

POLICY ISSUE
(Notation Vote)

July 13, 2004

SECY-04-0118

FOR: The Commissioners

FROM: Luis A. Reyes
Executive Director for Operations /RA/

SUBJECT: PLAN FOR THE IMPLEMENTATION OF THE COMMISSION'S PHASED
APPROACH TO PROBABILISTIC RISK ASSESSMENT QUALITY

PURPOSE:

To provide the Commission with the action plan for the implementation of the phased approach to probabilistic risk assessment (PRA) quality, and to inform them of anticipated staff resource impacts.

To request Commission direction and additional guidance on policy issues related to the implementation of the plan.

BACKGROUND:

On December 18, 2003, the Commission issued Staff Requirements Memorandum (SRM) COMNJD-03-0002, "PRA Quality Expectations and Requirements." In the SRM, the Commission approved implementation of a phased approach to achieving an appropriate quality for PRAs for Nuclear Regulatory Commission's (NRC) risk-informed regulatory decisionmaking. This phased approach was described in an attachment to the SRM. The SRM directed the staff to develop an action plan that would define a practical strategy for the implementation of the phased approach to PRA quality. In addition, the SRM directed the staff to discuss the resolution of technical issues, such as model uncertainty, treatment of seismic and other external events, and human performance issues.

CONTACTS: Gareth W. Parry, NRR/DSSA
415-1464

Mary T. Drouin, RES/PRAB

415-6675

DISCUSSION:

The plan was developed jointly by the Offices of Nuclear Reactor Regulation (NRR) and Nuclear Regulatory Research (RES). Drafts of the plan were distributed to stakeholders internal to the NRC, and were made available on the NRC public web site for external stakeholders. The staff held public meetings on the draft plan on February 24, March 24 and May 13, 2004. The staff met with the Advisory Committee on Reactor Safeguards (ACRS) subcommittee on PRA on March 25, 2004, and with the full committee on April 15, 2004. The ACRS issued a letter on April 27, 2004, broadly supporting the plan, with some additional recommendations. Letters have also been received from the Nuclear Energy Institute, the American Society of Mechanical Engineers (ASME) and the American Nuclear Society, the Westinghouse Owners Group, and the Electric Power Research Institute. These stakeholders expressed their general support for the staff's plan. This final version of the plan considers the input received from these stakeholders.

The term PRA quality has been interpreted in different ways by different stakeholders, resulting in some confusion and misunderstanding. In this plan, PRA quality is defined as in Regulatory Guide (RG) 1.174 and RG 1.200 as having three aspects: the scope of risk contributors addressed (full power, low power and shutdown modes of operation, internal initiating events, and external initiating events), the level of detail, and the technical adequacy of the model. Inherent in this definition is that a PRA of sufficient quality to support an application need only have the scope and level of detail sufficient to support that application, but it must always be technically adequate.

The plan covers the first three phases defined in the SRM, and identifies the activities required to support implementation. As directed by the SRM, the feasibility of the fourth phase will be assessed following achievement of Phase 3. The phases are achieved for specific risk-informed activities when guidance documents are available to support those activities, and in particular to address the issue of the quality of PRA necessary to support the activities. Phase 1 represents the current situation, where guidance on PRA quality is general, and staff review of the base PRA supporting the activity is performed on a case-by-case basis. Phase 2 takes advantage of the work that has been performed to develop PRA standards. Phase 2 occurs when there are PRA standards and the associated regulatory guides in place to address those PRA scope items that are significant to the decision. To be in Phase 2 for an application, the licensee's submittal is expected to be in conformance with the published standards. The PRA standards are being developed on different schedules. As a result, the risk-informed activities will transition to Phase 2 on different schedules according to which scope items are significant to the decision. Table 3.3 of the plan provides the schedule for implementation of Phase 2 as a function of PRA scope. Phase 3 provides a regulatory framework for the development of a PRA that will be of sufficient quality to support all current and anticipated applications. Phase 3 will be completed by December 31, 2008.

In implementing the phased approach, the plan calls for specific application types to be defined, and the necessary guidance documents identified. Additional guidance documents will be developed on a schedule that is a function of when the standards are developed. The implementation schedule has a built-in grace period to allow licensees to implement the new guidance. To implement the phased approach, a process will be developed for prioritizing and scheduling submittal reviews. This prioritization process is necessary to balance the need to

use staff resources effectively and efficiently and the need to provide incentives for licensees to develop more complete PRA models. Because the development of the guidance documents will be achieved over an extended time, the staff intends to continue to use other opportunities (e.g., review of licensee submittals, review of licensee Phase 3 Significance Determination Process (SDP) evaluations, Accident Sequence Precursor Analyses) to monitor the scope, level of detail, and technical adequacy of licensee PRAs. The staff plans on working closely with industry in the development of the guidance documents, and will develop the necessary standards not developed by a Standards Developing Organization (e.g., ASME).

In addition to providing a strategy for the implementation of the phased approach, the plan addresses the identification and resolution of technical issues (e.g., model uncertainty, the treatment of seismic and other external events, and human performance). It should be noted that the specific activities identified in the SRM are already under way. However, it is likely that, as the guidance is implemented, additional technical issues requiring resolution will be identified. In addition, it is the staff's intention to use the Standardized Plant Analysis Risk (SPAR) models to assist in identifying any additional technical issues and in prioritizing their resolution.

As part of the implementation of the plan, the staff will develop a communications plan. The objectives of this plan are to: (1) explain the staff activities to stakeholders, (2) describe the staff's approach, and (3) provide a structure for communicating the messages to stakeholders.

The action plan will be revised as necessary if schedules for the development of guidance documents change.

IMPLEMENTATION ISSUES:

A key to the successful implementation of the phased approach is the development of a process for the prioritization and scheduling of the staff's review of risk-informed submittals. This process is intended to establish a balance between the need to use staff resources effectively and efficiently and the provision of incentives for licensees to develop more complete PRAs. The attachment to the SRM states that, once Phase 2 has been reached, the staff should give low priority to, or return, nonconforming applications because of their adverse effect on effectiveness and efficiency. Following discussion with stakeholders, the staff has included, as one of the first tasks in the plan, the development of a process for the scheduling and prioritization of reviews of licensee submittals, taking into account such issues as the following:

- whether the staff resources required to review the PRA results for those significant scope items not addressed by the use of standards are available
- whether the application has a safety benefit
- whether there is a potential benefit to the licensee (economic, needed for outage planning, etc.)
- whether the application furthers the state of practice

- whether the application is a pilot for an application that is seen as having a net safety benefit

In determining how the phased approach would be implemented, two policy issues were identified:

Policy Issue 1 —
Issue:

Phase 2 occurs when there are available PRA standards and regulatory guidance to address the PRA scope items that are significant for a specific application. Phase 3 occurs when there are available PRA standards and regulatory guidance to address all current and anticipated applications. Although PRA standards and regulatory guidance for all current and anticipated applications may be available (Phase 3), the licensee may choose not to upgrade their PRA to support all such applications. The licensee may decide on a risk-informed activity that does not utilize all the available PRA standards and regulatory guidance. The staff believes this decision is acceptable. Consequently, every licensee would not be required to update their PRA to all available guidance completely before participating in risk-informed activities.

Pros:

- Licensees interested in only one or two applications would not have to develop a Phase 3 PRA conforming to all the available PRA standards and regulatory guidance.
- For licensees only interested in simple, same-type applications, requiring a Phase 3 PRA could serve as a disincentive to the licensee.
- Efficiencies in staff review would occur for licensees only submitting simple, same-type applications¹.
- Reduction of unnecessary burden for some licensees.

Cons:

- If there is no requirement for a Phase 3 PRA, there may be little incentive for development of a Phase 3 PRA. That is, licensees may not take advantage of the added benefits such as analyzing events and performing SDP evaluations.
- Inefficiencies in staff review would occur if licensee submits multiple, more complex applications.

Recommendation:

Phase 2 applications are acceptable even after Phase 3 guidance is in place.

¹Examples of simple, same-type applications include inservice inspections and allowed outage time extensions for accumulators.

Policy Issue 2 —**Issue:**

Phase 1 represents the current situation: PRA standards and regulatory guidance are incomplete. Phase 2 and Phase 3, as noted above, occurs when (1) there are PRA standards and regulatory guidance to address the PRA scope items that are significant for a specific application, and (2) there are PRA standards and regulatory guidance to address all current and anticipated applications, respectively. Although PRA standards and regulatory guidance for all current and anticipated applications may be available (Phase 3), the licensee may again choose not to upgrade their PRA to support all such applications. The licensee may decide on an application even though their PRA is not supported by the available PRA standard and regulatory guidance for that specific application (Phase 2). The staff does not agree with this decision. The staff believes that a licensee's application, where the PRA does not conform to at least the Phase 2 guidance, should be rejected. Therefore, licensees would not be allowed to submit individual Phase 1 applications once Phase 3 guidance is in place.

Pros:

- Licensees would have an incentive to develop and use more complete PRAs.
- Efficiencies in staff reviews would occur; staff review would not be performed on a case-by-case basis.

Cons:

- Stakeholders may argue that not allowing use of alternate approaches (such as margin type analyses with compensatory measures) would result in an unnecessary burden for simple, well-understood applications that have an established history.
- By rejecting Phase 1 applications in the future, it could be misinterpreted that the current practice (Phase 1) was inadequate.

Recommendation:

Once Phase 3 guidance is in place, Phase 1 applications would no longer be accepted.

RESOURCES:

The resources in the NRR and RES budget for the tasks in the plan for FY2004 - FY2006 are listed in the table below. Resources for the tasks to be completed in FY2007 - FY2008 will be allocated consistent with the agency's Planning, Budgeting, and Performance Management (PBPM) process.

	FY04 \$	FY04 FTE	FY05 \$	FY05 FTE	FY06 \$	FY06 FTE
NRR	0	0.6	0	1.3	0	0.8
RES	\$700K	1.2	\$750K	1.5	\$775K	1.5
Total	\$700K	1.8	\$750K	2.8	\$775K	2.3

RECOMMENDATIONS:

The staff recommends that the Commission approve the following:

- Phase 2 applications are acceptable even after Phase 3 guidance is in place.
- Once Phase 3 guidance is in place, Phase 1 applications would no longer be accepted.

COORDINATION:

The Office of the General Counsel has no legal objection to this paper.

The Office of the Chief Financial Officer has reviewed this Commission paper for resource implications and has no objections.

/RA/

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Attachment: Action Plan: Stabilizing the PRA Quality Exceptions and Requirements

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Attachment: Action Plan: Stabilizing the PRA Quality Exceptions and Requirements

Via email

Accession Number:Package: ML041530055, SECY paper: ML041470505, Attachment: ML041530099

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NAME	GWParry	Pkleene	MFTschiltz	MDrouin	DLew	CAder	SCBlack
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NAME	CJPaperiello (J. Craig for)	STreby	PJRabidu* (D. Drucker for)	BWSheron (R. Barrett for)	JEDyer	LAReyes	
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