

March 14, 2002

MEMORANDUM TO: Richard J. Barrett, Chief
Probabilistic Safety Assessment Branch
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation

FROM: Mark A. Cunningham, Chief /RA/
Probabilistic Risk Analysis Branch
Division of Risk Analysis and Applications
Office of Nuclear Regulatory Research

SUBJECT: RESPONSE TO NRR's REQUEST FOR ASSISTANCE RELATED
TO THE SIGNIFICANCE DETERMINATION PROCESS (SDP)
(Task Number 1 of three tasks under NRR User Need Request
NRR-2002-010)

Reference: Memorandum to Ashok C. Thadani from Samuel J. Collins, "UPDATE OF
ACTIVE NRR REQUESTS FOR ASSISTANCE," January 31, 2002 (The
NRR-2002-010-related portion of that memorandum is attached)

Attached is a Sandia National Laboratories (SNL) technical review letter report which is RES' response to Task 1 (Fire Protection SDP - "Review and Provide Technical Feedback on NRR 's Fire Protection SDP") of NRR's User Need Request 2002-010 ("Develop and Maintain Analytical Tools for Staff Risk Applications").

SNL's review of the overall fire SDP process, as documented in the attached letter report, finds that it provides a reasonable approach to the assessment of inspection findings within its stated limitations. The process derives from commonly applied fire PRA analysis methods and assumptions, appears to retain a modest level of conservatism as appropriate for its intended use as a screening tool, and although SNL did not explicitly review the individual probability numbers, those that were reviewed were found to correspond well to accepted fire PRA practice. Thus, the review found that the fire SDP provides a reasonable method for determining an initial screening assessment of the risk significance of inspection findings which can be used by persons who are not expert in PRA analysis. SNL's review did not cover SDP applications to actual inspection findings.

An earlier Draft Revision 1 (dated February 28, 2002) of the attached SNL report was informally provided to J.S. Hyslop of your staff on March 1, 2002. J.S.' review and resulting comments were discussed on several occasions with RES staff and our principal contractor for this effort (S. P. Nowlen, SNL). The attached Revision 2 (dated March 12, 2002) incorporates the results of those discussions. RES concurs with SNL's comments and recommendations in the attached Revision 2, which is hereby provided as RES' response to the subject NRR user need request.

Roy Woods of my staff (415-6622) will be pleased to provide any clarifications or other information related to our comments and recommendations.

- Attachments: 1. NRR's 1/31/2002 memorandum "UPDATE OF ACTIVE NRR REQUESTS FOR ASSISTANCE"
- 2. Technical Review of the SDP, Revision 2, March 12, 2002

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(RES File Code) RES -2C-1A

January 31, 2002

MEMORANDUM TO: Ashok C. Thadani, Director
Office of Nuclear Regulatory Research

FROM: Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

SUBJECT: UPDATE OF ACTIVE NRR REQUESTS FOR ASSISTANCE

NRR and RES are both tracking a number of active NRR requests for assistance from RES. The purpose of this memorandum is to update the individual tasks associated with these revised active requests. This effort was undertaken because a number of our requests for assistance are several years old and either are no longer needed, or require updating to reflect either revised needs or the substantial progress that has been made in resolving many of the issues identified in our initial requesting memoranda.

NRR has updated and consolidated the active requests for assistance for which continued support from RES is needed, with the exception of our previous requests for assistance related to reactor vessel and reactor vessel internal material issues and the three memoranda NRR issued in December 2001 transmitting to RES new requests for assistance. The NRR requests for assistance related to reactor vessel and reactor vessel internal material issues are in the process of being updated and consolidated to reflect current NRR regulatory needs. My staff will work closely with yours to assure that RES can support the scope of and schedules for the tasks in these new requests for assistance.

We did not update the two active requests for assistance that are no longer relevant to NRR's regulatory needs (NRR-1998-011, "Assistance on High Burnup Fuel," and NRR-1998-030, "Draft Regulatory Guide DG-1070"). Closeout memorandums are being prepared for these two requests.

The 20 updated NRR requests for assistance are attached to this memorandum. **Each request replaces in its entirety our previous request for assistance on the issue.** Each of the updated requests identifies both the NRR memorandum that initiated our request and the tracking number previously used by both offices. The updated requests identify only the tasks that remain to be completed and do not initiate any new requests for research effort. Any previous tasks no longer needed to support NRR's regulatory needs have also been removed from the updated requests for assistance. For some of the requests, the scope of the remaining tasks were refined to reflect current understanding of the technical issues involved, including where appropriate the specific type of report that would best meet NRR's needs. New completion dates were established for the majority of the tasks to reflect when NRR will need these products for use in its regulatory processes.

The scope of and schedules for all the tasks listed in the enclosed NRR requests for assistance have been discussed with the appropriate members of your staff. These discussions confirmed that we are making no new requests for research effort, and that the objectives of the original NRR requests for assistance will be met with the completion of these tasks. These discussions have also established schedules that are acceptable to both offices for these NRR requests for assistance.

NRR and RES plan to monitor the progress of the products delineated in NRR's requests for assistance against the agreed upon completion schedules.

The scope of and schedules for all the tasks listed in the enclosed NRR requests for assistance have been discussed with the appropriate members of your staff. These discussions confirmed that we are making no new requests for research effort, and that the objectives of the original NRR requests for assistance will be met with the completion of these tasks. These discussions have also established schedules that are acceptable to both offices for these NRR requests for assistance.

NRR and RES plan to monitor the progress of the products delineated in NRR's requests for assistance against the agreed upon completion schedules.

Attachment: **Updated NRR Requests for Assistance** (Note: only the part of the Attachment related to NRR-2002-010 - "Develop and Maintain Analytical Tools for Staff Risk Applications," which includes review of the Significance Determination Process (SDP), is included in the following copy.

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(Note: only that part of the Attachment related to NRR-2002-010 - "Develop and Maintain Analytical Tools for Staff Risk Applications," which includes review of the SDP, is included in the following copy.)

UPDATED NRR REQUESTS FOR ASSISTANCE

NRR-2002-010 - Develop and Maintain Analytical Tools for Staff Risk Applications

Background

The revised Reactor Oversight Process (ROP) and other NRR regulatory activities require the development and maintenance of analytical tools for risk applications. This attachment discusses NRR's request for assistance from RES on the Significance Determination Process (SDP) tools and the Standardized Plant Analysis Risk (SPAR) models. Specifically, the focus in this attachment is on the need for (1) the SDP inspection notebooks, (2) fire protection SDP tools, and (3) computer-based risk analysis model (SPAR) development.

NRR identified a need for probabilistic safety analysis tools (SPAR models) related to the Accident Sequence Precursor program in its April 24, 1998 letter, and identified its needs with respect to the ROP tool needs in a memorandum dated April 21, 1999 letter. Subsequent correspondence between NRR and RES served to delineate the specific requests for assistance.

This attachment updates and replaces in its entirety our previous requests, identified above, and the subsequent correspondence on this topic (designated as NRR-2000-004), and only identifies the tasks that remain to be completed. It does not establish any new requests for research effort.

Intended Use of RES Products

The ROP tools, which include both the SDP tools and the SPAR models, will be used to provide an objective, efficient, and effective implementation of the ROP. The product of RES's efforts will also serve to help the staff determine whether licensees are meeting the objectives of cornerstones and identify indications of performance problems to allow further engagement by the NRC before the objectives of the cornerstones are compromised.

The SPAR models are also expected to be used to perform various studies in support of regulatory decisions, to support risk-informed decisions on specific changes to individual plants' licensing bases, and to assist in the resolution of generic safety issues.

Scope and Schedule for Requested Tasks

1. Fire Protection SDP

Review and provide technical feedback on NRR's fire protection SDP (NRR contact is A. El-Bassioni)

Completion Date: February 2002

2. SDP Inspection Notebooks

RES is to provide concepts for an electronic version of the SDP notebooks, making their use more efficient (NRR contacts are P. Wilson or S.M. Wong).

Completion Date: August 2002

3. SPAR Model Development

NRR's SPAR model development plan goals and requested completion dates are provided below for Level 1, Low Power/Shutdown (LP/SD), and LERF/Level 2 models. We believe that feedback from the results of the SPAR model quality assurance plan is essential in order to ascertain if it is providing the level of quality assurance required. Possible improvements as a result of feedback should be considered for the quality assurance plan. In addition, the recommendations in our September 13, 2000, memorandum response should be considered in the SPAR model development plan. External events model work and completion dates will be specified at a later time in the context of the SPAR model users group process. Also, planned LP/SD model developmental work and associated completion dates will be specified in an updated SPAR model development plan as determined by the SPAR model user group process which will include an external peer review of LP/SD models and associated guidelines. (NRR contact is D. O'Neal)

REVISION 3 SPAR MODEL DEVELOPMENT GOAL

COMPLETION DATES	Produce all 70 models (including in-house QA review of each plant model)
By end of FY2002	Conduct onsite QA reviews at 28 plants
By end of FY2002	Conduct onsite QA reviews at remaining 42 plants
By end of FY2004	LOW POWER/SHUTDOWN MODEL DEVELOPMENT PLAN
COMPLETION DATES	Complete specification, prototype template, and associated guidelines for other LP/SD models
By end of FY2002	Complete internal peer review of specification, template, and associated guidelines for other LP/SD models, and issue updated user guidance.
By end of FY2002	PLAN FOR DEVELOPING LERF/LEVEL 2 MODELS
COMPLETION DATES	Schedule to be determined in conjunction with efforts of LERF/Level 2 group
By end of FY2002	

Priority

The priority of this request for assistance was determined using the four outcome goals: maintaining safety; increasing public confidence; making NRC activities and decisions more effective, efficient, and realistic; and reducing unnecessary regulatory burden on stakeholders. This request for assistance received a total score of 8 out of a possible 12, and has been assigned a medium priority.

NRR Contacts: See contacts listed above after each task description.