February 28, 2007

MEMORANDUM TO: Michael D. Tschiltz, Deputy Director
Division of Risk Assessment
Office of Nuclear Reactor Regulation

FROM: Donald A. Dube, Senior Technical Advisor ***/RA/***
Division of Risk Assessment
Office of Nuclear Reactor Regulation

SUBJECT: PUBLIC MEETING SUMMARY REGARDING USE OF STANDARDIZED PLANT ANALYSIS RISK MODELS AND LICENSEE PROBABILISTIC RISK ASSESSMENT MODELS IN THE REACTOR OVERSIGHT PROCESS HELD ON FEBRUARY 22, 2007

On February 22, 2007, a public meeting was held at the Nuclear Energy Institute (NEI) offices on 1776 I Street, Washington, DC, to discuss the use of the risk insights from standardized plant analysis risk (SPAR) models and the licensee probabilistic risk assessment (PRA) models to characterize the safety significance of inspection findings for the U.S. Nuclear Regulatory Commission (NRC) reactor oversight process (ROP). The agenda is provided as Enclosure 1, and a list of attendees is provided as Enclosure 2.

This meeting was held as follow-on to the December 13, 2006, kick-off meeting (see ADAMS Accession # ML063530303) of the industry and staff working groups. This activity stems from an action item from the public meeting of September 28, 2006 between the NRC PRA Steering Committee and industry representatives. The action from the September 28, 2006, meeting was to form a joint NRC/Industry task group to investigate various options to the use of the SPAR models in the significance determination process (SDP). The meeting of February 22nd focused on industry concerns, the status of the SPAR models, and options to the current process.

At the beginning of the meeting, NRC staff summarized the highlights of the December 13, 2006, meeting. The staff noted that the SPAR models are used in numerous applications other than SDP, including the accident sequence precursor program, incident investigation, generic issue prioritization, and independent review of license amendment submittals. As such, the staff would continue to maintain the SPAR models in the foreseeable future even if the decision were made not to rely upon them for SDP. In addition, the staff noted that there are large economies of scale with the SPAR program (e.g., methods, data), and even if SPAR models were not used for a large fraction of SDP evaluations there would be little resource savings to the staff in the near-term. There was consensus on the part of the staff and industry that the activity would be confined for the present to evaluating the use of licensee models only for the SDP.

CONTACT: Donald A. Dube, NRR/DRA
(301) 415-1483

The staff further noted that the SDP was a regulatory function, and that the staff reserved the final decision on whether to move forward with any recommendation coming from the activity. The industry noted that efforts are under way to upgrade a number of plant PRA models to conform to the requirements of Regulatory Guide (RG) 1.200, including training in March 2007. The industry further stated that should the NRC staff decide to move forward with whatever option is considered, it would be valuable to pilot the effort. The industry also provided a number of examples where they felt there were some form of deficiency in SDP evaluations using SPAR models (see Enclosure 3). The NRC staff acknowledged problems with the evaluations in several instances. The staff and industry agreed that areas to pay particular attention to include:

- human reliability analysis dependencies
- plant-specific initiator frequencies
- system success criteria
- incorporation of unique plant emergency operating procedures into the models
- use of historical individual plant examination of external events results.

The staff further acknowledged that as the industry makes major upgrades to models to meet RG 1.200, as well as to improve fire PRAs for National Fire Protection Association 805, the SPAR models could eventually lag the industry's models without adequate resources to keep the SPAR models up to date.

The staff did note recent initiatives to improve the quality of the SPAR models, including the SPAR model enhancement effort, quality assurance plan, and the use of the risk assessment standardization project handbook. The staff believes that many of the issues presented by the industry examples have been or are being addressed. The Office of Nuclear Regulatory Research (RES) provided a discussion of the status of the SPAR models, and noted the excellent agreement between SPAR models and licensee models following cut set level reviews, and after accounting for plant performance data differences (see Enclosure 4). The cut set level reviews are well underway with 41 models completed, another 20 models to be completed in 2007, and the remainder in 2008. RES staff highlighted the primary reasons for the model disparity, and noted that many of the technical issues are common not just to the SPAR models, but industry models as well. For example, the small loss of coolant accident frequencies for PWRs vary by some factor of 40 from low to high in the industry PRAs based on MSPI cross-comparisons.

The staff provided the results of General Accountability Office testimony on the ROP. Data for SDP findings for the period of 2001 through 2005 were presented (see Enclosure 5). The staff noted that the SPAR models have been used on a sizable fraction of the green findings as well as those greater than green, and that these need to be factored into the overall assessment of the performance of the SPAR models in the SDP. The NRC staff re-iterated its view that many of the examples presented by the industry during the meeting, as well as other cases, were the result of varying assumptions from the engineering analysis as to whether certain degraded conditions were actual failures, and for how long the condition existed, as opposed to major PRA modeling differences. Based on its experience from the four regions and headquarters, the staff was not entirely convinced that there has been an across-the-board problem with the use of the enhanced SPAR models for SDP.

The staff and industry reviewed and commented on a draft of the purpose of the working groups (see Enclosure 6). There was tentative agreement to re-phrase the purpose as follows:

> *To assess whether and how licensee PRA models that are updated to meet RG 1.200 can be factored in to the ROP.*

The industry and staff next outlined possible options (see Enclosure 7). Option 1 represents the status quo. Here, status quo represents the SDP as it is currently envisioned, that is, with continued enhancement of the SPAR models according to plan. It does not mean a static set of SPAR models. Options 2 through 4 present some alternatives to Option 1 for phase 3 SDP evaluations. Options 5 and 6 are with regard to phase 2 screening, with Option 6 the status quo (current plan). Option 7 was dismissed early on but is enclosed for completeness.

A set of 11 criteria was then established. Finally, each option was evaluated against how it would impact the criteria for consideration: either pro, con, neutral, or to be determined. The staff and industry reached general consensus on the pros and cons. (It is important to note that no weighting has been assigned to the criteria at this point.) No determination regarding the preferred option(s) has been made at this stage.

Actions for the industry and staff working groups include the following:

- provide comments on the objectives as drafted in Enclosure 6 by March 16
- better define the options, including the consideration of hybrid or mixed options
- begin to consider weights for the criteria.

The next meeting is tentatively planned for April 12, 2007, location to be determined.

Enclosures:
As stated

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