November 30, 2005

MEMORANDUM TO: James E. Lyons, Director
Division of Risk Assessment
Office of Nuclear Reactor Regulation

FROM: Gareth Parry, Senior Level Advisor for Probabilistic Risk Assessment***/RA/***
Division of Risk Assessment
Office of Nuclear Reactor Regulation

Subject: FORTHCOMING MEETING ON THE PRIORITIZATION PROCESS FOR LICENSING SUBMITTALS UNDER THE PHASED APPROACH TO PROBABILISTIC RISK ASSESSMENT QUALITY

DATE & TIME: Monday, December 12, 2005
1:00 P.M. to 5:00 P.M.

LOCATION: U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike, Room OWFN-O13B4
Rockville, Maryland 20852

PURPOSE: The purpose of the meeting is to discuss the prioritization process for licensing submittals under the phased approach to probabilistic risk assessment (PRA) quality.

CATEGORY 2. This is a Category 2 meeting. The public is invited to participate in this meeting by discussing issues with the U.S. Nuclear Regulatory Commission staff at designated points identified on the agenda.

PARTICIPANTS: Participants from the NRC will include members of the Office of Nuclear Reactor Regulation (NRR).

NRC	STAKEHOLDERS
Gareth Parry, NRR/DRA	Tony Pietrangelo, NEI
Michael Tschiltz, NRR/DRA	Other Industry Representatives
Michele Laur, NRR/DRA	

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TENTATIVE AGENDA FOR DECEMBER 12, 2005, PUBLIC MEETING TO DISCUSS THE PRIORITIZATION PROCESS FOR LICENSING SUBMITTALS UNDER THE PHASED APPROACH TO PRA QUALITY

TIME	TOPIC	PRESENTER
1:00 P.M.	Presentation on Process	NRC
2:15 P.M.	Break	
2:30 P.M.	Group Discussion	Group
3:45 P.M.	Break	
4:00 P.M.	Future Activity	Group
4:30 P.M.	General Discussion	All
5:00 P.M.	Adjourn	

Meeting Purpose: The purpose of the meeting is to discuss the prioritization process for licensing submittals under the phased approach to PRA quality.

Enclosure: Prioritization Process

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NRR-001

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DATE	11/30/05	11/30/05

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BACKGROUND

The Commission, by publishing its Final Policy Statement on the use of Probabilistic Risk Assessment (PRA) Methods in Nuclear Regulatory Activities (Federal Register, Volume 60, page 42622, August 16, 1995), reflected its belief that an overall policy on the use of PRA in nuclear regulatory activities should be established so that potential PRA applications are implemented in a consistent manner that would promote PRA quality. Furthermore, the Commission stated that the use of PRA technology should be increased to the extent supported by the state-of-the-art in PRA methods in a manner that complements the U.S. Nuclear Regulatory Commission's deterministic approach.

Since the PRA policy statement was issued, a number of risk-informed activities have been undertaken. In addition, a number of documents have been written by the staff and by the industry. These documents provide guidance on the use of PRA information in risk-informed reactor regulatory activities, and on PRA quality. In December 2003, the Commission provided a staff requirements memorandum (SRM) concerning the stabilization of the expectations for PRA quality (i.e., SRM - COMNJD-03-0002). In the SRM, the Commission approved implementation of a phased approach to achieving an appropriate level of PRA quality for risk-informed decision making. The SRM directed the staff to develop an action plan that would define a strategy for implementation of the Phased Approach to PRA Quality.

In response to the SRM directive, the staff developed an action plan consisting of the following tasks:

- Task 1.1 - Identify current risk-informed applications
- Task 1.2 - Specify PRA quality needs for each risk-informed application
- Task 1.3 - Phase 2 guidance document schedule development
- Task 1.4 - Phase 2 guidance, standard development and endorsement
    - Revise application-specific guidance to address PRA quality
    - PRA quality (RG 1.200) pilots for internal events
    - Implementation of quality for internal events PRA
    - Standards development - American Nuclear Society (ANS) fire PRA
    - NRC endorsement - ANS fire PRA standard
    - Implementation of quality in fire PRAs
    - Standards development - ANS low power and shutdown PRA quality
    - NRC endorsement - ANS low power and shutdown standard
    - Implementation of quality for low power and shutdown standard
- Task 1.5 - Development of a prioritization process for staff review
- Task 1.6 - Phase 2 implementation schedule
- Task 1.7 - Develop Phase 3 guidance
- Task 2.1 - Alternate methods and treatment of uncertainties, draft NUREG
- Task 2.2 - Phase 3 external event standards development, endorsement and implementation
    - Standards development - ANS external events PRA
    - NRC endorsement - ANS external events standard
    - Implementation of quality for external events PRAs

Of these tasks, the NRC has completed Tasks 1.1 through 1.3 (i.e., "Identify Current Risk-Informed Applications" (e.g., 50.69), "Specify PRA Quality Needs for Each Risk-Informed Application," and "Develop Phase 2 Guidance Document Schedule"). The remaining tasks will

be phased in and completed as documented in the PRA Quality Action Plan by December 2008. The focus of discussion for the remainder of this document is Task 1.5.

OBJECTIVE

The objective of task 1.5 of the plan for the Phased Approach to PRA Quality is to establish a process for the prioritization and scheduling of the staff reviews of licensee risk-informed licensing submittals. Examples of anticipated licensee submittals include, but are not limited to, applications related to:

- Title 10 of the *Code of Federal Regulations,* Part 50.69 (10 CFR 50.69)
- 10 CFR 50.46a
- Loss of offsite power/loss-of-coolant accident
- Risk-informed technical specifications
- Integrated leak rate test interval extension
- NFPA-805
- Risk-informed digital instrumentation and control
- Risk-informed inservice inspection

In the processing of these submittals, the intent of the NRC is to strike a balance between the need to use staff resources effectively and efficiently, and the provision of incentives to the licensees to develop more complete PRAs.

The issues addressed by this process include the following:

- Staff resources required to review the PRA results for those significant scope items not addressed by the use of standards (the impact of this on the prioritization and scheduling of submittal reviews will be different if standards exist and have not been used, or if they have not been developed and endorsed)
- The safety benefit of the application
- The potential benefit to the licensee (economic, schedule for plant modification, re-focusing of resources to maximize benefits, etc.)
- Whether the application is furthering the state of practice and is considered to result in an increased safety benefit
- Whether the application is a pilot for an application and is considered to result in a net safety benefit

The steps contained in the process are:

1. Categorization of submittals
2 Assignment of review time metrics
3. Prioritization of submittals in a category
    a. Assignment of prioritization points
    b. Prioritization of submittals based on overall score
4. Assessment of staff resource requirements
5. Disposition of submittals

A discussion of each step in the process follows.

CATEGORIZATION OF SUBMITTALS

Initially, the application type is identified as either a Phase 1 or Phase 2 application to help the analyst determine the level of effort that may be necessary to complete the review. The analyst makes the Phase 1 or 2 determination by answering the following questions.

- Is there guidance on the use of PRA in the application?

- Do standards exist for the significant risk contributors associated with the application?

If the answer to both questions is yes, the application is a Phase 2 application (i.e., the PRA analysis used to support the application is consistent with the guidance on the use of PRA to support the application, and the supporting PRA has been demonstrated to be consistent with the existing standards to the extent needed to support the application). A submittal is considered a Phase 2 submittal even if the PRA used is of a lesser scope than that for which standards exist, as long as the implementation of the application is limited to that addressed by the scope of PRA used in demonstration of acceptability of the change. NEI-00-04 is an example of a document that provides guidance on the restriction of the scope of the implementation of 10 CFR 50.69 when using less than a full scope PRA. An application may be classified as Phase 1 for a number of reasons, and can be generally categorized as follows:

Category A: The submittal is consistent with the guidance on the use of PRA to support the application. This is further divided into two sub-categories:

- Category A1: The submittal uses a PRA of lesser scope than that for which standards exist and have been endorsed, and uses alternative methods to address those significant risk contributors not in the scope of the PRA.

- Category A2: The submittal uses a PRA of greater scope than that for which standards exist and have been endorsed.

Category B: The submittal is “state-of-the-art” (i.e., an approach that uses the PRA in a way that is beyond currently accepted guidance). This category is subdivided into three sub-categories:

- Category B1: The submittal uses a PRA that is consistent with currently endorsed Standards.

- Category B2: The submittal uses a PRA that is of lesser scope than that for which standards and their endorsement in RG 1.200 exist.

- Category B3: The submittal uses a PRA that is of greater scope than that for which the standards and their endorsement in RG 1.200 exist.

Submittals in Categories A2 and B1, 2, 3 have the potential for furthering the state-of-the-art, and therefore, may be given higher priority than those in Category A1.

ASSIGNMENT OF REVIEW TIME METRICS

In general, because the review should be straightforward, Phase 2 submittals will be processed under our current time metrics and completed within **one** year. The remaining submittals, once accepted, will be processed within **two** years. However, when a significant number of

submittals are received, the submittals must be prioritized in order to effectively manage staff resources. A prioritization scheme for ranking the submittals is presented below. The responsible division director (or his designee) must evaluate each request and base his decision to accept a submittal on the priority allocated to it, taking into account staff work load.

Because of the potential for significantly higher resource requirements to process submittals in Categories B1, 2, and 3, their acceptance as license amendment requests will be contingent upon the finalization and approval of the methodology for performing the application. In other words, the 2-year time clock will begin once the methodology has been approved followed by acceptance of the submittal. Thus, for these submittals, the review will be conducted in two stages that must be scheduled sequentially.

Those applications that have received a low priority would not be accepted at that time if, given the available resources, they could not be processed within the current time limits and the benefits associated with the submittals have been determined to be less than benefits from other submittals.

PRIORITIZATION OF SUBMITTALS IN A CATEGORY

Assignment of Prioritization Points

After initially "categorizing" the submittal as described above, the submittals are prioritized using a scoring scheme to rank their importance into high, moderate, none or negative for a number of specific criteria. Each criterion will be scored using the following basic scheme:

- high - 2 points
- moderate - 1 point
- none - 0 points
- negative - minus 1 point

An exception to this scoring scheme is the scoring of the safety benefit criterion. In the case of the safety benefit criterion, the scores are double weighted.

The criteria used in this scoring scheme are compatible with the goals and strategies of the Commission's strategic plan. These high level goals are directly relevant to safe and effective (measured as future additional benefits) management of nuclear power plants, and include the following criteria:

Safety

The safe operation of nuclear power plants is a goal important to the overall mission of the NRC. To determine the score for this criterion, assess the following and assign scores as indicated.

What is the safety benefit as measured by reduction in the core damage frequency (CDF), increased defense-in-depth or increased safety margin?

- Significant safety benefit (4 points)
- Marginal safety benefit (2 points)

- Safety neutral (0 points)
- Marginal Reduction in safety (-4 points)

Future Additional Benefits

This group of criteria does not apply to applications determined to be in Category A1. While this group of criteria is not directly reflected in the NRC strategy, it is a reflection of congruence with Agency initiatives, since the Commission's phased approach to PRA quality looks ahead to a time when "state-of-the-art" methods and models are used to risk-inform applications. To determine the score for this group, ask the following questions and assign scores as indicated.

Does the application further the state-of-the-art?

- Application method (2 points)

- PRA – giving input on usefulness of, or piloting, standards for example (2 points)

Is the application likely to be of interest to a number of licensees, rather than limited to the one licensee?

- If yes and this is a pilot project (2 points)

- If yes and there is no pilot project (1 point)

- If no (0 points)

Value to the licensee

There are a number of criteria with the potential to impact licensee facilities. These criteria have different values associated with them for the licensee. Some criteria are associated with financial burdens while some impact other resources such as staffing. Some of the criteria may also have direct and indirect benefit to the public as well as to the licensee. A few of the higher priority criteria are listed below. To determine the score for this group, ask the following questions and assign scores as indicated.

Does the review support a shorter outage in the future?

- Yes (1 point)
- No (0 points)

Does the application result in a reduced economic burden/cost?

- Yes (1 point)
- No (0 points)

Does the application result in a reduced regulatory burden?

- Yes (1 point)
- No (0 points)

Does the application result in a reduced dose burden?

- Yes (1 point)
- No (0 points)

Prioritization of Submittals Based on Overall Score

To determine the overall score and final priority for each submittal, the table (i.e., Table 1) shown below should be filled out for each submittal. After completing the table for each submittal, submittals should be prioritized by giving higher priority to those submittals whose total scores are higher than those submittals with lower scores.

Table 1: Submittal Prioritization Scoring

Group of Criteria	Element	Element Points and Score	
		Element Points	Total Element Score
Safety	Safety benefit as measured by reduction in the CDF, increased defense-in-depth or increased safety margin		
Future Additional Benefits	State-of-the-art application method		
	State-of-the-art PRA		
	Of interest to a number of licensees		
Value To The Licensee	Shorter future outage		
	Reduced economic burden/cost		
	Reduced regulatory burden		
	Reduced dose burden		
		Total Score:	

Notes: See process description to determine the appropriate element scores.
1. To determine total score for the submittal: sum all the total element scores for this submittal.

ASSESSMENT OF STAFF RESOURCE REQUIREMENTS

While the resources needed to perform a review are not directly part of the prioritization process, they are a constraint that must be factored into the decision on how to disposition the submittals. The following questions and the associated scoring provide a means of ranking the resource needs. In this case, the higher scores represent higher resource requirements. The resources are assessed in two stages. The first relates to the assessment and approval of the method for those new application types. The second group relates to the licensing submittal itself.

Methodology

- Is the guidance being developed by an industry group or an individual utility?
    - Industry group (0 points)
    - Individual utility (2 points)
- Is the submittal issue complex (e.g., non-routine, unusual/novel issues, requiring use of multiple risk tools - MAAP runs, PRA quantification, etc.)?
    - Yes, significantly complex (3 points)
    - Yes, moderately complex (2 points)
    - Yes, slightly complex (1 point)
    - No (0 points)
- Does the staff have experience with the type of review?
    - Yes (0 points)
    - No (1 point)
- Is the submittal issue applicable to multiple plants?
    - Yes (0 points)
    - No (2 points)

Licensing Submittal

- Does the submittal require review of:
    - Fire PRA (2 points)
    - Seismic PRA (1 point)
    - Low power and shutdown PRA (1 point)
    - Internal events PRA (0 points)

- Does the application require compensatory measures for implementation?
    - Yes (1 point)
    - No (0 points)
- Does the success of the application depend on performance assessment?
    - Yes (1 point)
    - No (0 points)
- Does the submittal contain potentially challenging issues, thus requiring greater management oversight or more extensive analysis?
    - Yes (2 points)
    - No (0 points)

Summing the scores provides a means of assessing the resource requirements. The higher the score, the higher the resource requirements. These assessments are primarily aimed at providing a rough guide to the relative full-time equivalent requirements. A more detailed assessment may be required to finalize the scheduling of the review activities.

DISPOSITION OF SUBMITTALS

Based on the results of the assessment of priority, and the resource implications, the decision will be made to accept the proposed submittal into the appropriate category. The number of accepted submittals will be based on the resources available to process the higher priority submittals.

There are other factors that may play into the decision, such as the order in which the submittals were received, and the timing of a particular submittal. For example, the closer a submittal is to the expected completion date of a standard or its endorsement, the stronger the reason for delaying it.