



SEP 18 2007

SERIAL: HNP-07-122
10 CFR 54

U. S. Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

Subject: SHEARON HARRIS NUCLEAR POWER PLANT, UNIT NO. 1
DOCKET NO. 50-400 / LICENSE NO. NPF-63

RESPONSES TO REQUESTS FOR ADDITIONAL INFORMATION -
LICENSE RENEWAL APPLICATION - ADDITIONAL QUESTIONS
RELATED TO SCOPING AND SCREENING METHODOLOGY AND
RESULTS

- References:
1. Letter from Cornelius J. Gannon to the U. S. Nuclear Regulatory Commission (Serial: HNP-06-136), "Application for Renewal of Operating License," dated November 14, 2006
 2. Letter from Maurice Heath (NRC) to Robert J. Duncan II, "Requests for Additional Information for the Review of the Shearon Harris Nuclear Power Plant, Unit 1, License Renewal Application," dated August 20, 2007

Ladies and Gentlemen:

On November 14, 2006, Carolina Power & Light Company, doing business as Progress Energy Carolinas, Inc., requested the renewal of the operating license for the Shearon Harris Nuclear Power Plant, Unit No. 1, also known as the Harris Nuclear Plant (HNP), to extend the term of its operating license an additional 20 years beyond the current expiration date.

By letter dated August 20, 2007, the Nuclear Regulatory Commission provided requests for additional information (RAIs) concerning the HNP License Renewal Application (LRA). The enclosure to this letter provides responses to the RAIs. The responses to RAI 2.1.1.2-1 and RAI 2.3-1 indicate that changes to the LRA are required. A transmittal to document these changes will be provided at a later date. Neither this letter nor the enclosure contains any new or revised Regulatory Commitments.

Please refer any questions regarding this submittal to Mr. Roger Stewart, Supervisor - License Renewal, at (843) 857-5375.


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A126

NRR

I declare, under penalty of perjury, that the foregoing is true and correct
(Executed on **SEP 18 2007**).

Sincerely,



Thomas J. Natale
Manager - Support Services
Harris Nuclear Plant

TJN/mhf

Enclosure: Responses to Requests for Additional Information dated August 20, 2007

cc:

Mr. P. B. O'Bryan (NRC Senior Resident Inspector, HNP)
Ms. B. O. Hall (Section Chief, N.C. DENR)
Mr. M. L. Heath (NRC License Renewal Project Manager, HNP)
Ms. M. G. Vaaler (NRC Project Manager, HNP)
Dr. W. D. Travers (NRC Regional Administrator, Region II)

Responses to Requests for Additional Information dated August 20, 2007

Background

On November 14, 2006, Carolina Power & Light Company (CP&L), now doing business as Progress Energy Carolinas, Inc., requested the renewal of the operating license for the Shearon Harris Nuclear Power Plant, Unit No. 1, also known as the Harris Nuclear Plant (HNP), to extend the term of its operating license an additional 20 years beyond the current expiration date.

By letter dated August 20, 2007, the Nuclear Regulatory Commission (NRC) provided requests for additional information (RAIs) concerning the HNP License Renewal Application. This enclosure provides responses to the NRC RAIs.

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NRC 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 [sic] 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.

RAI 2.1.1.2-1 Response

Scoping relied heavily on reviews of the Final Safety Analysis Report (FSAR) and other plant documentation that constitute the Current Licensing Basis (CLB) and reviews of the Equipment Database (EDB) component quality classifications.

In using EDB component quality classifications, it was recognized that in some cases the scoping criteria of 10 CFR 54.4 would be narrower than the quality class designation shown in EDB. Therefore, in assessing the compatibility of EDB quality classifications with License Renewal scoping criteria, there were specific instances where EDB quality classifications would not be appropriate. HNP License Renewal procedures allow for the refinement of scoping results (on a case by case basis) to exclude items or quality classifications that are outside of the scoping criteria of 10 CFR 54.4 based on a functional review of a component.

It was noted during the scoping phase, that certain HNP components located in the Turbine Building and Waste Processing Building are classified in EDB as safety related. To determine if the subject components met the definition of safety related as stated in 10 CFR 54.4(a)(1), an evaluation was performed in the License Renewal 10 CFR 54.4(a)(2) Scoping Calculation. This evaluation included a review of the FSAR, Design Basis Documents, System Descriptions, Plant Operating Manual procedures, Safe Shutdown Analysis, and docketed correspondence. During this process, it was determined that the safety related quality classifications of the subject

components in EDB had been selected to ensure they were treated as important to safety. Following are summarized examples of the evaluations performed:

- *Turbine Building SSCs*

A small lower portion of the Turbine Building contains reinforced concrete mat and walls, near Column Lines 42 and 43, designed and constructed to seismic Category I requirements. This design is due to the presence of the Diesel Generator Service Water Pipe Tunnel and Class 1 electrical cable area above the pipe tunnel. This area houses safety related components and is designed and constructed to withstand the collapse of the Turbine Building concurrent with a safe shutdown earthquake. The tunnel is completely enclosed with a door at each end. Document reviews and a walkdown revealed that there are no other systems which may have an adverse spatial relationship with the safety related components associated with the tunnel and cable area.

Other components evaluated in the License Renewal 10 CFR 54.4(a)(2) Scoping Calculation were located in areas of the Turbine Building outside of the Diesel Generator Service Water Pipe Tunnel and Class 1 electrical cable area. Examples of these are:

- The Main Feedwater System feedwater regulating valves (FRV), FRV bypass valves, and associated components are located in areas of the Turbine Building that are not designed to seismic Category I requirements. The subject components are classified in EDB as safety related and have a safety class design to assure their reliability. The valves are not installed in safety grade piping. The valves are considered important to safety, but are not expected to remain functional during or after a seismic event. The FSAR states that non-seismic structures and components are those whose failure would not result in the release of significant amounts of radioactivity and would not prevent reactor shutdown or degrade the operation of Engineered Safety Features Systems. Based on this evaluation, the Main Feedwater System FRV, FRV bypass valves, and associated components do not meet the License Renewal definition of safety-related as stated in 10 CFR 54.4(a)(1). However, these components are included within the scope of License Renewal for 10 CFR 54.4(a)(2).
- Certain Main Feedwater System flow transmitters are associated with low feedwater flow as a non-primary input to the Solid State Protection System. This input is considered an anticipatory trip, and the flow elements associated with it are non-nuclear safety and are located in non-seismic piping within the Turbine Building. The low feedwater flow trip is one of several trips not required because they are not assumed to function in an accident and no credit is taken for them in the accident analysis. HNP drawings list these flow transmitters as Regulatory Guide 1.97, Category 3, variables, which are backup, not key, variables. The subject components are located in areas of the Turbine Building that are not designed to seismic Category I requirements. Based on this evaluation, the Main Feedwater System flow transmitters do not meet the License Renewal definition of safety-related as stated in 10 CFR 54.4(a)(1). However, these components are included within the scope of License Renewal for 10 CFR 54.4(a)(2).

- *Waste Processing Building SSCs*
 - The Waste Gas System decay tanks and associated piping and valves not normally or automatically isolated from the gas decay tanks are located in the Waste Processing Building. The FSAR states the most limiting waste gas accident is an unexpected and uncontrolled release to the atmosphere of the radioactive gases that are stored in one operating waste gas decay tank with maximum curie content. Two waste gas decay tanks may be connected for a short period of time to transfer tank contents only if both tanks are isolated from Waste Gas System influents and the total curie content is less than the maximum curie content specified in this FSAR section.

An analysis was performed and documented in the FSAR to define the upper limit of a gaseous release that could result from any malfunction in the Waste Gas System (such as a gas decay tank rupture). The resultant dose analysis results shown in the FSAR for the exclusion area boundary, low population zone, and the control room are within the acceptance limits established for this event. Based on this evaluation, the Waste Gas System decay tanks and associated piping and valves do not meet the License Renewal definition of safety-related as stated in 10 CFR 54.4(a)(1). However, these components are included within the scope of License Renewal for 10 CFR 54.4(a)(2).

LRA Section 2.1.1.2, Non-Safety Related Criteria Pursuant to 10 CFR 54.4(a)(2), on Page 2.1-9 discusses spatial interactions and identifies a list of structures housing safety related equipment, including the Turbine Building and the Waste Processing Building.

Since there are no 10 CFR 54.4(a)(2) spatial interactions in the Turbine Building, the LRA will be revised for clarification. On Page 2.1-9, it will be noted that in the case of the Turbine Building, the only safety related components are located in the Diesel Generator Service Water Pipe Tunnel and Class 1 electrical cable area above the pipe tunnel. The revision will also state that there are no 10 CFR 54.4(a)(2) spatial interactions in the Turbine Building. The revision will point to the Turbine Building component quality classification evaluations on Page 2.1-11 for further information.

Similarly, since there are no 10 CFR 54.4(a)(2) spatial interactions in the Waste Processing Building, the LRA will be revised for clarification. On Page 2.1-9, it will be noted that there is no safety related equipment in the Waste Processing Building. The revision will also state that there are no 10 CFR 54.4(a)(2) spatial interactions in the Waste Processing Building. The revision will also point to the Waste Processing Building component quality classification evaluations on Page 2.1-11 for further information.

NRC 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 2.1.1.2-2 Response

In the HNP License Renewal review methodology, the M-1 pressure boundary function envelops the structural/seismic support function for non-safety related "connected" piping described above. This is based on the consideration that if piping components maintain the ability to retain design pressure, then structural integrity will inherently be maintained.

The HNP basis calculation states that the M-4 structural support function is not typically applied for non-safety related "connected" piping. It further states that "connected" piping will typically be assigned the M-1 function.

Based on this, the HNP air/gas piping systems with seismically-connected piping do not require the M-4 intended function. LRA Tables 2.3.3-23, 2.3.3-24, 2.3.3-25 and 2.3.3-26 correctly identify piping that has the M-1 intended function in accordance with the HNP License Renewal review methodology.

NRC 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 2.1.2.1-1 Response

As described in LRA Subsection 2.1.1 on Page 2.1-2, the mechanical components were initially identified as supporting a system intended function in an in-scope system based on the component classification information and equipment type. Item 1 on LRA Page 2.1-21, states:

PassPort EDB uses an "equipment type" designation to catalog components into basic equipment categories.

After supplementing this information with other CLB sources, a comprehensive and bounding set of systems and components were identified as being in scope in accordance with 10 CFR 54.4. Upon further evaluation during the screening process, not all components of an equipment type could be assigned the same component level function. These components did not have component intended functions that supported the system intended function as described. Item 5 on LRA Page 2.1-22 discusses the assignment of the "no mechanical intended function."

There are three general cases where assigning "no mechanical intended function" was used for screening out these components/equipment types. They are:

1. Not Used/Temporary/Not Installed: This case includes tools and equipment, which had EDB unique identifiers, but were no longer in the plant, portable, or not used during normal plant operation.
2. No Impacts from Failure: The impacts of failure were evaluated and the failure of the component type or in some cases subcomponent type would have no adverse affect on the performance of the system intended function.
3. Covered by Civil or Electrical Function: The component type that was typically mechanical was later found to only have a civil or electrical function.

The equipment types and commodities that exemplify these cases are listed below:

Not Used/Temporary/Not Installed:

- Reactor Head Guide Studs
- Service Water Booster Pump Suction Startup Strainer elements
- Containment Integrated Leak Rate Test Equipment
- Five Carbon Dioxide System Components (No longer in use.)
- Security Diesel Day Tank Level Indicator and Root Valves
- Eleven RCS System Vacuum Fill Portable Skid Components
- Fuel Transfer Components (Fuel element container and drive unit)

No Impacts from Failure:

- Selected RCP Oil Spill Protection System Components inside the oil spill enclosure.
- Non-safety related Filter Medium in the Nitrogen supply to the Main Feedwater Isolation Valve Accumulator Tank.

- Solenoid Operated Valves (SOVs) used for venting air from Air Operated Containment Isolation Valve (CIV) Operators. (Failure of the SOV pressure boundary would result in closure of the CIV.)
- Service Air Filter Medium in supply to Essential Service Water Expansion Tank
- Essential Chilled Water Refrigerant Recovery and Transfer Subsystem Components
- Steam Turbine Stop, Throttle, Reheat, and Interceptor Valves
- High Pressure Turbine Casing
- Low Pressure Turbine Casings
- Auto Stop Trip (AST) Solenoid Valves (Failure of the AST solenoid valve pressure boundary would result in closure of the steam turbine valves)
- Emergency Diesel Starting Air Compressor Aftercooler Fans

Covered by Civil or Electrical Function:

- Reactor Head Seismic Tie Rods
- Recirculation Valve Chambers
- New and Spent Fuel Pools and Cask Loading Pool
- Integrated Head Package
- Refueling System Manipulator Crane Components
- Refueling Bridge Crane Components
- Fuel Cask Handling Crane Components
- Polar Crane Components
- Pressurizer Electric Heaters
- HVAC Electric Heaters
- Emergency Safeguard Sequencer Panel Cooling Fans
- Lightning Arrestor Straps

NRC 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 2.3-1 Response

Explanation of Components Included in Piping, Piping Components, and Piping Elements

NUREG-1801, "Generic Aging Lessons Learned (GALL)," Rev. 1, Volume 2, defines the term "Piping, piping components, and piping elements," as follows:

This general category includes various features of the piping system that are within the scope of license renewal. Examples include piping, fittings, tubing, flow elements/indicators, demineralizer, nozzles, orifices, flex hoses, pump casing and bowl, safe ends, sight glasses, spray head, strainers, thermowells, and valve body and bonnet. For reactor coolant pressure boundary components in Chapter IV that are subject to cumulative fatigue damage, this can also include flanges, nozzles and safe ends, penetrations, vessel head, shell, welds, stub tubes and miscellaneous Class 1 components, such as pressure housings.

Furthermore, NUREG-1801, Volume 2, explains the usage of the term "Piping, piping components, and piping elements," as follows:

The format and content of the aging management review (AMR) tables presented here in the GALL Report, Vol. 2, (GALL'05) have been revised to enhance its applicability to future plant license renewal applications. Several types of changes were incorporated in this revision to achieve the objective. One of these was to add material, environment, aging effect and program (MEAP) combinations established by precedents establishing strong technical justification from earlier license renewal applications (LRAs) and the corresponding NRC safety evaluation reports (SERs).

Associated with this was the simplification and generalization of terms used within these MEAP combinations to make the line items more generic and less prescriptive. As a simple example, the phrase "Piping, piping components, and piping elements" is used to replace various combinations of "piping, fittings, tubing, flow elements/indicators,

demineralizer, nozzles, orifices, flex hoses, pump casing and bowl, safe ends, sight glasses, spray head, strainers, thermowells, and valve body and bonnet."

Use of the term "Piping, piping components, and piping elements," in the HNP LRA was made to follow the guidance of NUREG-1801, Volume 2 (See Component/Commodity discussion, LRA Section 3.0, Page 3.0-3). Use of such terms to represent commodity groups makes it possible to address an entire group of components with a single evaluation. Additionally, use of standardized wording provides an LRA format that is easier to compare to NUREG-1801, Volume 2, and makes it possible to ascertain more readily whether or not a given line item in the HNP LRA corresponds with a given line item in NUREG-1801, Volume 2.

Representation in the LRA of Components Identified in RAI 2.3-1

Section 2.3.3.6 Circulating Water System	
expansion joints	Expansion joints are represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-6 and Table 3.3.2-6)
temperature elements	The Circulating Water System temperature elements are considered active and are not subject to AMR.
thermowells	Thermowells are represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-6 and Table 3.3.2-6)
Section 2.3.3.21 Emergency Diesel Generator System	
expansion joints	Expansion joints are represented in the LRA by inclusion in the component commodities "Diesel combustion air intake piping, piping components, and piping elements" and "Diesel engine exhaust piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-17 and Table 3.3.2-17)
flexible connections	No Emergency Diesel Generator System flexible connections were identified that were subject to AMR.
Section 2.3.3.27 Instrument Air System	
valves	Valves are represented in the LRA by inclusion in the component commodities "Containment isolation piping and components" and "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-23 and Table 3.3.2-23)
Section 2.3.3.28 Service Air System	
valves	Valves are represented in the LRA by inclusion in the component commodities "Containment isolation piping and components" and "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-24 and Table 3.3.2-24)
drain trap(s)	Drain trap(s) are represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-24 and Table 3.3.2-24)
closure bolting	No Service Air System closure bolting was identified in the AMR process. In scope Service Air System components were identified with threaded connections.

Section 2.3.3.29 Bulk Nitrogen Storage System	
valves	Valves are represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-25 and Table 3.3.2-25)
accumulator tank	The accumulator tank is represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-25 and Table 3.3.2-25)
Section 2.3.3.30 Hydrogen Gas System	
valves	Valves, including the excess flow check valve, are represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-26 and Table 3.3.2-26)
excess flow check valve	See above.
Section 2.3.3.18 Emergency Screen Wash System	
buried piping	Buried piping is represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-16 and Table 3.3.2-16)
Section 2.3.4.14 Turbine System	
valves	Valves are represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.4-13 - erroneously numbered Table 2.3.3-13 in the LRA - and Table 3.4.2-13) A change to the LRA will be made to correct the table number.
Section 2.3.3.37 Laundry and Hot Shower System	
piping, piping components, and piping elements	Piping, piping components, and piping elements is represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-33 and Table 3.3.2-33)
Section 2.3.3.54 Spent Fuel Cask Decontamination and Spray System	
filters	Filter housings, pumps, tanks and valves are represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-48 and Table 3.3.2-48)
pumps	See above
tanks	See above
valves	See above
Section 2.3.3.81 Mechanical Components in Electrical Systems	
detector	The Gross Failed Fuel Detection System detector is considered active and is not subject to AMR.
sample cooler	The sample cooler is represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-69B and Table 3.3.2-69)
Sections 2.3.3.6, 7, 8, 9, 10, 11, 12, 14, etc.	
valves and/or pumps	See Pump/Valve Table Below.
Section 2.3.4.4 Main Steam Dump System	
silencers	The silencers are represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.4-4 and Table 3.4.2-4)

Pump/Valve Table	
Sections 2.3.3.6 Circulating Water System	
Valves	Valves are represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-6 and Table 3.3.2-6)
Pumps	No pumps were identified subject to AMR for this system.
Sections 2.3.3.7 Cooling Tower System	
Valves	Valves are represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-7 and Table 3.3.2-7)
Pumps	No pumps were identified subject to AMR for this system.
Sections 2.3.3.8 Cooling Tower Make-Up System	
Valves	Valves are represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-8 and Table 3.3.2-8)
Pumps	No pumps were identified subject to AMR for this system.
Sections 2.3.3.9 Screen Wash System	
Valves	Valves are represented in the LRA by inclusion in the component/commodity "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-9 and Table 3.3.2-9)
Pumps	The pumps are discussed on LRA Page 2.3-65 and represented in the LRA by inclusion in the component/commodity "Fire Service Screen Wash Pumps." (Refer to LRA Table 2.3.3-9 and Table 3.3.2-9)
Sections 2.3.3.10 Main Reservoir Auxiliary Equipment	
Valves	The components that are subject to AMR consist of civil structures and commodities (See LRA Page 2.3-68); these are addressed in LRA Section 2.4.
Pumps	See above.
Sections 2.3.3.11 Auxiliary Reservoir Auxiliary Equipment	
Valves	The components that are subject to AMR consist of civil structures and commodities (See LRA Page 2.3-70); these are addressed in LRA Section 2.4.
Pumps	See above.
Sections 2.3.3.12 Normal Service Water System	
Valves	Valves are represented in the LRA by inclusion in the component commodities "Containment isolation piping and components" and "Piping, piping components, and piping elements." (Refer to LRA Table 2.3.3-10 and Table 3.3.2-10)
Pumps	The pumps are represented in the LRA by inclusion in the component commodities "Normal Service Water Pumps" and "Normal Service Water Seal & Bearing Water Booster Pump." (Refer to LRA Table 2.3.3-10 and Table 3.3.2-10)
Sections 2.3.3.14 Component Cooling Water System	
Valves	Valves are represented in the LRA by inclusion in the component commodities "Containment isolation piping and components" and "Piping, piping components, and piping elements, and tanks." (Refer to LRA Table 2.3.3-12 and Table 3.3.2-12)
Pumps	The main pumps are represented in the LRA by inclusion in the component commodities "Component Cooling Water Pumps." The smaller Holdup Tank and Drain Tank Transfer Pumps are represented by the component/commodity "Piping, piping components, and piping elements, and tanks." (Refer to LRA Table 2.3.3-12 and Table 3.3.2-12)
<p>Conclusion Pumps/Valves Inclusion of a component in a component/commodity group was typically performed in one of three ways:</p>	

1. Where it is desired to identify an important component by name, such as the Component Cooling Water Pumps, that component is included in a unique component/commodity group; or
2. Valves associated with the containment isolation function are included within the component/commodity "Containment isolation piping and components;" or
3. All other pumps and/or valves were typically included in the component/commodity "Piping, piping components, and piping elements."

In summary, the term "Piping, piping components, and piping elements," for a given system in the HNP LRA represents piping system components that are within the scope of license renewal, as defined above.

NRC 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 2.3.3.12-1 Response

Both statements are correct. Per Note (3) in FSAR Table 9.2.1-1, two NSW pumps would be used when accelerated shutdown is desired. The description of the NSW system in LRA Subsection 2.3.3.12 was not meant to identify every possible configuration of the plant as described in the FSAR. The LRA subsection provides the normal minimum requirements for NSW to support safe shutdown requirements in case of fire. Since either NSW pump may be used to meet these needs, both NSW pumps are included in the AMR for the Normal Service Water System (See License Renewal Scoping Drawing 5-G-0048-LR).

NRC 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 2.3.3.13-1 Response

The Emergency Service Water Pumps component/commodity group in LRA Table 2.3.3-11 and LRA Table 3.3.2-11 represents the Emergency Service Water pumps and the Emergency Service Water Booster pumps. See Plant-Specific Note 323 in AMR Table 3.3.2-11 (Page 3.3-178). The Note describes the constituents of this AMR line item as follows:

The component group in this line includes the main Emergency Service Water pumps and the booster pumps. This line only applies to the booster pumps, which are located in the RAB.

NRC 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 2.3.3.16-1 Response

The drawing referenced in this question should be 8-G-0499, rather than 5-G-0499. Pipe section 3CX4-71SB-1 shown on 8-G-0499-LR should be highlighted. This pipe line is included in

component/commodity "Piping, piping components, piping elements and tanks" in LRA Table 2.3.3-14. Since the piping class is continuous and the locations are the same as the adjacent sections of highlighted piping there is no impact on the AMR results on AMR Table 3.3.2-14.

NRC 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 2.3.3.21-1 Response

This component/commodity should read "Piping, piping components, and piping elements." Refer to the corresponding AMR table, LRA Table 3.3.2-17 on Page 3.3-219, where this component/commodity is written correctly.

NRC 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 2.3.3.22-1 Response

The cathodic protection for the Diesel Generator Fuel Oil Storage and Transfer System buried piping is included in LRA Table 2.2-3. Cathodic protection is used in addition to coatings to prevent corrosion in the buried yard piping. This is a non-safety related function and does not meet any of the License Renewal scoping criteria listed in 10 CFR 54.4(a)(1)-(3). Consequently, this system is not in the scope of License Renewal.

NRC 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 2.3.3.22-2 Response

Pipe vents, line numbers 3FO1-237SA-1 and 3FO1-238SB-1 shown on 5-G-0133-LR should be highlighted. These lines are included in component/commodity "Piping, piping components, and piping elements" in LRA Table 2.3.3-18. Since the piping is the same class and is located in the same building as the highlighted piping to which it is connected, there are no impacts on the results shown in the associated AMR Table 3.3.2-18.

NRC 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 2.3.3.28-1 Response

Valve 7SA-V79-1 is within the scope of License Renewal and is depicted on scoping drawing 5-G-0300-LR near Containment Penetration M-41. This valve should have been highlighted on drawing 5-G-0300-LR as within the scope of License Renewal for 10 CFR 54.4(a)(2) criterion since it is part of the connected piping needed for seismic continuity.

Valve 7SA-V79-1 is included in the component/commodity group "Piping, piping components, and piping elements" shown on LRA Table 2.3.3-24 Component/Commodity Groups Requiring Aging Management Review and Their Intended Functions: Service Air System.

NRC 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 2.3.3.28-2 Response

License Renewal scoping drawings have been developed to facilitate NRC staff review. These drawings depict mechanical components that support system intended functions and are within the scope of License Renewal.

In LRA Subsection 2.3.3.28, the Service Air System License Renewal scoping drawing is identified as 5-G-0300-LR. This drawing is the primary drawing identifying components for the Service Air System. For any given system, it was not the intent of the License Renewal review to cross reference every License Renewal scoping drawing to every in-scope mechanical component of that system. In the case of the Service Air System, there are other License Renewal scoping drawings that identify a small number of Service Air System components. Scoping drawings 8-G-0498-S02-LR and 8-G-0499-S02-LR mainly depict Essential Services Chilled Water System components and are examples of drawings with a relatively small number of Service Air System components. These two drawings are considered secondary drawings for the Service Air System and are not required by the HNP process to be listed in LRA Subsection 2.3.3.28.

NRC 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 2.3.3.34-1 Response

In-line pump strainers and the surrounding piping identified 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 are not the system strainers indicated in LRA Tables 2.3.3-30 and 3.3.2-30 that are subject to AMR.

Radioactive Floor Drains System strainers identified in LRA Subsection 2.3.3.34, LRA Table 2.3.3-30, and LRA Table 3.3.2-30 include strainers such as: a) in-line pump strainers depicted on 5-G-0816-LR at locations K-11, 14 with a pressure boundary required intended function, b) sump pump integral strainers depicted on 5-G-0187-LR at locations L-10, 15 with both a pressure boundary and filtration required intended function, and c) sump pump integral strainers depicted on 5-G-0184-LR at locations I-16, 18 with both a pressure boundary and filtration required intended functions. The referenced sump pumps are mounted vertically with the strainer attached to the bottom of the pump volute.

NRC 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 2.3.3.43-1 Response

The piping downstream of the oil water separator is not needed to support the intended function of draining fire fighting water. Floor drains are designed to accommodate any water discharged

from fire suppression equipment, and prevent damage to safety-related equipment. These floor drains are highlighted on License Renewal scoping drawings 5-G-133-LR, for the Diesel Generator Building floor drains, and 5-G-485-LR for the Diesel Fuel Oil Storage Tank Building floor drains at location H-12.

Highlighting from these floor drains is extended from the subject building sumps to the oil water separator. As there is no safety-related equipment located in the proximity of the oil-water separator, this highlighting is considered sufficient to identify the components required to support the intended function of draining fire fighting water to prevent damage to safety-related equipment.

The HNP methodology treats the piping downstream of the oil water separator as an interfacing system that is secondary to the portion of the system that supports the FP intended function. This downstream interfacing system does not need to be included in the scope of License Renewal based on considerations described in NEI 95-10. As discussed in NEI 95-10, Section 3.1.3, in regards to SSCs relied on to demonstrate compliance with certain specific commission regulations:

Mere mention of a system, structure or component in the analysis or evaluation does not constitute support of a specified regulatory function. An applicant should rely on the plant's CLB, plant-specific experience, industry wide operating experience, as appropriate and existing plant-specific engineering evaluations to determine the appropriate systems, structures and components in this category. Consideration of hypothetical failures that could result from system interdependencies that are not part of the plant's CLB and that have not been previously experienced is not required.

NEI 95-10, Rev. 6, has been endorsed by NRC Regulatory Guide 1.188, Revision 1.

NRC 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 2.3.3.45-1 Response

HNP License Renewal System Scoping is described in LRA Subsection 2.1. In particular, it is stated on LRA Page 2.1-2:

The initial step in the process is to compile a list of SSCs for scoping. Major structures and plant components such as pumps, valves, tanks, heat exchangers, and instruments at HNP are assigned unique component numbers that are maintained in a controlled database called the PassPort Equipment Database (PassPort EDB or EDB). Each HNP system is identified in EDB by a unique system number, and each component in a given system is assigned a unique EDB component identification number.

Although, conceptually, the Secondary Waste Treatment System may be considered a subsystem of the Liquid Waste Processing System; the Secondary Waste Treatment System has a unique system number assigned to it by PassPort EDB. This number is different than the system number assigned to the Liquid Waste Processing System. Based on this methodology, the Secondary Waste Treatment System is treated as a different system than the Liquid Waste Processing System.

HNP License Renewal System Scoping and identification of system intended functions was performed on each system identified in EDB with a unique system number. Since the Secondary Waste Treatment System does not process or receive inputs from systems associated with fire protection, the Secondary Waste Treatment System does not have a system intended function associated with NRC regulations for fire protection, 10 CFR 50.48, in accordance with 10 CFR 54.4(a)(3).

NRC 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.

RAI 2.3.4.1-1 Response

Steam Generator Blowdown System components relied on during postulated fires and station blackout events consist of components associated with Containment Isolation Valves (CIVs).

Containment isolation components are depicted on License Renewal scoping drawing 5-G-0051-LR near Containment Penetrations M-51, M-52, and M-53.

LRA Table 2.3.4-1 Component/Commodity Groups Requiring Aging Management Review and Their Intended Functions: Steam Generator Blowdown System identifies the intended function for the component/commodity Containment isolation piping and components as M-1, Pressure Boundary, described in LRA Table 2.0-1.

The Steam Generator Blowdown System contains certain electrical equipment (e.g., CIV position switches) required to be environmentally qualified to mitigate a design basis accident. Electrical equipment that is part of the Environmental Qualification (EQ) Program is maintained on the EQ Master List which resides in PassPort EDB. Electrical equipment on the EQ Master List satisfies the scoping criteria in 10 CFR 54.4(a)(3). Refer to LRA Subsection 2.1.1.3.2 for a discussion of Environmental Qualification.