mitigating system) of 18 existing indicators in whole or in part bringing the total number of indicators per plant to about 30. In addition to the issue of the appropriate risk scope of ROP indicators (noted above), it will be necessary to assess whether potentially expanding the total number of indicators to approximately 30 per plant is reasonable from a logistics/process point of view. For example, the criteria that result in plants entering various columns of the Action Matrix would have to be reconsidered. If deemed appropriate, future RBPI development will examine the feasibility of developing indicators at a higher level (systems) by combining results of lower level data and models. The program will also examine means to use risk insights to develop a shorter list at the component/train level.

Do the data sources for RBPIs exist and have sufficient quality for use in the ROP?

A significant portion of the RBPIs require access to and use of data from the Equipment Performance and Information Exchange (EPIX) system. These data are voluntarily provided by industry in response to the Commission decision to forgo the Reliability Data Rule. Full industry participation, verification and validation of existing EPIX, and development of guidelines for consistent data reporting are important to the feasibility of many RBPIs as potential improvements to the ROP. In addition, certain data for shutdown and containment systems will need to be developed in order to have RBPIs in those areas. The issue of the regulatory mechanisms for certifying the accuracy of data used in RBPIs for the ROP will be dealt with through the ROP change process if a decision is made to proceed with potential implementation of some or all of the identified RBPIs.

Will SPAR Revision 3i models be available for setting plant-specific thresholds for all plants?

Approximately 30 Standardized Plant Accident Risk (SPAR) Revision 3i models are currently available. Completion of all 70 SPAR Revision 3i models is scheduled for the end of calendar year 2002. As more models are made available for use in the RBPI development program, it will be possible to determine if plants can be grouped so that a few models can be used to set thresholds for all plants or individual models will be needed for each. The RBPI development program will continue to use the SPAR Revision 3i models as they are developed. External stakeholder comments on the White Paper indicated that peer review by licensees should be included in the development of these models. An additional implementation issue relates to whether licensees or NRC will calculate the thresholds and indicators as well as whether licensee models (meeting as yet to be developed NRC specifications) could be used instead of the SPAR models.

Will LERF models be available for setting thresholds for mitigating and containment systems?

There are a limited number of large, early release frequency (LERF) models available to set thresholds for performance of systems that impact the integrity of the containment barrier. In addition, currently available data are inadequate for establishing performance measures for the containment systems. Also, for some systems under the mitigating systems cornerstone, the thresholds associated with changes in core damage frequency (CDF) due to performance degradations may not be limiting compared to changes in LERF. To assess that condition, LERF models that reflect the impact of potential CDF changes are needed. The current plan for developing LERF models over the next several years will support only limited capability for identifying RBPIs or setting plant-specific LERF thresholds.

The NRC has scheduled two public meetings on this matter. The purpose of the first public meeting is to brief external stakeholders on the results of Phase 1 of Risk-Based Performance Indicator development. The purpose of the second public meeting is to discuss external stakeholder comments on the results of Phase-1 RBPI development, and the technical feasibility of applying these concepts in the ROP.

Dated at Rockville, Maryland, this \_\_\_\_ day of \_\_\_\_\_, 2001.

For the Nuclear Regulatory Commission.

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Thomas L. King, Director,  
Division of Risk Analysis and Applications,  
Office of Nuclear Regulatory Research.