

August 20, 2007

Mr. Robert J. Duncan II  
Vice President  
Carolina Power & Light Company  
P.O. Box 165, Mail Zone 1  
New Hill, NC 27562

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE  
SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1, LICENSE RENEWAL  
APPLICATION

Dear Mr. Duncan:

By letter dated November 14, 2006, Carolina Power & Light Company submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, to renew the operating license for Shearon Harris Nuclear Power Plant, Unit 1, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review.

These requests for additional information were discussed with Roger Stewart, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-3137 or via e-mail [MLH5@nrc.gov](mailto:MLH5@nrc.gov).

Sincerely,

*/RA/*

Maurice Heath, Project Manager  
License Renewal Branch A  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket No. 50-400

Enclosure:  
Requests for Additional Information

cc w/encl: See next page

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SHEARON HARRIS NUCLEAR POWER PLANT (HNP), UNIT 1  
LICENSE RENEWAL APPLICATION (LRA)  
REQUESTS FOR ADDITIONAL INFORMATION (RAIs)

**RAI 2.1.1.2-1**

**LRA Section 2.1 Scoping and Screening Methodology**

In LRA Section 2.1.1.2, “Non-Safety Related Criteria Pursuant to 10 CFR 54.4(a)(2),” the applicant describes the methodology in identifying applicable structures, systems and components (SSC’s). LRA Section 2.1.1.2 contains guidance for “10 CFR 54.4(a)(2) Scoping Based on NRC Scoping Guidance for Spatial Interactions and Seismic-Connected Piping.” Additionally, in LRA Section 2.1.1.2, the applicant describes “Spatial Interactions,” and on page 2.1-10, the applicant requires that non-connected, non-safety related systems be brought within the scope of license renewal to protect safety related SSC’s from the consequences of failures of the non-safety related systems.

On LRA pages 2.1-9 and 11, the applicant states in the guidance that the turbine building contains safety related components and that this information is used to identify non-safety related systems having potential for adverse spatial interactions. On LRA page 2.1-11, the applicant describes that feedwater system flow transmitters, the feedwater regulating valves, associated bypass valves, etc., in the Turbine Building as designated safety related in the Pass Port equipment data base (EDB). However, the applicant makes the conclusion, “Therefore, no systems in the Turbine Building are brought into scope per the current guidance regarding special interactions.”

On LRA pages 2.1-9 and 11, the applicant states in the guidance that the Waste Processing Building contains safety related components and that this information is used to identify non-safety related systems having potential for adverse spatial interactions. On LRA page 2.1-11, the applicant describes that the waste gas decay tanks and associated piping and valves and radiation monitor components as designated safety related in the Pass Port EDB.

Although, there are non-safety related SSC’s within the Waste Processing Building and within the Turbine Building that may have the potential for adverse spatial interaction with safety related components, the applicant has excluded them from 10 CFR 54.4(a)(2) for spatial interactions. The applicant’s evaluation has determined that the safety related components do not meet the license renewal definition of “safety related.”

**Provide the details of the evaluation that allowed the exclusion of the non-safety related SSC’s within the Turbine Building and within the Waste Processing Building from the 10 CFR 54.4(a)(2) criterion for spatial interactions.**

Enclosure

### **RAI 2.1.1.2-2**

In LRA Section 2.1.1.2, page 2.1-13, under the topic of Seismic-Connected Piping, the applicant states, “These air/gas piping systems with seismically-connected piping include the Instrument Air System [Section 2.3.3.27], Service Air System [section 2.3.3.28], Bulk Nitrogen Storage System [Section 2.3.3.29], Hydrogen Gas System [Section 2.3.3.30], and Penetration Pressurization System [Section 2.3.3.62].” These systems have non-safety related piping connected to safety related piping that is included in the scope of license renewal up to the first seismic anchor or equivalent anchor past the safety/non-safety interface. It is expected that all of these systems should have an intended function of “M-4 structural support” in LRA tables 2.3.3-23, 2.3.3-24, 2.3.3-25, 2.3.3-26 respectively.

**Explain why the intended function M-4 Structural Support (i.e. provide structural support/seismic integrity) is not shown also in LRA tables mentioned above for the components subject to an Aging Management Review (AMR).**

### **RAI 2.1.2.1-1**

In LRA Section 2.1.2.1, “Mechanical Components,” the applicant describes the process used to identify mechanical components subject to AMR. In LRA Section 2.1.2.1 paragraph 5, on page 2.1-22, the applicant states, “In-scope mechanical components with no mechanical intended function are assigned a screening result of ‘no mechanical intended function,’ and they are not subjected to Aging Management Review.” However, the applicant states, “In a limited number of cases, there are in-scope mechanical components that do not support a mechanical system intended function but are in the scope because of their potential to damage safety related components through direct impact during a seismic event.”

**Identify the in-scope mechanical components with “no mechanical intended function” that are not subject to an AMR and describe why they are not subject to an AMR.**

### **RAI 2.3-1**

#### **LRA Section 2.3 Scoping and Screening Results – Mechanical Systems**

In several LRA section descriptions and associated licensee renewal scoping drawings, the applicant describes and highlights various components indicating that they are within the scope of the license renewal and subject to an AMR. The staff notes that many component/commodity types are not included in the associated LRA tables. The highlighted components include: valves, piping, accumulators closure bolting, drain traps, detectors, pumps, etc. In the associated LRA tables, the applicant did not identify the following component/commodity types:

Section 2.3.3.6 Circulating Water System – expansion joints, temperature elements, thermowells

Section 2.3.3.21 Emergency Diesel Generator System – expansion joints, flexible connections

Section 2.3.3.27 Instrument Air System – valves

Section 2.3.3.28 Service Air System – valves, drain trap(s), closure bolting

Section 2.3.3.29 Bulk Nitrogen Storage System – valves, accumulator tank

Section 2.3.3.30 Hydrogen Gas System – valves, excess flow check valve

Section 2.3.3.18 Emergency Screen Wash System – buried piping

Section 2.3.4.14 Turbine System – valves

Section 2.3.3.37 Laundry and Hot Shower System – piping, piping components, and piping elements

Section 2.3.3.54 Spent Fuel Cask Decontamination and Spray System – filters, pumps, tanks, valves

Section 2.3.3.81 Mechanical Components in Electrical Systems – detector, sample cooler

Sections 2.3.3.6, 7, 8, 9, 10, 11, 12, 14, etc. - valves and/or pumps

Section 2.3.4.4 Main Steam Dump System - silencers

**Specifically explain how each of these components is represented in the LRA. Additionally, explain what components the term “piping, piping components, and piping elements” includes for each system.**

#### **RAI 2.3.3.12-1**

#### **2.3.3.12 Normal Service Water System**

In final safety analysis report (FSAR) Section 9.2.1.2, page 9.2.1-3, the applicant describes the normal service water pumps as follows:

Normal Service Water (NSW) Pumps - Two 100 percent capacity pumps are provided with one pump normally supplying all service water requirements. One single supply header will normally furnish the two redundant loops serving the essential plant components. Pumps are sized such that the water requirements for Unit start-up and normal operation can be met by one pump. Both pumps may be required after four hours have elapsed from the plant normal shutdown initiation (see Table 9.2.1-1). In this case both loops serving the essential plant components will be in service.

In LRA Section 2.3.3.12, pages 2.3-70 & 71, the applicant describes the NSW pumps as follows:

Two 100-percent capacity NSW pumps are provided. During Unit start-up, shutdown, and normal operation, service water (SW) requirements will be met by one of the NSW pumps. The pump furnishes all normal operating SW requirements for the Unit through a single supply line.

**Explain the discrepancy in operating requirements of one or two pumps, between the descriptions in FSAR Section 9.1.2 and LRA Section 2.3.3.12.**

#### **RAI 2.3.3.13-1**

#### **2.3.3.13 Emergency Service Water System**

In LRA Section 2.3.3.13, the applicant, identifies that under emergency operation, the service water booster pumps start. However, the booster pumps are not identified in either LRA Table 2.3.3-11 or LRA Table 2.3.3-10 (Section 2.3.3.12) as one of the component/commodity types subject to an AMR.

**Explain why the service water booster pumps are not identified as a component/commodity type in either LRA Tables 2.3.3-10 or 2.3.3-11.**

**RAI 2.3.3.16-1**

**2.3.3.16 Essential Services Chilled Water System**

On license renewal scoping drawing 5-G-0499, location L-16, for the essential services chilled water system, a flag is shown with a “3” in it indicating that the piping and valves beyond it are designed to meet Safety Class 3 and Seismic Category I requirements. The piping beyond the piping class flag (line number 3CX4-71SB-1) is partially highlighted as in the scope of license renewal for 10 CFR 54.4(a)(1) criterion. There is no piping class flag indicating a change in pipe class at the location along the pipe where the highlighting stops.

**Since pipe line 3CX4-71SB-1 is designed to meet Safety Class 3 and Seismic Category I requirements, explain why pipe line 3CX4-71SB-1 is not highlighted along its total length; thereby, indicating that it is not within the scope of license renewal for 10 CFR 54.4(a)(1) criterion.**

**RAI 2.3.3.21-1**

**2.3.3.21 Emergency Diesel Generator System**

In LRA Table 2.3.3.17, the applicant identifies, for the emergency diesel generator system, the component/commodity type of “piping, piping components, and piping components.”

**It is unclear why the words “piping components” were listed twice. Please clarify whether this is a typographical error and what the intended verbiage should be.**

**RAI 2.3.3.22-1**

**2.3.3.22 Diesel Generator Fuel Oil Storage and Transfer System**

In LRA Section 2.3.3.22, the applicant describes that buried fuel oil piping is coated and cathodically protected. The buried piping is required in order for the system to perform its intended function of supplying fuel oil to the emergency diesel generators for all modes of operation. In LRA Table 2.2-3, License Renewal Scoping Results for Electrical/I&C Systems, the applicant identifies that the cathodic protection system is not within the scope of license renewal.

**Explain whether the cathodic protection for the diesel generator fuel oil storage and transfer system buried piping is included within the system identified in LRA Table 2.2-3, or if it should be added or included into LRA Table 2.3.3-18. If it is included in Table 2.2-3, explain why the cathodic protection system is not within the scope of license renewal.**

### **RAI 2.3.3.22-2**

On license renewal scoping drawing 5-G-0133-LR, the applicant depicts the diesel generator fuel oil day tanks 1A-SA and AB-SB for emergency diesel generators 1A-SA and 1B-SB respectively. Each day tank has a supply line from its respective fuel oil transfer pump which is required for the system to perform its intended function. Piping sections 3FO1-237SA-1 and 3FO1-238SB-1 are not highlighted on the license renewal scoping drawing, even though their failure could prevent the transfer of fuel oil to the day tanks.

**Explain whether these piping sections are intended to be excluded from the scope of license renewal. If they are, then explain the effects of their failure on the diesel generator fuel oil storage and transfer system.**

### **RAI 2.3.3.28-1**

#### **2.3.3.28 Service Air System**

On license renewal scoping drawing 5-G-0300, location B-2, for the service air system, the applicant depicts valve 7SA-V79-1 as attached to the continuation piping required for containment isolation at penetration M-41. The piping required for the containment isolation at penetration M-41 is highlighted as in the scope of license renewal for 10 CFR 54.4(a)(1) criteria; and the continuation piping has been highlighted as in the scope of license renewal for 10 CFR 54.4(a)(2) criteria for functional support (seismic continuity).

**Explain why valve 7SA-V79-1 is not highlighted as within the scope of license renewal for 10 CFR 54.4(a)(2) criterion since it may be a part of the continuation piping needed for seismic continuity.**

### **RAI 2.3.3.28-2**

In LRA Section 2.3.3.28, page 2.3-109, the applicant states that the service air system includes safety related system piping associated with the containment penetration as well as supply piping for the essential services chilled water system. On page 2.3-110, the applicant states that the license renewal scoping boundaries for the service air system are shown on the following boundary drawing 5-G-0300-LR. In addition, the staff noted that service air system piping and components are highlighted on license renewal scoping drawings 8-G-0498-S02-LR, HVAC essential services chilled water condenser flow diagram Unit 1-SA and 8-G-0499-S02-LR, HVAC essential services chilled water condenser flow diagram Unit 1-SB, indicating they are within the scope of license renewal.

**Explain why the license renewal scoping drawings 8-G-0498-S02-LR and 8-G-0499-S02-LR are not included on LRA page 2.3-110 as license renewal scoping drawings for the service air system.**

#### **RAI 2.3.3.34-1**

##### **2.3.3.34 Radioactive Floor Drains System**

In Section 2.3.3.34, the applicant has included “system strainers” as a component/commodity type in LRA Tables 2.3.3-30 and 3.3.2-30. This component has intended functions of filtration and pressure boundary. On license renewal scoping drawings 5-G-0816-LR at location F-3, and 5-G-0866-LR at locations F-2, 4 and 6, pump strainers were found, however these strainers are not indicated on the drawings as being within the scope of license renewal. Additionally, if these strainers as indicated in Tables 2.3.3-30 and 3.3.2-30 have a pressure boundary intended function, the surrounding piping would also need to also have a pressure boundary function.

**Clarify if these strainers and the surrounding piping are the specified components indicated in LRA Tables 2.3.3-30 and 3.3.2-30 that are subject to AMR or justify their exclusion.**

#### **RAI 2.3.3.43-1**

##### **2.3.3.43 Oily Waste Collection and Separation System**

On the license renewal scoping drawing titled “Scoping Notes for Miscellaneous Systems,” also known as “System Boundary Drawing Scoping Discussions,” CALC HNP-P/LR-0002, Attachment 4, Revision 2, the applicant states that highlighted flow paths in the “Oily Drains System” are intended to indicate flow paths for draining fire fighting water when needed. However, on license renewal scoping drawing 5-G-0485-LR, the applicant does not highlight portions of the system downstream of the oil water separator.

**Explain why the piping downstream of the oil water separator is not needed to support the intended function of draining fire fighting water. If piping is to be included in the scope of license renewal, identify the piping downstream of the oil water separator necessary to support the fire protection intended function.**

#### **RAI-2.3.3.45-1**

##### **2.3.3.45 Secondary Waste Treatment System**

In LRA Section 2.3.3.45, the applicant states that the Secondary Waste Treatment System only performs the system intended function of containing components that have the potential for spatial interactions with safety related SSC’s or are relied on for seismic continuity in accordance with 10 CFR 54.4(a)(2). However, on license renewal scoping drawing titled “Scoping Notes for Miscellaneous Systems,” the applicant states that highlighted flow paths in the “Liquid Waste Processing System” are intended to indicate flow paths for draining fire fighting water when needed. In FSAR Section 11.2.2.6, the applicant describes the Secondary Waste Treatment System as a subsystem of the Liquid Waste Processing System.

**Explain the exclusion of the system intended function associated with fire protection, 10 CFR 50.48, for the secondary waste treatment system in accordance with 10 CFR 54.4(a)(3).**



### **RAI 2.3.4.1-1**

#### **2.3.4.1 Steam Generator Blowdown System**

In LRA Section 2.3.4.1, the applicant identifies the steam generator blowdown system as in scope of license renewal because, in part, it contains components that are relied on during postulated fires and station blackout events, and components that are part of the environmental qualification program. In FSAR Section 10.4.8, the applicant describes the steam generator blowdown system, but does not identify how the system is credited in fire protection, station blackout, and environmental qualification.

**Provide a list of all the components and their intended function(s) within this system that are within the scope of license renewal and are relied on during postulated fires, station blackout events, or part of the environmental qualification program.**

Letter to R. Duncan, from M. Heath, dated August 20, 2007

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