May 19, 2003

NOTE TO: FILE

FROM: Gregory F. Suber, Project Manager **/RA/**
Environmental Section
License Renewal & Environmental Impacts Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF TELECONFERENCE WITH SOUTH CAROLINA ELECTRIC AND GAS IN SUPPORT OF THE STAFF'S REVIEW OF THE V. C. SUMMER LICENSE RENEWAL APPLICATION (TAC NO. MB5227)

On Monday, May 5, 2003, the U.S. Nuclear Regulatory Commission (NRC) conducted a telephone conference (telecon) with representatives of the South Carolina Electric and Gas Company (SCE&G). Attached is the list of participants.

By letter dated January 17, 2003, the NRC issued a request for additional information (RAI) to SCE&G regarding the severe accident management alternatives (SAMA) evaluation presented in the Environmental Report submitted on August 6, 2002. The purpose of the telecon was to discuss and clarify certain responses to the RAI's submitted to the NRC by letter dated March 19, 2003.

A total of fourteen (14) additional issues were discussed during the telecon (see attached). Several issues were resolved during the call, however, written responses are expected for the following issues: 1.a.i, 1.a.ii, 2, 4, 6, 7, 8a, 8b, 9, 11, 13, and 14.

Attachments: As stated

Docket No. 50-395

May 19, 2003

NOTE TO: FILE

FROM: Gregory F. Suber, Project Manager **/RA/**
Environmental Section
License Renewal & Environmental Impacts Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF TELECONFERENCE WITH SOUTH CAROLINA ELECTRIC AND GAS IN SUPPORT OF THE STAFF'S REVIEW OF THE V. C. SUMMER LICENSE RENEWAL APPLICATION (TAC NO. MB5227)

On Monday, May 5, 2003, the U.S. Nuclear Regulatory Commission (NRC) conducted a telephone conference (telecon) with representatives of the South Carolina Electric and Gas Company (SCE&G). Attached is the list of participants that participated in the telecon.

By letter dated January 17, 2003, the NRC issued a request for additional information (RAI) to SCE&G regarding the severe accident management alternatives (SAMA) evaluation presented in the Environmental Report submitted on August 6, 2002. The purpose of the telecon was to discuss and clarify certain responses to the RAI's submitted to the NRC by letter dated March 19, 2003.

A total of fourteen (14) additional issues were discussed during the telecon (see attached). Several issues were resolved during the call, however, written responses are expected for the following issues: 1.a.i, 1.a.ii, 2, 4, 6, 7, 8a, 8b, 9, 11, 13, and 14.

Attachments: As stated

Docket No. 50-395

Distribution: See next page

Accession no.: ML031390642

*See previous concurrence
Document name: C:\MYFILES\Copies\SAMA telecon II.wpd

OFFICE	RLEP:DRIP:PM	RLEP:DRIP:SC
NAME	GSuber*;nb	JTappert*
DATE	5/19/03	5/19/03

OFFICIAL RECORD COPY

LIST OF ATTENDEES

SOUTH CAROLINA ELECTRIC AND GAS

V. C. SUMMER NUCLEAR STATION (VCSNS)

MAY 5, 2003

Telecon Conference

Attendees	**Affiliation**
Gregory Suber	U.S. Nuclear Regulatory commission (NRC)
Robert Palla	NRC
Mark Rubin	NRC
Donald Harrison	NRC
Kim Green	Information Services Laboratory (ISL)
Jim Meyer	ISL
Bruce Morowca	ISL
Ron Clary	South Carolina Electric & Gas (SCE&G)
Steve Summer	SCE&G
Eric Rumsfeld	SCE&G
Jeff Gabor	Erin Engineering (ERIN)
Don MacLeod	ERIN
Phil Moore	Tetra Tech

DISTRIBUTION:
Summary of Teleconference w/SCE&G Re: V.C. Summer, Dated: May 19, 2003
Accession no.: ML031390642

PUBLIC
RLEP R/F
D. Matthews/F. Gillespie

Mr. Stephen A. Byrne
Senior Vice President, Nuclear Operations
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
Post Office Box 88
Jenkinsville, South Carolina 29065

Ronald B. Clary
Manager, Plant Life Extension
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
P.O. Box 88
Jenkinsville, SC 29065

Ms. Sarah McMaster
Director
Fairfield County Library
300 Washington St.
Winnsboro, SC 29180

Mr. William Suddeth
Government Information Librarian
Thomas Cooper Library
University of South Carolina
1322 Greene St.
Columbia, SC 29208

Open Issues/Need for Clarification based on Summer RAI Responses

Background

The IPE Technical Evaluation Report (TER) includes the following statements:

> "Since all phenomena that may cause an early containment failure are considered in the IPE as unlikely to cause failure, and thus not included in containment failure quantification, the conditional probability of early containment failure for VCSNS is zero."
>
> "The elimination, and thus exclusion, of most containment failure modes from containment failure quantification limits the use of the Level 2 analysis for systematic evaluations of the relative importance of these failure modes and the investigation of potential benefit of recovery actions on overall containment performance."

The VCSNS SAMA analysis uses four release categories for the evaluation of the offsite dose. These appear to be the same four release categories included in the IPE submittal.

In Section F.7.1, Large Early Release Frequency, of Appendix E – Environmental Report, a sensitivity analysis of the non-LERF events is provided. Two sensitivity cases are provided in which a different release category is used to represent the dose consequences from the non-LERF events, specifically:

> **Case 1** - assumes that the non-LERF fission product releases (at 48 hours) are represented by **TRE13NH** (a containment isolation failure), and a frequency of **5.52E-5/yr** (total CDF of 5.59E-5/y minus total LERF of 6.99E-7/y). It is stated that this is a bounding estimate in that it takes no credit for natural removal mechanisms in containment. This case was revised by Response 9 and shows about a factor of 140 increase in total population dose relative to Case 2 below.
>
> **Case 2** - assumes that the non-LERF fission product releases (at 48 hours) are represented by **TRE13IH** (an intact containment until failure at 48 hours), and a frequency of 1.12E-5/y (20% of total CDF). This sequence represents a total loss of service water and a failure to recover one train by 2 hours. ECCS injection and recirculation are unsuccessful, but spray injection and spray recirculation are available. One spray system train is assumed operational. Spray recirculation is initiated at an RWST level of 18 percent. A 50-gpm pump seal LOCA is initiated at time zero. There is no containment isolation failure, and containment release occurs at 48 hours. Case 2 is used in the ER to represent the non-LERF contribution to population dose.

Items for Further Clarification

1. Based on the above, please clarify/provide the following information to facilitate the staff's review:

    a. Explain why the annual population dose of 1.01 person-rem (which is based in part on Case 2 above) is considered bounding given the following:
        i. early containment failure mechanisms are not included in the quantification.

ii. it appears that LOOP/SBO sequences are binned into release category TRE13NH, which credits scrubbing due to sprays. Sprays would not be available in an SBO.
iii. use of the bounding sensitivity analysis (Case 1) in the baseline model would produce a factor of 7 increase in total population dose, and is still optimistic in that it assumes a scrubbed release
iv. the contribution of non-LERF events is underestimated in the ER since this contribution is estimated by using 20% of CDF (1.1E-5/y) rather than all of the non-LERF frequency (5.52E-5/y) to calculate the dose-risk and offsite economic cost risk
v. the contribution from external events is not considered

b. Confirm that the only SBO containment failure mechanism considered is represented by the failure of containment isolation.

c. Please provide the basis for 3" opening being the bounding containment failure.

2. In response to RAI 1b, it is stated that a sensitivity study of the EFW system model was performed to evaluate the 24-hour mission time requirement (page 7 of 53). Please describe how the EFW mission time was treated prior to this sensitivity study. Please describe the sensitivity study and its results.

3. Discuss why the operator action to control the turbine driven EFW pump following battery depletion (OAEFC) does not appear on the RAW list of important contributors even though it increases CDF by 4.2 percent when its value is increased from 4.1E-03 to 1.0E-01 (see page 47 of 53 of RAI response). What is the impact if this value is set to failure?

4. Please provide the description of the EFW action and the bases for the 4.1E-03 value used for this operator action including the instrumentation that is assumed available for the performance of this action (see page 47 of 53 of RAI response).

5. Provide a cost-benefit analysis for powering the SG level indication with a portable generator after considering an appropriate increase in CDF based on peer review comments (approximately 20%), and then uncertainty (see pages 46 and 47 of 53 of RAI response).

6. Although it was stated that recommendations from the Westinghouse peer review were noted to be "within the normal fluctuation that occurs due to regular maintenance of the PRA model" please describe the process used to reach the judgement that there is a minimal impact on the SAMA analysis.

7. In Table 1f-1 of the response to the RAI, SCE&G provides the source term categories for the Non-LERF and LERF sequences. On page 14 of the RAI response, the % release for SrO for SGTR has decreased by two orders of magnitude since the IPE. On page 15, the % release for CeO2 for SGTR and ISLOCA has decreased by 6 orders of magnitude since the IPE. Please explain these apparent significant decreases.

8. During the IPE, SCE&G indicated the following:

a. Since SBO is a generic issue under study by the industry and NRC, there is no immediate plan to address this subcategory other than through Severe Accident Management Guidelines (SAMGs).

b. Use of Main Feedwater Pumps for a Loss of Heat Sink Event was not implemented. EOPs call for using feedwater booster pumps which require SG depressurization to less than 305 psig (the HRA showed the operator could not complete the required steps in the available time).

What is the status of these items, i.e., what has been done at Summer since the IPE to address these issues, if anything?

9. During the IPE process, SCE&G identified a potential modification -- add a Fire Service System cross-connect for emergency RCP thermal barrier cooling. The plan was abandoned. In the SAMA analysis, SCE&G evaluated SAMA #19 which proposed a similar change, but in addition included a backup to the high pressure makeup. SCE&G stated that since the fire water system is a low pressure system, to modify it so that it could be used as a backup to a high pressure system would be costly ($5-10M). Briefly address why the fire water system could not be used solely as a back up to the seal injection, i.e., why was this potential modification abandoned during the IPE.

10. In response to RAI 2c, SCE&G provided a table that correlated high importance events to the ER SAMA list. In that table, the following events were correlated to the identified SAMAs:

Event	SAMA
AADG----DGAFR	95 (Phase 2 SAMA 10)
OAR4	193 (Phase 2 SAMA 24)
OAH_1	193 (Phase 2 SAMA 24)

In Section F.5 of Appendix F to the ER, detailed cost-benefit analyses are provided. In the list of modeling changes made, AADG----DGAFR was not included for SAMA 10, and OAH_1 was not included for SAMA 24. Briefly explain why these events were not included in the modeling changes. If this was an oversight, please provide an updated analysis.

11. In response to RAI 2c, SCE&G provided a table that correlated high importance events to the ER SAMA list. In that table, the following event was correlated to the identified SAMA:

Event	SAMA
DBPT----XPP8FR	SAMA 170

The event is described as: turbine-driven pump fails to run due to mechanical failure. The importance of this pump is to provide flow to the steam generators during SBO. In the ER, SAMA 170 suggests use of the fire protection system as a back-up for SG inventory. The SAMA was identified as being similar to SAMA 169 whose status is "Implemented." SAMA 169 involves the creation of the ability for emergency

connections of existing or alternate water sources to feedwater/condensate. The disposition of the SAMA states that service water is connected to EFW. Please explain why SAMA 169 suffices for SAMA 170 when the condition of concern is SG inventory during SBO. Provide a cost-benefit analysis for SAMA 170, or discussion to address the feasibility of this SAMA. It is noted that the use of the FP system as a back-up for SG inventory has been implemented at other plants, e.g., Fort Calhoun.

12. In the ER, SCE&G indicates that the SAMA analysis is based on PRA Model UP3a. In response to RAI 1b, SCE&G indicates that the WOG Peer Review was performed on Model UP3h, and that incorporation of the Peer Review comments could potentially increase the CDF by up to 30 percent. Please provide the CDF for Model UP3h, and an estimate of the CDF if all the Peer Review comments that affect the SAMA analysis are incorporated.

13. In response to RAI 7c, SCE&G provides a cost-benefit analysis for a direct-drive diesel EFW pump. Indications are the averted cost risk is $152,600 and the implementation cost is $200,000. If the CDF is increased by a factor of 1.3 based on Peer Review comments, thereby increasing the benefit by the same factor, this low cost alternative come very close to being cost beneficial. Given the uncertainties associated with the analysis, this modification appears to be cost beneficial. Please discuss why this alternative is not considered at VCSNS.

14. Confirm whether SAMAs 3, 10, the portable DC generator (see response to RAI 7b), or the direct-drive diesel EFW pump (see response to RAI 7c) have any benefit in external events, and the extent to which these SAMAs might reduce external event risk.