

March 28, 2003

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE
V.C. SUMMER NUCLEAR STATION (VCSNS), LICENSE RENEWAL
APPLICATION - SECTIONS 2.1, 2.2, 2.3, AND 3.3 AND APPENDIX B.

Dear Mr. Byrne:

By letter dated August 6, 2002, South Carolina Electric & Gas Company (SCE&G) submitted, for the Nuclear Regulatory Commission's (NRC's) review, an application pursuant to 10 CFR Part 54 to renew the operating license for VCSNS. The NRC staff is reviewing the information in the license renewal application and has identified areas where additional information is needed to complete the review.

The enclosed requests for additional information (RAIs) are numbered to coincide with the numbering of the license renewal application. These RAIs concern Sections 2.1, 2.2, 2.3 and 3.3 and related Appendix B sections.

The staff is willing to meet with SCE&G and to clarify the RAIs before SCE&G submits its responses. If you have any further questions, please contact me at 301-415-1025 or rca@nrc.gov.

Sincerely,

/RA/

Rajender Auluck, Senior Project Manager
License Renewal Section
License Renewal and Environmental Impacts Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No: 50-395

Enclosure: As stated

cc w/enclosure: See next page

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE
V.C. SUMMER NUCLEAR STATION (VCSNS), LICENSE RENEWAL
APPLICATION - SECTIONS 2.1, 2.2, 2.3, AND 3.3 AND APPENDIX B.

Dear Mr. Byrne:

By letter dated August 6, 2002, South Carolina Electric & Gas Company (SCE&G) submitted, for the Nuclear Regulatory Commission's (NRC's) review, an application pursuant to 10 CFR Part 54 to renew the operating license for VCSNS. The NRC staff is reviewing the information in the license renewal application and has identified areas where additional information is needed to complete the review.

The enclosed requests for additional information (RAIs) are numbered to coincide with the numbering of the license renewal application. These RAIs concern Sections 2.1, 2.2, 2.3 and 3.3 and related Appendix B sections.

The staff is willing to meet with SCE&G and to clarify the RAIs before SCE&G submits its responses. If you have any further questions, please contact me at 301-415-1025 or rca@nrc.gov.

Sincerely,

/RA/

Rajender Auluck, Senior Project Manager
License Renewal Section
License Renewal and Environmental Impacts Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No.: 50-395

Enclosure: As stated

cc w/enclosure: See next page

Document Name: C:\ORPCheckout\FileNET\ML030900653.wpd

OFFICE	RLEP:DRIP:PM	RLEP:DRIP:PM	RLEP:DRIP:LA	SC:RLEP
NAME	R.Subbaratnam	RAuluck	Y. Edmonds (Ltr. Only)	S. Lee
Date	3/27 /03	3/28 /03	3/27 /03	3/28 /03

OFFICIAL AGENCY RECORD

DISTRIBUTION: March 28, 2003

HARD COPY

RLEP RF

R. Auluck

R. Subbaratnam

E-MAIL:

PUBLIC

W. Borchardt

D. Matthews

F. Gillespie

RidsNrrDe

R. Barrett

E. Imbro

G. Bagchi

K. Manoly

W. Bateman

J. Calvo

C. Holden

H. Nieh

G. Holahan

H. Walker

S. Black

B. Boger

D. Thatcher

G. Galletti

C. Li

J. Moore

R. Weisman

M. Mayfield

A. Murphy

W. McDowell

S. Smith (srs3)

T. Kobetz

C. Munson

RLEP Staff

R. Pettis, DIPM

N. Iqbal, DSSA

K. Landis

C. Julian

K. Cotton

L. Plisco, RII

K. Clark

M. Kotzalas

Request for Additional Information

2.1 SCOPING AND SCREENING METHODOLOGY

RAI 2.1-1: LRA Section 2.1.1.2, "Safety-Related Criteria Pursuant to 10 CFR 54.4(a)(1)," appropriately states in the table that plant systems, structures, and components within the scope of this part are--

- a. Safety-related systems, structures, and components which are those relied upon to remain functional during and following design-basis events (as defined in 10 CFR 50.49(b)(1)) to ensure the following functions--
 - (i) The integrity of the reactor coolant pressure boundary;
 - (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or
 - (iii) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in §50.34(a)(1), §50.67(b)(2), or § 100.11 of this chapter, as applicable [emphasis added].

During the audit, however, the staff noted that Procedures TR00160-001, "Mechanical Systems Scoping for License Renewal," dated July 3, 2002; TR00170-001, "Structures Scoping for License Renewal," dated July 3, 2002, and TR00150-001, "Electrical Systems Scoping for License Renewal," dated July 3, 2002, currently cite superseded regulatory text in establishing the scoping criteria to be used in identifying structures, systems, and components in accordance with §54.4(a)(1) requirements. Specifically, these specifications cite the following criteria in reference to §54.4(a)(1) scoping requirements:

10 CFR Part 54.4(a) -

- (a) Plant systems, structures, and components within the scope of this part are--
 - (1) Safety-related systems, structures, and components which are those relied upon to remain functional during and following design bases events (as defined in 10 CFR 50.49(b)(1)) to ensure the following functions--
 - (i) The integrity of the reactor coolant pressure boundary,
 - (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition, or
 - (ii) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR Part 100 guidelines [emphasis added].

Therefore, the applicant needs to provide a written evaluation that addresses the impact, if any, of not having explicitly considered in its scoping methodology those structures, systems, or components that are relied upon to ensure the capability to prevent or mitigate the

consequences of accidents which could result in potential offsite exposures comparable to those referred to in §50.34(a)(1), §50.67(b)(2), or §100.11 of this chapter, as applicable [emphasis added], consistent with the CLB.

RAI 2.1-2: Long-Term Implementation

During the scoping and screening methodology audit, the team determined that the procedures reviewed, in combination with the review of a sample of scoping and screening products, provided adequate evidence that the scoping and screening process was conducted in accordance with the requirements of 10 CFR 54.4, "Scope," and 10 CFR 54.21, "Contents of Application — Technical Information." Additionally, the staff discussed the applicant's position concerning the potential long-term program implementation of the License Renewal Application (LRA) methodology and guidance into the operational phase of the plant during the extended period of operation. As a result, the team concluded that the applicant needs to formally document the process it intends to implement to capture the LRA methodology and guidance upon which the applicant will rely during the period of extended operation to satisfy the requirements of 10 CFR 54.35, "Requirements During the Term of Renewed License." The discussion should include, as appropriate, a description of the current configuration and design control processes including references to implementation guidance for those processes which are currently being reviewed for potential impact, and identification of any new process or procedures planned to address the integration of the LRA methodology and guidance into the operational phase of the plant.

RAI 2.1-3: Quality Assurance Program Attributes in Appendix A, "FSAR Chapter 18" and Appendix B, "Aging Management Program and Activities"

During the audit, the staff reviewed the applicant's programs described in Appendix A, "FSAR Chapter 18," and Appendix B, "Aging Management Program and Activities," to assure that the aging management activities were consistent with the staff's guidance described in Section A.2, "Quality Assurance for Aging Management Programs" and Branch Technical Position IQMB-1, regarding quality assurance of the LR-SRP.

Based on the staff's evaluation, the descriptions and applicability of the aging management programs and their associated attributes to all safety-related and non safety-related structures and components provided in Appendix A and Appendix B of the LRA are consistent with the staff's position regarding quality assurance for aging management. However, the applicant has not sufficiently described the applicability of the quality assurance program and its associated attributes (corrective action, confirmation process, and document control) in Appendix A of the LRA. The staff requests that the applicant revise Appendix A to include a description of the quality assurance program attributes, including references to pertinent implementing guidance. This description should be consistent with the level of detail provided in Appendix B of the LRA.

2.2 PLANT LEVEL SCOPING RESULTS

RAI 2.2.2-1: Tables 2.2-1, "Mechanical Scoping Results," and 2.2-2, "Structural Scoping Results," of the license Renewal Application (LRA) list the mechanical systems and plant structures that are not within the scope of license renewal. Since no descriptions and intended functions of these mechanical systems and structures are provided in the LRA and tables, the

staff is unable to determine the scoping results whether the following mechanical systems and plant structures should be included in the scope of license renewal:

Mechanical Systems: emergency offsite facility (EO), emergency equipment (EQ), liquid effluent from nuclear plant to pent stock (LW), radwaste solidification, and solid handling (WD).

Structures: auxiliary fire pump house, containment access building, plant lighting masts, radiological maintenance building.

Describe these passive and long-lived mechanical components and structures and their intended functions. Justify why they should not be in scope.

2.3 SYSTEM SCOPING AND SCREENING: MECHANICAL

Section 2.3.3.1 Air Handling And Local Ventilation And Cooling Systems

RAI 2.3.3.1-1: Ventilation damper housings are highlighted on the ventilation flow diagrams identified in the LRA as within the scope of license renewal. While ventilation damper housings are highlighted as within the scope of license renewal, ventilation damper housings are not identified in Table 2.3-18 of the LRA that relates ventilation system component types subject to an aging management review (AMR) and their intended functions. Examples of the ventilation damper housings highlighted on the system flow diagrams include the following:

- Fuel handling building charcoal flow diagram D-912-131, (B5, B3, D5, D3, E5, E8, F8)
- Reactor building cooling system flow diagram D-912-102 (C6, C10, D6, D9, G8).
- Auxiliary Building HEPA Exhaust System flow diagram D-912-120 (C8 and C10).
- Auxiliary Building Pump Room Cooling System flow diagram D-912-132 (H6, H7, J8)
- Control Room Normal and Emergency Air Handling System flow diagram D-912-140 (A1,B3,A6,B7,H5, H6, J7, H8, K7, H9, G12, A13)

State whether these components are within the scope of license renewal and subject to an AMR. If so, provide the relevant information about the components in order to provide the staff with the ability to coordinate between the component/commodity tables and the flow diagram drawings, and complete the aging management review Table 2.3-18. If the components are not in scope or not subject to an AMR, provide justification for their exclusion.

RAI 2.3.3.1-2: The following five passive components associated with ventilation system ductwork are not identified as within the scope of license renewal or subject to an aging management program:

- Ductwork turning vanes
- Ventilation system elastomer seals
- Ventilation equipment vibration isolator flexible connections
- Ductwork test connections
- Ductwork access doors

State whether you agree if these components are within the scope of license renewal and subject to an AMR. If they are, provide the information necessary to complete the aging management review result tables. If these components are not in scope and subject to an AMR, provide justification for their exclusion.

RAI 2.3.3.1-3: Clarify whether structural sealants used to maintain the power block building pressure boundary envelope (i.e., main control room, auxiliary building, fuel handling building, containment) at design pressure with respect to the adjacent areas are included in the scope of license renewal and subject to an AMR. Provide information relating to structural sealants use as referenced in Table 2.1-3 on page 2.1-15 of NUREG -1800 (Standard Review Plan-License Renewal). The Standard Review Plan states that an applicant's structural aging management program is expected to address structural sealants with respect to an AMR program. If structural sealants are not in the scope of license renewal and subject to an AMR, provide justification for their exclusion.

RAI 2.3.3.1-4: Filter housings in the air handling and local ventilation and cooling systems are identified on ventilation system flow diagrams referenced in the LRA as within the scope of license renewal. Filter housings perform the intended function of a pressure boundary. However, they are not included in the aging management review results Table 2.3-18 of the LRA. State whether filter housings are subject to an AMR and provide the relevant information about this component to enable the staff to complete its review of the aging management review results table. If filter housings are not subject to an AMR, provide justification for their exclusion.

RAI 2.3.3.1-5: The safe shutdown controls and panels are not identified in Section 9.4 of the FSAR. The Summer ventilation systems used to support use of the safe shutdown controls have not been included as part of the scoping and screening process. State whether the ventilation systems used to support safe shutdown controls are within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a)(1) and (a)(2). If so, provide the relevant information about the components to enable the staff to complete its review of the aging management review result tables in the LRA. If the ventilation systems used to support the safe shutdown controls are not in the scope of license renewal and subject to an AMR, provide justification for their exclusion.

RAI 2.3.3.1-6: The air handling and local ventilation and cooling systems flow diagrams have highlighted instruments and their associated housings and tubing, indicating they are included in the scope of license renewal. State whether these identified instrument housings and their associated tubing are subject to an AMR and provide the relevant information within Table 2.3-18 to enable the staff to complete the license renewal review process. If the highlighted instrument housings and associated tubing are not subject to an AMR, provide justification for their exclusion.

RAI 2.3.3.1-7: The applicant does not describe their process of evaluating consumables in the license renewal application. The applicant should state whether their evaluation process for consumables is subject to the screening guidance in accordance with Table 2.1-3 of NUREG-1800. If consumables are not considered subject to NUREG-1800 scoping and screening guidance, provide justification for their exclusion.

RAI 2.3.3.1-8: Fuel handling building charcoal exhaust system and air supply distribution ductwork are not highlighted on the ventilation flow diagram identified in the license renewal application as within the scope of license renewal (D-912-131, zones A-1 thru A-5). State whether this exhaust ductwork is within the scope of license renewal and subject to an AMR. If so, provide the relevant information about the exhaust ductwork in order to provide the staff with ability to coordinate between the component/commodity tables and the referenced flow diagram drawing and complete the aging management review Table 2.3-18 of the LRA. If the exhaust ductwork is not in scope or subject to an AMR, provide justification for their exclusion.

Section 2.3.3.6 Component Cooling Water

RAI 2.3.3.6-1: The following component types are shown on the listed license renewal boundary drawings to be within the scope of license renewal:

venturi	Drawing D-302-612, locations D4, D5, D6, and D7
radiation monitor housing	Drawing D-806-005, locations A5 and A8

However, the staff is unable to locate these component types in LRA Table 2.3-22. Clarify whether these component types are included in a component group already listed in the table. If not, justify the exclusion of these component types from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a)(1) and 10 CFR 54.21(a)(1).

RAI 2.3.3.6-2: The license renewal boundary drawings referenced in LRA Section 2.3.3.6 show numerous lines connecting temperature elements or temperature indicators to piping segments that are within the scope of license renewal. However, although they often include dimensional markings indicating they represent piping stubs, these connecting lines are not identified as being within the license renewal scope. Describe the typical configuration used to monitor flow stream temperature in the component cooling water system using temperature elements or temperature indicators, and clarify which portions of these assemblies are subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

Section 2.3.3.7 Diesel Generators Services Systems

RAI 2.3.3.7-1: With regard to diesel generator (DG) fuel oil storage and transfer system, the following components are neither identified in LRA drawing D-302-351 as being within the scope of license renewal nor included in LRA Table 2.3-23 as being subject to an AMR:

- the vent line with flame arrestor for each fuel oil storage tank and each day tank,
- the manway for each fuel oil storage tank,
- the fuel oil fill lines.

The staff believes that these components are the long-lived components with a passive function as described in 10 CFR 54.4 and, therefore, should be subject to an AMR. Please clarify whether these components are subject to an AMR, or justify their exclusion.

RAI 2.3.3.7-2: The components of DG crankcase vacuum system (e.g., crankcase pump cases, oil separators, flex connectors, valves, piping, etc.) are neither identified in LRA drawings (D-302-353 and IMS-32-005, sht. 7) as being within the scope of license renewal nor included in

LRA Table 2.3-23 for an AMR. The staff believes that these components are the long-lived components with a passive function as described in 10 CFR 54.4, and therefore, should be subject to an AMR. Please clarify whether these components are subject to an AMR, or justify their exclusion.

RAI 2.3.3.7-3: The components (e.g., expansion tanks, sight glasses, flex connectors, valves, piping, etc.) of DG jacket water system are neither identified in LRA drawings (D-302-353 and IMS-32-005, sht. 4) as being within the scope of license renewal nor included in LRA Table 2.3-23 for an AMR. The staff believes that these components are the long-lived components with a passive function as described in 10 CFR 54.4, and therefore, should be subject to an AMR. Please clarify whether these components are subject to an AMR or justify their exclusion.

Section 2.3.3.8 Fire Service System

RAI 2.3.3.8-1: The license renewal boundary drawings referenced in Section 2.3.3.8 did not identify the following fire protection (FP) systems and components as being within the scope of license renewal and subject to an AMR. The staff believes that the FP systems and components described below are passive and long-lived and perform a function that demonstrates compliance with 10 CFR 50.48 for fire protection. Provide basis for excluding the following FP systems and components from the scope of license renewal and subject to an AMR:

(1) LRA Drawing D-302-231, sht. 1 - Fire Service - pumps

The FP piping leading to the Alt. F.S. pump house, turbine building, a portion of the CW pump house, and the FP components (including Jockey Pumps, valves, piping, fittings, and diesel fuel tanks) are not highlighted in the system flow diagram (D-302-231, sht. 1) as components within the scope of license renewal and subject to an AMR. The staff believes that these FP components perform a pressure boundary intended function consistent with rest of the FP system in scope. Clarify whether the FP piping and components should be in scope or justify their exclusion.

(2) LRA Drawing D-302-231, sht. 2 - Fire Service - hydrants and loops

The fire hydrants (at locations H12, K8, K9, K10, K11, and K12) are not highlighted in the system flow diagram (D-302-231, sht 2) as components within the scope of license renewal and subject to an AMR. The staff believes that these components have the FP intended functions required to be compliance with 10 CFR 50.48 as stated in 10 CFR 54.4. The fire hydrants also serve as the pressure boundary for the FP water supply system. LRA Section 2.1.1.4.1, "Fire Protection," states that the plant's fire protection program meets the guidance of Appendix A to BTP 9.5-1. For the fire hydrants, Appendix A to BTP 9.5-1, Section E.2.g, states that outside manual hose installation should be sufficient to reach any location with an effective hose stream. To accomplish this, hydrants should be installed approximately every 250 feet on the yard main system. In addition, hydrants are the integral components for performing system flow tests. Lack of maintenance on fire hydrants over time can result in partially close or shutting valves and clogging hydrants with debris, all of these will affect system flow. Furthermore, fire hydrants are subject to an AMR in accordance with 10 CFR 54.21, because they are the

passive and long-lived components. Clarify whether the fire hydrants should be in scope or justify their exclusion.

(3) LRA Drawing D-302-231, sht. 3 - Fire Service - reactor building, intermediate building, diesel generator building, fuel handling building, and control building.

The FP piping, fittings, and valves in the reactor building (at locations E5, E7, and E8), fire hose connections in the fuel handling building (at location B4), fire hose connection in the auxiliary building (at location B13), fire hose connection in intermediate building (at location H4), and fire hose connections in reactor building (at location E9) are not highlighted in the system flow diagram (D-302-231, sht. 3) as components within the scope of license renewal and subject to an AMR. However, the FP components perform a pressure boundary intended function with rest of the FP water supply system. Clarify whether the FP piping, fittings, and valves and fire hose connections in the reactor building, intermediate building, fuel handling building, and auxiliary building at these locations should be in scope or justify their exclusion.

(4) LRA Drawing D-302-231, sht. 4 - Fire Service - turbine building and water treatment building

The FP piping, fittings, valves, and fire hose connections in the turbine building (at locations D6, E6, E7, E8, E9, E10, F7, F8, F9, and F10) are not highlighted in the system flow diagram drawing (D-302-231, sht. 4) as components within the scope of license renewal and subject to an AMR. However, these FP components perform a pressure boundary intended function with rest of the FP water supply system in the turbine building that is in scope. Clarify whether the FP piping, fittings, and valves in the turbine building at these locations should be in scope or justify their exclusion.

(5) LRA Drawing D-302-231, sht. 5 - Valve Manifolds

The FP piping, fittings, and valves in turbine building south, El 412' (at locations J6 to J9) are not highlighted in system flow diagram (D-302-231, sht. 5) as components within the scope of license renewal and subject to an AMR. However, these FP components at level EL. 412' of turbine building south area perform a pressure boundary intended function with rest of the FP water supply system that is in scope. Clarify whether the FP piping, fittings, and valves in turbine building south area at El 412' should be in scope or justify their exclusion.

(6) LRA Drawing D-302-232 - Fire Service - halon and low pressure CO₂

As shown in LRA drawing D-302-232, the computer BOP relay and technical support center (TSC) equipment rooms are protected by a total flooding carbon dioxide (CO₂) fire extinguishment system utilizing 5-ton low pressure CO₂ storage tanks as the supply source. However, the CO₂ system electric control panels and the IF&S system are not highlighted in the system flow diagram as components within the scope of license renewal and subject to an AMR. These components perform a pressure boundary intended function for the total flooding CO₂ fire extinguishment system in the computer BOP relay and TSC equipment rooms. Clarify whether these components should be in scope or justify their exclusion.

(7) LRA Drawing IMS-55-059, sht. 1 - Deluge Water Spray Systems - deluge valve station in turbine building

The FP components for the valve station system in the turbine building are not highlighted in the system flow diagram (IMS-55-059, sht. 1) as components within the scope of license renewal and subject to an AMR. These FP components perform a pressure boundary intended function with rest of the FP system that is in scope and subject to an AMR for license renewal. Clarify whether these components should be in scope or justify their exclusion.

(8) LRA Drawing IMS-55-085, sht. 26 - diesel fire pump room in diesel generator building

The fire suppression system (including sprinklers with heat collectors) are installed in the diesel fire pump room of the diesel generator building. The fire suppression system is not highlighted in the system flow diagram (IMS-55-085, sht. 26) as components within the scope of license renewal and subject to an AMR. However, the fire suppression system and its components perform a pressure boundary intended function with rest of the FP system that is in scope and subject to an AMR for license renewal. Clarify whether the fire suppression system and its components should be in scope or justify their exclusion.

(9) LRA Drawing IMS-55-085-27-2 - Charcoal Filter Plenum Systems in auxiliary building, control building, and reactor building

The manual deluge sprinkler system for the charcoal filter plenums (XAA-40A-AH and XAA-40B-AH) in the auxiliary building are not highlighted in the system flow diagram (IMS-55-085-27-2) as components within the scope of license renewal and subject to an AMR. This manual deluge system provide a pressure boundary intended function for the charcoal filter plenums in the auxiliary building. Clarify whether the deluge sprinkler system and its components should be in scope or justify their exclusion.

(10) LRA Section 2.3.3.8 and the flow diagram drawings referenced in the LRA do not identify the pre-action sprinkler system installed in the diesel generators room as systems within the scope of license renewal and subject to an AMR. Section 5.0 (F) (9), "Diesel Generator Area" (Item "d" on page 5.0-40) of the VCSNS FPER (Amendment 02-01), states that the emergency diesel generators are protected by a pre-action sprinkler system. Since this system performs a pressure boundary intended function for the FP water supply system in the emergency diesel generator room, the pre-action sprinkler system and its components should be within the scope of license renewal. Provide a technical justification for their exclusion.

Section 2.3.3.9 Fuel Handling System

RAI 2.3.3.9-1: The following components are shown to be within the scope of license renewal on license renewal boundary drawing D-302-651:

- fuel transfer tube
- fuel transfer tube blank flange
- mechanical fasteners for blank flange
- valve body for fuel transfer tube gate valve
- pipng and valve body for vent line connected to fuel transfer tube

However, LRA Table 2.3-25 lists only the fuel transfer tube as a component subject to an AMR. The fuel transfer tube and associated components perform a pressure boundary intended

function for both containment integrity and spent fuel pool leakage prevention. Clarify whether each of the other components are included with the fuel transfer tube listed in the table. If not, add the components to LRA Table 2.3-25 or justify their exclusion from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

Section 2.3.3.10 Gaseous Waste Processing System

RAI 2.3.3.10-1: The system flow diagram drawing, E-302-745, Rev. 3 (catalytic hydrogen recombiner B), shows the piping of cooler condenser continuing to drawing E-302-743. However, drawing E-302-743 is not included in the submittal nor referenced in Section 2.3.3.10 of the LRA. Explain whether the license renewal boundary of gaseous waste processing system extends to drawing E-302-743. Please supply this drawing.

RAI 2.3.3.10-2: The system flow diagram drawing, E-302-742, Rev. 11 (waste processing), does not identify the heat-exchanger-shell-chemical-drain piping and valve 7938A to be within the scope of license renewal. This piping and housing of the valve provide a pressure retaining function and are passive and long-lived. Therefore, these components appear to be within the scope of license renewal and subject to an AMR. Justify exclusion of these components from the scope of license renewal and aging management review.

Section 2.3.3.12 Instrument Air Supply System

RAI 2.3.3.12-1: FSAR Section 9.3.1.3 identifies the feedwater isolation valves as valves that are required to function following an accident and that do not fail in a safe position after a loss of air supply. These air operated valves are equipped with safety-related air accumulators to allow operation of the valves following a loss of air supply from the instrument air system. However, with the exception of the valve air operators, the applicant did not identify the accumulators and the related components necessary for operation of the feedwater isolation valves among the components identified in the drawings referenced in LRA Sections 2.3.3.12 and 2.3.4.5 as being within the scope of license renewal. The air operators for the feedwater isolation valves were identified as being within the scope of license renewal on license renewal drawing 1MS-25-898. Clarify whether the accumulators and the related components necessary for the operation of the feedwater isolation valves are within the scope of license renewal and subject to an AMR. If not, justify their exclusion from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

RAI 2.3.3.12-2: The license renewal drawings referenced in LRA Section 2.3.3.12 identified the air accumulators and their associated components for the following valves and dampers as components within the scope of license renewal:

- control room outside air intake isolation dampers
- service water makeup to component cooling water system isolation valves
- emergency feedwater flow control valves
- turbine-driven emergency feedwater pump steam isolation valve
- main steam isolation valves
- emergency diesel generator service water bypass valves
- pressurizer power operated relief valves

However, the actuator housings associated with the above dampers and valves were not included in the scope of license renewal. For the listed dampers and valves, clarify whether the portions of the associated actuator housings that perform a passive pressure boundary intended function are within the scope of license renewal and subject to an AMR. If not, justify their exclusion from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

RAI 2.3.3.12-3: FSAR Section 9.2.1.2 states that the fire protection system serves as a standby means of cooling the diesel generators. When the diesel generator is operating in the emergency mode, the cross-connect valve automatically opens on high lube oil temperature or high jacket water temperature. FSAR Section 9.3.1.3 states that these fire protection system valves are equipped with quality-related air accumulators. Describe the basis for excluding these air accumulators and associated air components from the scope of license renewal when the fire protection and service water system piping that interfaces at the valves is within the scope of license renewal.

Section 2.3.3.14 Liquid Waste Processing System

RAI 2.3.3.14-1: Section 2.3.3.14 of the LRA states that the license renewal boundaries for the liquid waste processing system are depicted in drawing E-302-735. Table 2.3-28 of the LRA lists components of "condensers" and "heat exchangers" subject to an AMR. However, drawing E-302-735 has identified only one heat exchanger, i.e., reactor coolant drain heat exchanger. Where can one locate the other heat exchanger/s and condensers in the LRA?

Section 2.3.3.17 Radiation Monitoring System

RAI 2.3.3.17-1: LRA Section 2.3.3.17 states that the mechanical license renewal functions of the radiation monitoring system are to provide post accident monitoring capability for the containment activities and maintain system boundaries with the component cooling, spent fuel cooling, and chemical and volume control systems. However, in system flow diagram drawings D-302-611 (component cooling), D-302-651 (spent fuel cooling), and D-302-771 (nuclear sampling), the license renewal boundaries of the radiation monitoring system are not defined in these drawings. Also, Section 2.3.3.17 does not provide adequate information for the system components related to these drawings. Please define the license renewal boundaries for the system in these system flow diagram drawings.

Section 2.3.3.18 Reactor Makeup Water Supply System

RAI 2.3.3.18-1: System flow diagram drawing D-302-791 (reactor makeup water supply system) highlights the flow restrictors (XPS-009-MU, XPS-158-MU, XPS-93A-MU, XPS-93B-MU) as components within the scope of license renewal. However, these passive and long-lived components are not included in LRA Table 2.3-32 as components subject to an AMR. These flow restrictors serve as a pressure boundary with the system piping in scope. Therefore, the flow restrictors should be subject to an AMR. Please justify their exclusion.

Section 2.3.3.21 Service Water System

RAI 2.3.3.21-1: The license renewal boundary drawings referenced in LRA Section 2.3.3.21 show numerous lines connecting temperature elements or temperature indicators to piping segments that are within the scope of license renewal. However, although they often include dimensional markings indicating they represent piping stubs, these connecting lines are not identified as being in scope. Describe the typical configuration used to monitor flow stream temperature in the service water system using temperature elements or temperature indicators. Clarify which portions of these assemblies are subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

RAI 2.3.3.21-2: License renewal boundary drawing (D-302-222) shows that the service water piping extends to drawing D-302-085 at locations D12 and H12 for backup supply to the emergency feedwater pump suction and to drawing D-302-611 at locations B8 and G8 for supply of component cooling water system makeup water. However, LRA Section 2.3.3.21 fails to reference drawings D-302-085 and D-302-611 to include service water piping on these flow diagrams within the aging management programs identified for the service water system. LRA Tables 2.3-22 and 2.3-40, which present aging management results for the component cooling water and emergency feedwater systems respectively, do not reference aging management programs consistent with the component exposure to a raw water environment. A related issue exists with regard to fire protection system piping that extends onto service water system drawing D-302-222 at locations B8-9 and J8-9 for supply of backup cooling water to the emergency diesel generators from the fire protection water system. Clarify how these piping segments have been included in an AMR and what aging management programs apply to these piping segments.

Section 2.3.3.23 Thermal Regeneration System

RAI 2.3.3.23-1: LRA Section 2.3.3.23 states that the (boron) thermal regeneration system (BTRS) is used as the deborating demineralizer to reduce reactor coolant boron concentration towards the end of core life. LRA Table 2.3-37 lists heat exchangers (HX)-channel head, HX (shell), HX (tube), and HX (tube-sheet) as the component types of the thermal regeneration system subject to an AMR. System flow diagram drawing E-302-676, which contains the thermal regeneration system and portion of the chemical and volume control system, shows the letdown reheat HX, letdown chiller HX, and moderating HX in the boundary of the chemical and volume control system. The drawing does not show any heat exchangers in the boundary of the thermal regeneration system. LRA Table 2.3-8 lists HX-channel head, HX-shell, HX-tubes, and HX-tube sheet as the components of the chemical and volume control system subject to an AMR. Clarify whether the heat exchangers in LRA Table 2.3-37 for the thermal regeneration system are those shown in LRA Table 2.3-8 for the chemical and volume control system. If so, explain why the same heat exchangers should be listed in both tables.

Section 2.3.4.1 Auxiliary Boiler Steam and Feedwater System

RAI 2.3.4.1-1: In LRA drawing D-302-051, the license renewal boundary of the auxiliary boiler steam piping terminates at valves PCV 337 (at locations G11) and PCV 316 (at location J8), upstream of the two evaporators. In the same drawing, the license renewal boundary terminates at mid-pipe of the 2 " line that supplies the preheater, downstream at valves TCV 325 (at location G10) and TCV 304 (at location G8). Typically, the license renewal boundary for the lines upstream of large components with a significant amount of stored energy terminates at the components that provide physical pressure boundaries per criterion 10 CFR 54.4(a)(2).

Justify the differences in the license renewal boundary between the lines supplying steam to the preheaters and the lines supplying steam to the evaporators.

Section 2.3.4.2 Condensate System

RAI 2.3.4.2-1: The condensate storage tank is the primary source of water for the emergency feedwater system. In LRA drawing D-302-101, it appears that the 10" atmospheric vent pipe on the condensate storage tank (at location A11) provides vacuum protection for the tank. This vent pipe is not highlighted in the drawing as being in scope. The vent pipe has an intended function to protect the tank and should be included in the scope of license renewal. Justify its exclusion from being within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a)(1) and 10 CFR 54.21. Also explain why this 10" vent pipe is not shown on the condensate storage tank in LRA drawing D-302-085.

RAI 2.3.4.2-2: The condensate storage tank is a safety-related, safety class 2B component. It appears that the piping attached to the condensate storage tank should be within the scope of license renewal up to the first isolation valve to meet the requirements of 10 CFR 54.4(a)(2). However, in LRA drawing D-302-101, the piping is not shown to be within the license renewal boundary. Justify why the piping attached to the condensate storage tank is not considered to be in scope and subject to an AMR for license renewal.

Section 2.3.4.3 Emergency Feedwater System

RAI 2.3.4.3-1: In LRA drawing D 302-085, the license renewal boundaries terminate at locked open valves, 1026 EF (at location G5), 1025A-EF (at location A5), and 1025B-EF (at location E5). It appears that the 2" and 3" lines that extend upstream of these valves should be within the scope of license renewal to meet the requirements of 10 CFR 54.4(a)(2). Please explain why these 2" and 3" lines, downstream of these valves, are not highlighted up to, and including, check valve 1027-EF (at location C4) as being within the scope of license renewal.

Section 2.3.4.6 Gland Sealing Steam System

RAI 2.3.4.6-1: The gland seal system license renewal boundary drawing, D-302-141, Rev. 15, does not identify the housing of stop valve, S.V. # 1. This valve housing provides a pressure retaining function and is passive and long-lived. Therefore, this component appears to be within the scope of license renewal and subject to an AMR. Justify exclusion of the valve housing from the scope of license renewal and aging management review.

Section 2.3.5 Criterion 2 Supplement to the License Renewal Application

RAI 2.3.5-1: The technical Report, "Criteria 2 Supplement to the Application for Renewed Operating License (RC-02-0159)," did not fully address non-fluid containing component groups (e.g., ventilation ducts, instrument air valves, valve actuators, etc.) that are spatially orientated near safety-related components. Although, LRA Section 2.3.3.1 has identified the components of air handling and local ventilation duct-work that perform intended safety functions in scope. However, certain non-fluid containing components may not have safety functions but have a spatial relationship with safety-related piping, such that their failure could adversely impact the

performance of an intended safety function. Explain whether any components of these groups should be identified and treated as seismic II/I components.

RAI 2.3.5-2: On page 5 of 56 of the technical report (RC-02-0159), the applicant stated that code break piping is within the scope of license renewal to preclude adverse affects on safety-related equipment and function. Please define the code break piping and in what situation a pipe is considered as code break piping.

3.3 AUXILIARY SYSTEMS

Section 3.3.2.4.8 Fire Service System

RAI 3.3.2-4.8-1: (1) LRA Table 3.3-1 (Item 6) lists components in reactor coolant pump oil collect system of fire protection as a component group in the aging management program (AMP). However, the AMP only requires one time inspection for these components. Explain why these components should not be inspected periodically for managing aging.

(2) LRA Table 3.3-2 (Item 18) lists nozzles, piping, and fire hydrants of the fire service system as a component type subject to aging management evaluation. This table does not identify any aging effect or mechanism to be evaluated for these components. However, the components in this component type expose to outside environment (such as fire hydrants) and are subject to corrosion that may results in loss of material due to pitting and microbiological influenced corrosion. Provide basis for not identifying any aging effect/mechanism for Item 18 aging management evaluation.

APPENDIX B.1.5 FIRE PROTECTION PROGRAM

RAI B.1.5-1: LRA Appendix B.1.5, "Fire Protection Program," states that the fire protection program is consistent with XI.M26, "Fire Protection," XI.M27, "Fire Water System", and XI.M33, "Selective Leaching of Materials," as identified in NUREG-1801 and is enhanced in a specified table of this appendix. In order for the staff to evaluate the adequacy of the applicant's fire protection AMP and reach a conclusion that it is consistent with NUREG-1801, the staff requests the applicant to confirm the following:

(1) The additional guidance, which will be added to the diesel fire pump maintenance procedures during enhancements in accordance with Chapter XI. M26 of NUREG-1801, should ensure that the diesel-driven fire pump is under observation during the performance tests for detecting any degradation of the fuel supply line (such as flow and discharge tests, sequential starting capability tests, and controller function tests).

(2) The guidance, which will be added to the carbon dioxide (CO₂) fire suppression systems and fire damper inspection procedures in accordance with Chapter XI. M26 of the NUREG-1801, should include periodic visual inspection to examine signs of degradation. Material conditions that may affect the performance of the system (such as corrosion, mechanical damage, or damaged damper) are observed during inspection. Inspection should be performed at least once every month to verify that the extinguishing agent supply valves are open, and the system is in an automatic mode.

(3) The specific guidance, which will be added related to fire door inspection, will ensure that hollow metal fire doors are visually inspected for holes in the skin of the door based on the plant specific frequency. Fire door clearances are also checked as part of an inspection. Functional tests of fire doors are performed daily, weekly, or monthly (which may be plant-specific) to verify the operability of the automatic hold-open, release, closing mechanism, and latches. The visual inspections should detect any degradation of the fire doors prior to loss of the intended function.

(4) The NRC staff has issued an Interim Staff Guidance (ISG)-04, "Aging Management of Fire Protection Systems for License Renewal" (in ADAMS Accession # 022260137, dated December 3, 2002), to modify the FP AMP described in NUREG-1801 Chapter XI. M27. The relevant portions of the ISG-04 are summarized below:

Staff Position for Wall Thinning of FP Piping due to Internal Corrosion

Fire protection piping is typically designed for a 50-year life in industrial applications. The limiting aging mechanism is general corrosion. Because the general corrosion of FP piping is typically very uniform, loss of intended function as a result of catastrophic failure caused by wall thinning throughout the system is possible and needs to be managed. However, internal inspections performed during each refueling cycle by disassembling portions of the FP piping, as stated in NUREG-1801, Chapter XI. M27, "Fire Water Systems," may not be most effective means to detect this aging effect. Each time the system is opened, oxygen is introduced into the system and this accelerates the potential for general corrosion. Therefore, the staff recommends that the applicant perform a baseline pipe wall thickness evaluation of the fire protection piping using a non-intrusive means of evaluating wall thickness, such as volumetric inspection, to detect this aging effect before the current license term expires. The staff also recommends that the applicant performs pipe wall thickness evaluations at plant-specific intervals during the period of extended operation. The plant-specific inspection intervals are determined by engineering evaluation performed after each inspection of the fire protection piping to detect degradation prior to the loss of intended function. As an alternative to pipe wall thickness evaluations, an applicant may use the existing Chapter XI. M27.

As part of the review of this issue and the above stated approach, a concern was raised as to the inspection specifications of the internal surface of below grade FP piping. The staff acknowledges that some applicants may be able to demonstrate that the environmental and material conditions that exist on the interior surface of below grade FP piping are similar to the conditions that exist within the interior surface of the above grade FP piping. If an applicant makes such a demonstration, the staff agrees that the results of the interior inspections of the above grade FP piping can be extrapolated to evaluate the interior condition of the below grade FP piping. If not, additional inspection activities are needed to provide reasonable assurance that the intended function of below grade FP piping will be maintained consistent with an applicant's current licensing basis for the period of extended operation.

Staff Position for Testing of Sprinkler Heads

NFPA 25 (1999 Edition) Section 2.3.3.1, "Sprinklers," states that where sprinklers have been in place for 50 years, they shall be replaced or representative samples from one or

more sample areas shall be submitted to a recognized testing laboratory for field service testing. NFPA 25 also contains guidance to perform this sampling every 10 years after the initial field service testing.

The 50-year service life of sprinkler heads does not necessarily occur at the 50th year of operation in terms of licensing. The service life is defined from the time the sprinkler system is installed and functional. In most cases, sprinkler systems are in place several years before the operating license is issued. However, sprinkler systems in some plants may have been installed after the plant was placed in operation. The staff recommends, in accordance with NFPA 25, that sprinkler head testing should be performed at year 50 of sprinkler system service life, not at year 50 of plant operation, with subsequent sprinkler head testing every 10 years thereafter.

In order to adequately managing the water-based FP systems and components (including sprinklers, nozzles, fittings, valves, hydrants, hose stations, stand-pipes, water storage tanks, and aboveground and underground piping), the staff requests the applicant to revise LRA Appendix B.1.5 in accordance with ISG-04 and revise NUREG-1801 Chapter XI. M27 to assure maintenance of the structures and components intended function during the period of extended operation. The staff also requests the applicant to discuss (1) how it plans to follow the guidance of the ISG-04, and (2) how this will be reflected in LRA Appendix B 1.5 and conforms with the staff position, as outlined above.

RAI B.1.5-2: The staff is concerned that the applicant's AMP for FP systems and components may not adequately manage the aging of the protective coatings in steel structure, since neither NUREG-1801 Chapters XI. M26 nor XI. M27 address aging effects for the protective coating. On this basis, the staff requests the applicant to identify any steel structures within the scope of license renewal and subject to an AMR which depend on coatings to protect steel structures from aging-related degradation. For any such coatings, describe the aging management activities that manage the aging effects for the coatings and identify what AMP performs these activities.

Mr. Stephen A. Byrne
VIRGIL C. SUMMER NUCLEAR STATION
South Carolina Electric & Gas Company

cc:

Ms. Kathryn M. Sutton, Esquire
Winston & Strawn Law Firm
1400 L Street, NW.
Washington, DC 20005-3502

Mr. R. J. White
Nuclear Coordinator
S.C. Public Service Authority
c/o Virgil C. Summer Nuclear Station
P.O. Box 88, Mail Code 802
Jenkinsville, SC 29065

Resident Inspector/Summer NPS
c/o U.S. Nuclear Regulatory Commission
576 Stairway Road
Jenkinsville, SC 29065

Chairman, Fairfield County Council
Drawer 60
Winnsboro, SC 29180

Mr. Henry Porter, Assistant Director
Division of Waste Management
Bureau of Land & Waste Management
Department of Health & Environmental
Control
2600 Bull Street
Columbia, SC 29201

Mr. Gregory H. Halnon, General Manager
Nuclear Plant Operations
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station,
Mail Code 303
P.O. Box 88
Jenkinsville, SC 29065

Mr. Melvin N. Browne, Manager
Nuclear Licensing & Operating Experience
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station,
Mail Code 830
P.O. Box 88
Jenkinsville, SC 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

Mr. Alan P. Nelson
Nuclear Energy Institute
1776 I Street, NW., Suite 400
Washington, DC 20006-3708

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

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

Ms. Pearson
1106 St. Barnabus Ch Rd.
Jenkinsville, SC 29065

Mr. Kamau Marcharia
Member County Council
Fairfield County
P.O. Drawer 49
Jenkinsville, SC 29065

Mr. Bret Bursey
SC Progressive Network
P.O. Box 8325
Columbia, SC 29202

Mr. Billy Hendrix
18662 Newberry Rd.
Blair, SC 29015

Mr. Stephen A. Byrne
VIRGIL C. SUMMER NUCLEAR STATION
South Carolina Electric & Gas Company

cc:

Mr. Gregory C. DeCamp
Constellation Nuclear Services
6120 Woodside Executive Ct.
Aiken, SC 29803

Mr. Kim Bowens
ICRC
1098 Old Levington Hwy.
Chapir, SC 29036

Ms. Lunelle Harmon
SCE&G
3364 SC Hwy. 219
Newberry, SC 29108