

May 13, 2004

LICENSEE: Southern Nuclear Operating Company

FACILITY: Farley Nuclear Plant, Units 1 and 2

SUBJECT: SUMMARY OF TELECOMMUNICATION WITH SOUTHERN NUCLEAR OPERATING COMPANY (SNC) TO DISCUSS THE RESPONSE TO THE FARLEY SEVERE ACCIDENT MITIGATION ALTERNATIVES (SAMA) REQUESTS FOR ADDITIONAL INFORMATION (RAI)

On March 30 and April 6, 2004, the U.S. Nuclear Regulatory Commission (NRC) staff (the staff) and its contractor from Information Systems Laboratory (ISL) conducted conference calls (telecons) with representatives from SNC to discuss the Joseph M. Farley Nuclear Plant (FNP) SAMA RAI responses received on February 26, 2004. Enclosure 1 is the list of participants. The telecons were held to clarify the information that SNC submitted on February 26, 2004.

The following issues were discussed:

RAI 1b Discuss why the following peer review findings will not impact the SAMA identification process and the dispositioning of the SAMAs: SY-02 Item 5, DA-02, ST-2, and HR-05. Specifically, how would future model changes address these findings impact CDF? Dominant accident sequences? Would any additional SAMAs become cost-beneficial? Would the three cost-beneficial SAMAs have an even greater benefit?

Response: The potential impacts were discussed, but SNC's view is that it is not possible to predict the impact of future model changes.

NRC: The staff agreed, no further information is needed.

RAI 1c Explain why the steam generator tube rupture (SGTR) core damage frequency (CDF) is so small ( $7E-8$ /year). Note that the SGTR CDF was  $3E-6$ /year for H.B. Robinson and  $1.7E-7$ /year for Summer plant. Did any of the peer review comments address this?

It is not clear what the baseline PRA for SAMA assumed regarding the time the clapper valve was open. Based on this response it seems to be 102 hours/year (versus 1489 hours/year in Revision 5). However, the analysis of SAMA 118 in the ER suggests that the baseline PRA for SAMA used 1489 hours/year. Please explain.

During the April 4, 2004, telecon, the NRC staff asked which sequences are included within the "special initiators" event category (referring to page 26 of 75 in the RAI responses).

SNC Response: SNC referred the staff to the discussion of peer review comment AS-01, in the SAMA RAI responses. SNC agreed to provide additional clarification of modeling changes made since the IPE.

SNC Response: The value used in the SAMA analysis is 102 hours/year. SNC will provide a revised paragraph.

SNC Response: Special initiators relate to loss of a support system. For example, it includes a loss of one or both trains of SW or CCW. It also includes loss of instrument air or a DC bus.

NRC: SNC will provide response.

RAI 1d The only changes to internal flooding model seem to have been made in Revision 4 of the probabilistic risk assessment (PRA). Do these Revision 4 changes, plus the change in clapper valve times noted in response to RAI 1c, account for the full reduction from the individual plant examinations (IPE) flood CDF of 5E-6/year to the current flood CDF of 1.6E-6/year?

SNC Response: Yes. The SAMA model, which assumed a clapper valve time of 102 hours, produced a flood CDF of 1.6E-6/year. Page 26 of the RAI responses addresses this issue.

NRC: No additional information is required.

RAI 1e The changes described in this response were not identified anywhere in the chronology provided in response to RAI 1d. When were these Level 2 model changes made?

Clarify the nomenclature for classifying functional sequences (i.e., the NUMARC functional designators). Although the binning process appears to be similar to that used in the IPE, the analyzed sequences and bounded sequences appear to be completely different, and some of the bins appear to be different from the IPE. Discuss how the current process and results compare to that for the IPE.

SNC Response: The changes were based on the work performed as part of the Integrated Leak Rate Test (ILRT) extension application for Farley which was approved by NRC. The work was performed post Revision 5 and will be going into Revision 6 of the PRA.

SNC Response: The first 2 characters of the sequence groups are defined in the response to RAI 1c. The functional designators are defined in the response to RAI 1e.

NRC: The response addressed the question and no new information required.

RAI 1f The functional sequence analyzed for Source Term Bin 2 (Systemic Sequence 20; Functional Sequence IA-1) has fan coolers operable. Explain why the source terms for Functional Sequence IIC-3, which involves station black out (SBO) and inoperable fan coolers) is bounded by Functional Sequence IA-1.

Response: IIC3 corresponds to sequence BOE-23IH in the IPE. The sequence assumes recovery of power and fan coolers prior to containment failure. Refer to page 27 of 75, Part 2C of the SAMA analysis. No more information is required.

NRC: The response addressed the question and no new information required.

RAI 1i The total person-rem/year based on the table presented is 1.478, whereas the value used in the SAMA analysis is 1.214. Please resolve this discrepancy.

SNC Response: A revised table will be provided. The correct value of 1.214 person-rem/year.

NRC: SNC will provide response.

RAI 2 Please discuss whether a licensee commitment or tracking number is available that we can cite regarding the modification to remove the service water booster pump dependency for Unit 2.

This same modification was identified as SAMA 121 in the ER and was eliminated on the basis of high costs. Why wasn't this SAMA identified as an improvement that is being implemented (for Unit 2)?

SNC Response: The modifications to Unit 2 are expected to be completed prior to the license renewal period.

NRC: A commitment or tracking number will not be needed for the staff to document its review.

RAI 5d Many of the candidate SAMAs cited as addressing the identified risk contributors are indicated (in ER Table F-10) to already be implemented. If these SAMAs were in fact implemented and the related risk contributor is still dominant, then further SAMAs should have been considered. Three of the dominant risk contributors (Items R15-F01, E21-F11, and ORC\_A\_1) effectively have not been addressed by any SAMAs since the referenced SAMAs are either already implemented or (in the case of SAMA 66) eliminated on the basis of an inappropriate cost estimate (see RAI 10f). Additional justification is needed to support a conclusion that the set of SAMAs considered addressed the dominant risk contributors.

SNC Response: SNC agreed to provide an explanation of their logic used to make these conclusions.

NRC: SNC will provide response.

RAI 7a Where the response indicates or implies that procedural changes have been made (e.g., switchgear rooms, electrical penetration rooms, service water pump room, CCW heat exchanger/pump room), please identify the specific procedural changes that were made.

Response: SNC referred the NRC staff to Section 4.6.7.2 of the Individual Plant Examination for External Events (IPEEE) Fire submittal to the staff, and indicated that these changes have been made.

SNC Response: SNC will provide a statement to this effect.

NRC: SNC will provide response.

RAI 7b&c Please identify any previously docketed correspondence we can reference regarding these statements.

SNC Response: SNC will provide references to letters that address seismic modifications. SNC will also provide a statement to address implementation of flood-related modifications.

NRC: SNC will provide response.

RAI 10f SAMA 66 involves developing procedures to replace failed breakers, and pre-staging the necessary replacement breakers. The cost estimate of \$7 million is based on replacing all breakers at both units, and is not what is intended for this SAMA. This same SAMA has been evaluated in previous SAMA analyses and its cost was estimated at about \$50K. This SAMA should be screened in and further evaluated. The point of this SAMA is to have procedures and spare breakers in place to assure that individual breakers that may fail during an event can be replaced in a timely manner.

Response: SNC is replacing all breakers, and based its evaluation on that activity. SNC will assess SAMA 66 in this context, and will provide the assessment.

NRC: SNC will provide response.

RAI 11 This question asked about lower cost alternatives that are available in lieu of the high cost modifications evaluated. For SAMA 58, the suggested low cost alternative is a portable battery charger (generator) that would be independent of existing systems and connected during an event. The RAI response addressed a permanently installed charger, and did not consider the benefit that the diesel-driven charger would have in those events in which, with existing spare battery chargers would not be functional. Please reconsider the costs and benefits for this alternative.

For SAMA 107, the suggested low cost alternative is a diesel-driven power source to supply the existing motor driven auxiliary feedwater (MDAFW) pump. The cost for such a modification has been estimated elsewhere to be around \$200K - \$300K, which is less than the FNP benefit of about \$500K. Please evaluate the costs associated with using a diesel-driven power source to power the existing MDAFW pump.

SNC Response: Both alternatives suggested by the NRC involve supplying large electrical loads using a diesel-driven power source (e.g., a 450 HP AFW pump for the SAMA 107 alternative, and an electrical load that is supplied from a 600VAC load center for the SAMA 58 alternative) SNC will provide a response clarifying the load/generator size for this alternative.

#### Diesel Generator to Power a Motor-Driven AFW Pump (alternative to SAMA 107)

An appropriately sized generator would not be portable due to its physical size and weight, and would need to be permanently installed. Due to plant configuration, the generator would be located at-grade, external to the building. About 100 feet of large conductor cabling would be needed to connect the generator to the MDAFW pump motor, which is about 50 feet below grade and inside water-tight doors. Safety-related switchgear and disconnects would also be needed. The cost of the switchgear alone would be \$200K - 300K. The cost of the entire project would be much higher than the cost of the switchgear alone. SNC agreed to provide a cost estimate of the entire modification generator, conduit/cabling, and switchgear.

#### Diesel-driven battery charger (alternative to SAMA 58)

SNC agreed to provide the same type of information for SAMA 58, as it discussed above in its response to SAMA 107.

NRC: SNC will provide response.

RAI 12c The majority of the cost for SAMA 11 (which appears to be about \$460K) is attributed to running a new small bore line through the aux bldg and adding a few isolation MOVs. Provide a breakout of the cost for the small bore pipe, e.g., how many feet of piping.

SNC Response: This SAMA would require approximately 100 to 150 feet of seismically supported ANSI class piping which would run through the auxiliary building, and several hundred feet of safety-related conduit and cabling to supply the remotely-actuated MOVs. The majority of the cost for SAMA 11 would be associated with the conduit and cabling to the MOVs, which needs to be aligned within 15 minutes of an accident in order for this SAMA to be effective.

NRC: SNC will provide response.

RAI 12d Rather than rely on room temperature as an entry condition, please address the feasibility of an event-based procedure to address room cooling in lieu of the hardware changes proposed under SAMA 24. The procedure would be entered upon loss of HVAC and involve actions to address high room temperatures that are anticipated following loss of HVAC (such as opening doors). The procedure would not require new instrumentation, and would appear to be cost-beneficial for FNP. If such a procedure were developed, what would be the associated cost and benefits? Are there reasons why the doors cannot be opened (e.g., flooding barrier)?

SNC Response: SNC will provide a revised explanation.

NRC: SNC will provide response.

C-B SAMAs SAMAs 11 and S166 have a positive net value when risk reduction from external events is considered (Table 8d), and an even greater net value when a lower discount rate or the impact of uncertainties are considered. SAMAs 24 and 66 would also have a positive net benefit given more appropriate implementation costs. In addition, SAMA 7 has a positive net value when uncertainties are considered. Given their positive net value, please discuss any plans and schedules for further evaluating or implementing these cost-beneficial SAMAs under the current operating license.

SNC Response: Because the SAMA is not related to aging management issues, and is outside the scope of license renewal, SNC did not commit to implement S166. However, SNC does plan to implement S166 in the near future. SNC will enter SAMAs 7 and 11 into their action item tracking system. SAMAs 24 and 66 are being re-evaluated, and will be entered into SNC's action item tracking system if found to be cost beneficial.

NRC: SNC will provide response.

No staff decisions were made during the telephone conference. In some cases, the applicant agreed to provide information for clarification. The applicant has had an opportunity to review and comment on this summary.

***/RA/***

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Docket Nos.: 50-348 and 50-364

Enclosure: As stated

cc w/enclosure: See next page

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**/RA/**

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Docket Nos.: 50-348 and 50-364

Enclosure: As stated

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