

July 18, 2002

Mr. J. A. Stall
Senior Vice President
Nuclear and Chief Nuclear Officer
Florida Power and Light Company
P. O. Box 1400
Juno Beach, FL 33408-0420

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF
SECTIONS 2.0, 3.0, 4.0, AND APPENDIX B OF THE APPLICATION FOR
RENEWED OPERATING LICENSES FOR ST. LUCIE UNITS 1 AND 2

Dear Mr. Stall:

By letter dated November 29, 2001, Florida Power and Light Company (FPL), submitted for Nuclear Regulatory Commission (NRC) review an application, pursuant to Title 10, Part 54, of the *Code of Federal Regulations* (10 CFR Part 54), to renew the operating licenses for the St. Lucie Nuclear Plant, Units 1 and 2. The NRC staff is reviewing the information contained in this license renewal application (LRA) and has identified, in the enclosure, areas where additional information is needed to complete its review. Specifically, the enclosed requests for additional information concern the following sections of the LRA:

- Sec. 2.2: Plant Level Scoping Results
- Sec. 2.3: Scoping and Screening Results – Mechanical
- Sec. 2.4: Scoping and Screening Results – Structures
- Sec. 2.5: Scoping and Screening Results – Electrical and I&C Systems
- Sec. 3.1: Aging Management Review (AMR) of Reactor Coolant Systems
- Sec. 4.6.1: Time-Limited Aging Analysis (TLAA) of Leak-Before-Break
- Sec. 4.6.4: TLAA of Alloy 600 Instrument Nozzle Repairs
- Sec. B.3.1.2: Galvanic Corrosion Susceptibility Inspection Program
- Sec. B.3.2.1: Alloy 600 Inspection Program
- Sec. B.3.2.5: Chemistry Control Program
- Sec. B.3.2.14: Systems and Structures Monitoring Program

J.A. Stall

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Please provide a schedule by letter or electronic mail for submitting your response within 30 days of the receipt of this letter. Additionally, the staff would be willing to meet with FPL prior to the submittal of the response to clarify its requests for additional information.

Sincerely,

/RA/

Noel Dudley, Senior Project Manager
License Renewal and Environmental Impacts Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket Nos. 50-335 and 50-389

Enclosure: As stated

cc w/encl: See next page

J.A. Stall

- 2 -

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REQUEST FOR ADDITIONAL INFORMATION
ST. LUCIE UNITS 1 AND 2
LICENSE RENEWAL APPLICATION

The staff of the U.S. Nuclear Regulatory Commission (NRC) met with representatives of Florida Power and Light Company (FPL) on June 10–11, 2002, to discuss draft requests for additional information (RAIs) concerning the license renewal application (LRA) for St. Lucie Units 1 and 2. The NRC staff and FPL representatives also held teleconferences on June 20 and 26, and July 1, 2002, to continue their discussions regarding the draft RAIs. On the basis of these discussions, the staff is issuing the following RAIs.

The staff requests that FPL provide a schedule for submitting its response within 30 days of the receipt of these RAIs. The staff is willing to meet with FPL prior to the submittal of the response to provide clarify its requests for additional information.

2.2 PLANT LEVEL SCOPING RESULTS

RAI 2.2 - 1

The NRC staff is unable to find descriptions of the air blower or sluice water in the updated final safety analysis reports (UFSARs). Table 2.2-1 of the LRA lists these systems as not being within the scope of license renewal. As such, the staff is unable to determine with reasonable assurance that these systems do not have intended functions that meet the criteria of Title 10, Section 54.4, of the *Code of Federal Regulations* (10 CFR 54.4). Provide a reference to the UFSAR section that describes these systems, or provide a summary description of their intended functions.

2.3 SCOPING AND SCREENING RESULTS — MECHANICAL SYSTEMS

2.3.2 Engineered Safety Features Systems

RAI 2.3.2 - 4

On page 6.2-36 of the Unit 2 UFSAR, the applicant states that “blowout panels are provided on the duct risers between the fan coolers and ring header to attenuate high-pressure transmission from inside the secondary shield wall through the duct.” Similar blowout panels are also described as components of the containment cooling system on page 6.2-50 of the Unit 1 UFSAR. However, blowout panels are not identified as a component or commodity group in Table 3.2-1 of the LRA. The staff believes that the blowout panels perform a safety-related intended function and, as such, should be within the scope of license renewal and subject to an aging management review (AMR). Justify why the blowout panels are considered to be outside the scope of license renewal or are not subject to an AMR.

RAI 2.3.2 - 5

Figure 6.2-46 of the Unit 1 UFSAR shows drum-type air outlets (at numerous locations) as components of the containment cooling system, but these outlets were neither identified in LRA

Table 3.2-1 nor shown on license renewal boundary drawing 1-HVAC-01. It appears that these components are passive and long-lived and, as such, should be within the scope of license renewal and subject to an AMR. Justify why these components are considered to be outside the scope of license or are not subject to an AMR.

RAI 2.3.2 - 6

Figure 6.2-46 of the UFSARs for Units 1 and 2 shows gravity dampers (at numerous locations) as components of the containment cooling system. The housings for these components were neither identified in LRA Table 3.2-1 nor shown on license renewal boundary drawings 1-HVAC-01 and 2-HVAC-01. It appears that these component housings are passive and long-lived and, as such, should be within the scope of license renewal and subject to an AMR. Justify why the gravity dampers are considered to be outside the scope of license or are not subject to an AMR.

2.3.3 Auxiliary Systems

RAI 2.3.3 - 1

Unit 1 license renewal boundary drawing 1-CCW-01 shows connections to temporary air conditioning chillers at four locations (D1, C1, C2, and C3). These chillers are shown as not being within the scope of license renewal; however, two of them are connected to essential loop A and two are connected to essential loop B. These chillers and their intended functions are not described in Section 9.2.2 of the Unit 1 UFSAR, which discusses the component cooling water system. Therefore, the staff is unable to verify that these chillers do not have an intended function that would meet the requirements of 10 CFR 50.54(a). Justify why these components are considered to be outside the scope of license renewal or are not subject to an AMR.

RAI 2.3.3 - 2

Table 3.3-4 of the LRA does not list certain diesel generator and support system components and their housings, which are identified below. Although the license renewal boundary drawings, which are cited below, identify them as being within the scope of license renewal. It appears that these components are passive and long-lived and, as such, should be within the scope of license renewal and subject to an aging management review. Justify why these components are excluded from Table 3.3-4.

The fuel oil system components that were omitted are the duplex strainers at location B4 of drawings 1-EDG-03 and 1-EDG-06, and at location G4 of drawings 1-EDG-02 and 1-EDG-05.

The lube oil system components and housings that were omitted are as follows:

- Immersion heaters at location C3 of drawings 1-EDG-02 and 1-EDG-05, location E5 of drawings 1-EDG-03 and 1-EDG-06, locations D6 and E5 of drawings 2-EDG-02 and 2-EDG-05, and locations D3 and E2 of drawings 2-EDG-03 and 2-EDG-06
- Y-strainers and a lube oil strainer at locations B4 and D5 of drawings 1-EDG-02 and 1-EDG-05, locations D3 and G4 of drawings 1-EDG-03 and 1-EDG-06, locations D3 and

H3 of drawings 2-EDG-02 and 2-EDG-05, and locations C3 and E4 of drawings 2-EDG-03 and 2-EDG-06

RAI 2.3.3 - 3

The NRC staff is unable to identify the suppression systems for the cable spreading rooms (Unit 1-Halon 1301 and Unit 2-Preaction System) on the license renewal boundary drawings. Identify where these suppression systems are on a drawing or provide a description of the systems.

RAI 2.3.3 - 4

The spent fuel pool cooling systems are acceptable, based in part on the diversity of makeup water sources to the spent fuel pool. At Unit 1, the makeup water sources include the refueling water storage tank and three other water storage tanks. At Unit 2, makeup to the fuel pool is also provided from the refueling water tank via the refueling water pool purification pump and piping. The Unit 1 and 2 UFSARs reference multiple makeup sources; however, license renewal boundary drawings 1-SFP-01 and 2-SFP-01 do not show the piping and valves associated with the makeup line from the refueling water storage tanks to be within the scope of license renewal. The refueling water storage tanks are within the scope of license renewal. Justify why the piping and valves are considered to be outside the scope of license renewal or are not subject to an AMR.

RAI 2.3.3 - 5

Table 3.3-8 of the LRA does not list certain instrument air system components and/or their housings, which are identified below. Although the license renewal boundary drawings, which are cited below, identify them as being within the scope of license renewal. It appears that these components are passive and long-lived and, as such, should be within the scope of license renewal and subject to an AMR. Justify why these components are excluded from Table 3.3-8.

- Oil/water separator (at location F6 of drawing 1-IA-06)
- Moisture separators (at locations C3 and E3 of drawing 1-IA-06, and locations B3 and D3 of drawing 2-IA-04)
- Oil coolers (at locations F2 and H2 of drawing 2-IA-04)

RAI 2.3.3 - 6

License renewal boundary drawing 1-IA-06 indicates that the Unit 1 instrument air dryers and associated equipment are within the scope of license renewal. However, drawing 2-IA-04 indicates that the Unit 2 instrument air dryers are outside the scope of license renewal.

In Section 9.3.1 of the Unit 1 and 2 UFSARs, the applicant discusses the ability to cross-connect the Unit 1 and Unit 2 instrument and station air systems. On the basis of the information provided, the staff cannot determine, with reasonable assurance, that the

instrument air dryers for Unit 2 should not be within the scope of license renewal and subject to an AMR. Justify why the Unit 2 instrument air dryers are considered to be outside the scope of license renewal or are not subject to an AMR.

RAI 2.3.3 - 7

In Section 9.3.1.2 of the Unit 1 and 2 UFSARs, the applicant states that each unit has four air compressors. At both units, air compressors 1C and 1D are each capable of full-load capacity and are used for normal operation, while air compressors 1A and 1B have only a partial-load capacity. On license renewal boundary drawing 2-IA-04 at locations F2 and H2, the applicant indicates that the Unit 2 instrument air compressors 2C and 2D are within the scope of license renewal. On drawing 1-IA-06 at locations F2 and H2, the applicant indicates that the Unit 1 instrument air compressors 1C and 1D are outside the scope of license renewal. On the basis of the information provided, the staff cannot determine, with reasonable assurance, whether all four air compressors for Unit 1 should be within the scope of license renewal and subject to an AMR. Justify why two of the Unit 1 air compressors are considered to be outside the scope of license renewal or are not subject to an AMR.

RAI 2.3.3 - 8

The boundary of the portion of the instrument air system that is within the scope of license renewal ends at valves that are shown as normally open (see license renewal boundary drawing 1-IA-03 at locations C5, C7, D5, and H6; drawing 1-IA-05 at locations A2 and A5; and drawing 2-IA-04 at location C5). Failure of the downstream piping may affect the pressure boundary intended function. In Section 2.3.3.8 of the LRA, the applicant states that this approach is acceptable because sufficient time exists to close the open valves for the station blackout and fire scenarios for which this system is needed.

Provide additional information to support the basis for this determination. For example, discuss the steps in the station blackout and fire procedures for closing the valves, the amount of time required to complete these steps, and the availability of sufficient air inventory if the valves are not closed.

RAI 2.3.3 - 9

In Section 2.3.3.9 of the LRA, the applicant states that the intake cooling water system provides a safety-related makeup source for spent fuel pool cooling. It appears that the temporary hoses shown at location D7 on license renewal boundary drawings 1-ICW-01 and 2-ICW-01 for Units 1 and 2, respectively, are required to perform this spent fuel pool makeup intended function and, therefore, are within the scope of license renewal. Furthermore, it appears that these components are passive and long-lived and, therefore, should be subject to an AMR. However, these components are not listed in Table 3.3-9 of the LRA. Justify why the temporary hoses are excluded from Table 3.3-9 of the LRA.

RAI 2.3.3 - 10

In LRA Section 2.4.2.10, "Intake Structures," the applicant states that water enters each intake structure through four submerged openings and passes through the stationary and traveling

screens before entering the rear of the intake structure where the pumps are located. It appears that these screens perform an intended function by preventing debris and organisms from reaching and causing the failure of the safety-related intake cooling water pumps and strainers. As such, these screens would be within the scope of license renewal and subject to an AMR. The staff was unable to locate these components either in LRA Table 3.3-9 for the intake cooling water system, or in Table 3.5-11 for the intake structure. Justify why the traveling screens are considered to be outside the scope of license renewal or are not subject to an AMR.

RAI 2.3.3 - 11

The miscellaneous bulk gas supply (MBGS) system is common to both Units 1 and 2. In Section 2.3.3.10 of the LRA, the applicant states that portions of the MBGS system are within the scope of license renewal. Table 3.3-10 of the LRA identifies those MBGS system structures and components that are within the scope of license renewal and subject to an AMR. However, because of the limited description of the MBGS system provided in Section 9.3.1 of the Unit 1 UFSAR, the staff is unable to determine, with reasonable assurance, that the applicant has correctly identified the components that are within the scope of license renewal. The staff is also unable to identify which of the components shown on the four license renewal boundary drawings referenced in Table 2.3-3 (1-SAMP-02, 2-SAMP-03, 2-CS-01, and 2-IA-05) belong to the MBGS system and whether other components not shown on any of the referenced drawings are required for the system to perform its intended function.

Provide additional information concerning the design and intended functions of the MBGS system. Clarify the depiction of the MBGS system in the referenced drawings, and identify which specific components are within the scope of license review.

RAI 2.3.3 - 12

The boundary of the portion of the primary makeup water system that is within the scope of license renewal ends at valves that are shown as normally open (see license renewal boundary drawing 2-PW-01 at locations H4 and H5). Failure of the downstream piping may affect the pressure boundary intended function. In LRA Section 2.3.3.11, "Primary Makeup Water," the applicant states that this approach is acceptable because Unit 2 primary makeup water is only required in the event of a fire in the Unit 2 containment or Unit 2 fuel handling building, and the open boundary valves are closed for these fire scenarios.

Provide additional information to support the basis for this determination. For example, discuss the steps in the fire procedures for closing the valves, the amount of time required to complete these steps, and the availability of sufficient water inventory if the valves are not closed.

RAI 2.3.3 - 13

On license renewal boundary drawing 1-TCW-01, the licensee indicates the components that are within the scope of license renewal. However, Table 3.3-14 of the LRA does not include all of these components. Justify why the following components are excluded from Table 3.3-14:

- Instrument air aftercoolers shown on license renewal boundary drawing 1-TCW-01 at locations A4, C4, and D4.
- Jackets for the service air compressor shown at location B4 on drawing 1-TCW-01
- Instrument air compressors 1A and 1B shown at locations B4 and D4 on drawing 1-TCW-01

If these components were included in Table 3.3-14 under the category of “piping/fittings,” clarify why Table 3.3-14 does not list a heat transfer intended function for these components.

RAI 2.3.3 - 14

Clarify the intended support function of the Unit 1 turbine cooling water system that led to the determination that only the Unit 1 turbine cooling water system is within the scope of license renewal. Confirm that the Unit 2 turbine cooling water system does not perform a similar intended function.

2.3.3.15 Ventilation

RAI 2.3.3.15 - 1

The ventilation system license renewal boundary drawings, which are identified below, show damper components for both Units 1 and 2; however, LRA Table 3.3-15 does not identify the housings for these dampers. It appears that these component housings are passive and long-lived and, as such, should be within the scope of license renewal and subject to an AMR. Justify why these components are considered to be outside the scope of license renewal or are not subject to an AMR.

- Unit 1 on license renewal boundary drawing 1-HVAC-01, Rev. 0
 - Hot shutdown panel housing for fans HVS-9 and HVE-35 at locations E7 and D7
 - Unlabeled damper housing at locations E7
- Unit 1 on license renewal boundary drawing 1-HVAC-02, Rev. 0
 - Control room cooling system damper housings D-17 at location B5, D-18 at location B6, D-19 at location C6, GD-5 at location B6, GD-6 at location C6, D-20 at location A7, D-21 at location B7, D-22 at location C7, GD-7 at location A8, GD-8 at location B8, GD-9 at location C8, D-29A at location C4, D-29B at location C5, D-41 at location C8, D-42 at location C7, and unlabeled at locations C8 and D8
 - Control room cooling system fan housings HVE-13A at location B6; HVE-13B at location C6; HVA-3A, 3B, and 3C at locations A7, B7, and C7, respectively; HVA-10A at location C8; and 10B at location D8

- Control room cooling system charcoal adsorber housings for heating, ventilation and air conditioning (HVAC) units HVE-13A and 13B at location B5
- Emergency core cooling system area ventilation fan housings HVS-4A and 4B at locations D2 and E2, and HVE-9A and 9B at locations D5 and E5
- Emergency core cooling system area ventilation damper housings L-8 at location E1; GD-3 at location D2; GD-4 at location E2; D-1, D-2, D-3, and D-4 at location D3; D-8A and D-8B at location E3; GD-12 at location E3; D-7A and D-7B at location F3; D-9A and D-9B at location D4; D-12A and D-12B at location E4; D-5A and D-5B at location E4; D-6A and D-6B at location F4; D-13 and D-14 at location D4; D-15 and D-16 at location E4; L-7A at location D5; and L-7B at location E5
- Housings for battery room exhaust fans RV-1 and RV-2 at location G3, and an unlabeled gravity damper housing at location G3
- Housings for electrical equipment room fans HVS-5A and HVS-5B at locations G5 and H5, RV-3 and RV-4 at locations G5 and G6, and HVE-11 and HVE-12 at locations G6 and H6
- Housings for electrical equipment room dampers L-11 at location G4, GD-1 and GD-2 at location G5, unlabeled dampers at locations G5 and G6, and L-9 and L-10 at locations G6 and H6
- Housings for shield building ventilation fans HVE-6A and 6B at locations D7 and F7
- Housings for shield building ventilation dampers GD-10 and D-23 at location D7, and GD-11 and D-24 at location F7
- Housings for outdoor air conditioning units ACC-3A, ACC-3B, and ACC-3C at locations A7, B7, and C7
- Housings for air handling units HVA-10A and HVA-10B at locations C8 and D8
- Unit 2 on license renewal boundary drawing 2-HVAC-01, Rev. 0
 - Intake structure exhaust fan housings 2HVE-41A and 41B at location F5
 - Housings for unlabeled intake structure pressure dampers at location F5
- Unit 2 on license renewal boundary drawing 2-HVAC-02, Rev. 0
 - Control room cooling system damper housings D-17A at location A3; D-17B, D-20, D-21, and D-22 at location C3; D-18 at location A4; D-19 at location B4; GD-5 at location A4; GD-6 at location B4; unlabeled at locations A5, B5, and C5; GD-7 at location A6; GD-8 at location B6; GD-9 at location C6; DPR-25-2 at

- location A6; DPR-25-4 at location B6; DPR-25-3 at location C6; D39 at location C5; and D40 at location D5
- Control room cooling system fan housings 2HVE-13A at location A4 and 2HVE-13B at location B4
- Housings for air handling unit fans 2HVA/ACC-3A at location A6, 2HVA/ACC-3B at location B, and 2HVA/ACC-3C at location C6
- Control room cooling system charcoal adsorber housings for HVAC units 2HVE-13A and 13B at locations A4 and B4
- Emergency core cooling system area ventilation fan housings 2HVS-4A and 4B at locations D2 and E2, and 2HVE-9A and 9B at locations D5 and E5
- Emergency core cooling system area ventilation damper housings 2L-8 at location E1; unlabeled at locations D2 and E2; D-1, D-2, D-3, and D-4 at location D3; GD-12 at location E3; D-7B at location F3; unlabeled at location F3 (total of 3); D-9A and D-9B at location D4; D-12A and D-12B at location E4; D-13 at location D4; D-15 at location E4; D-14 at location D5; D-16 at location E5; 2L-7A at location D7; and 2L-7B at location E7
- Housings for battery room exhaust fans RV-1, RV-2, RV-3, and RV-4 at location H2, and unlabeled damper at location G2
- Housings for electrical equipment room fans 2HVS-5A and 5B at locations G3 and H3, and 2HVE-11 and 12 at location H4
- Housings for electrical equipment room dampers 2L-11 at location G3, GD-1 and GD-2 at locations G3 and H3, 2FDPR-25-123 and 2FDPR-25-119 at location G4, and GD-19 and GD-20 at locations G4 and H4
- Unit 2 on license renewal boundary drawing 2-HVAC-03, Rev 0
 - Fuel handling building ventilation damper housings D-29 and D-30 at location B2, D-33 and D-34 at location C2, D-31 and D-32 at location B4, D-35 and D-36 at location C4
 - Housings for shield building ventilation fans 2HVE-6A and 6B at locations D6 and F6
 - Housings for shield building ventilation dampers GD-10 at location D6, D-23 at location D7, GD-11 at location F6, and D-24 at location F7

RAI 2.3.3.15 - 2

The ventilation systems license renewal boundary drawings, which are identified below, show system filters for both Units 1 and 2; however, LRA Table 3.3-15 does not identify the media for

these filters. It appears that these system filters are passive and may be long-lived. Identify whether the media for these system filters was excluded from the scope of license renewal on the basis that these media components are periodically replaced and, if so, identify the replacement interval.

If the filter media was excluded because it is routinely replaced on condition, describe the plant-specific monitoring program and the specific performance standards and criteria for replacement. If neither of those replacement conditions apply, justify why the filter media is considered to be outside the scope of license renewal or are not subject to an AMR.

Unit 1, on license renewal boundary drawing 1-HVAC-01, Rev. 0, media for the miscellaneous ventilation filters at locations E7.

- Unit 1 on license renewal boundary drawing 1-HVAC-02, Rev. 0
 - Control room cooling system filter media for HVAC units HVA-3A, 3B, and 3C at locations A7, B7, and C7
 - Control room cooling system high-efficiency particulate air (HEPA) filter media and charcoal adsorber media for HVAC units HVE-13A and 13B at location B5
 - Media for emergency core cooling system area ventilation prefilter(s) at location E1, HEPA filters at locations D4 and E4, and charcoal adsorbers at locations D5 and E5
 - Media for the electrical equipment room filters at location G4
 - Media for the four shield building ventilation system HEPA filters at locations D7 and F7, and two charcoal adsorbers at locations D7 and F7
- Unit 2 on license renewal boundary drawing 2-HVAC-02, Rev. 0
 - Control room cooling system filter media for HVAC units 2HVA/ACC-3A, 3B, and 3C at locations A5, B5, and C5
 - Control room cooling system prefilter media, HEPA filter media, and charcoal adsorber media for HVAC units 2HVE-13A and 13B at locations A4 and B4
 - Media for emergency core cooling systems area ventilation prefilters at location E1, HEPA filters at locations D5 and E5, and charcoal adsorbers at locations D5 and E5
 - Media for the electrical room filters at location G3
 - Media for the four shield building ventilation system HEPA filters at locations D4, D5, F4, and F5, and two charcoal adsorbers at locations D5 and F5

RAI 2.3.3.15 - 3

Table 3.3-15 of the LRA does not list certain components, which are listed below, although the components are shown on the license renewal boundary drawings (cited below) as being within the scope of license renewal. Justify why these components are excluded from Table 3.3-15.

- Unit 1 on license renewal boundary drawing 1-HVAC-01, Rev. 0 a screen for the hot shutdown panel ventilation outside air inlet at location E7
- Unit 1 on license renewal boundary drawing 1-HVAC-02, Rev. 0
 - Direct expansion cooling coils and coil housings for indoor HVAC units HVA-3A, 3B, and 3C, at locations A7, B7, and C7
 - Technical support center exhaust damper EHC-1 at location D7 and EHC-2 at location D8
 - Shield building ventilation system electrical heating coils and housings EHC-HVE-6BZ and EHC-HVE-6AI at location D6, and EHC-HVE-6AZ and EHC-HVE-6BI at location F6
 - Shield building ventilation system demister housings at locations D6 and F6
 - Emergency core cooling system ventilation exhaust system components and housings downstream of the exhaust fans HVE-9A and HVE-9B at locations D-5 and E-5
- Unit 2 on license renewal boundary drawing 2-HVAC-02, Rev. 0 direct expansion cooling coils and coil housings for HVAC units 2HVA/ACC-3A, 3B, and 3C at locations A5, B5, and C5
- Unit 2 on license renewal boundary drawing 2-HVAC-03, Rev. 0
 - Shield building ventilation system electrical heating coils and housings EHC-2HVE-6AI at location D3, EHC-2HVE-6BZ at location D4, EHC-2HVE-6BI at location F4, and EHC-2HVE-6AZ at location F3
 - Shield building ventilation system demister housings at locations D3 and F3
- Unit 2 – not shown on a license renewal boundary drawing, screened openings and associated intake structure ductwork (as identified in Section 9.4.6.2 of the Unit 2 UFSAR)

RAI 2.3.3.15 - 4

Many of the symbols used for HVAC system components in license renewal boundary drawings 1-HVAC-01, 2-HVAC-01, 1-HVAC-02, 2-HVAC-02, and 2-HVAC-03 are not defined on the "General Notes and Legend" Drawings 1-NOTES-01 and 2-NOTES-01. Clarify the notes and legend drawing(s) that define ECCS ventilation exhaust system components and housings downstream of the exhaust fans HVE-9A and HVE-9B at locations D-5 and E-5 on drawing 1-HVAC-02.

RAI 2.3.3.15 - 5

In order to comply with the requirements of General Design Criterion (GDC) 19, as specified in Appendix A to 10 CFR Part 50, a control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions including loss-of-coolant accidents. Typically, a main control room envelope (MCRE) is established to maintain habitable environment within which main control room operators can take actions to operate the nuclear power unit safely.

Describe the areas that constitute the MCRE for St. Lucie Units 1 and 2. Verify that all control room ventilation system components inside and/or outside the MCRE that are relied on to perform safety-related functions, are identified as being within the scope of license renewal and subject to an AMR. These system components should include, but not be limited to, the housings of air filtration unit components including demisters; heaters; prefilters; HEPA filters and adsorbers; housings of air handling units and fan coil units; housings of fire dampers and control dampers; housings of air intakes and louvers; and housings of exhaust fans and associated supply, return, and exhaust ductwork. Justify why any of these components are considered to be outside the scope of license renewal or are not subject to an AMR.

RAI 2.3.3.15 - 6

In Section 2.3.3.15 of the LRA, the applicant states that the miscellaneous ventilation system provides ventilation for the Unit 1 computer room and the Unit 1 hot shutdown panel room. However, the license renewal boundary drawings do not show a separate ventilation system for the computer room. For example, drawing 1-HVAC-02 (at locations C8 and D8) shows a ventilation supply line to the Unit 1 computer room from the Unit 1 control room ventilation system. Clarify why computer room ventilation is considered to be a separate subsystem under miscellaneous ventilation.

RAI 2.3.3.15 - 7

License renewal boundary drawing 1-HVAC-02, Rev. 0, does not identify the components and/or housings, which are listed below, as being within the scope of license renewal, although these components and/or housings support the intended function of the control room ventilation system to comply with the requirements of GDC 19, as specified in Appendix A to 10 CFR Part 50. Justify why the following components and housings are considered to be outside the scope of license renewal and not subject to an AMR:

- Piping, valves, and flexible connections that comprise the refrigerant lines to and from the outdoor air conditioning compressor unit ACC-3A at location A7 to the indoor air conditioner unit HVAC-3A at location A7
- Piping, valves, and flexible connections that comprise the refrigerant lines to and from the outdoor air conditioning compressor unit ACC-3B at location B7 to the indoor air conditioner unit HVAC-3B at location B7
- Piping, valves, and flexible connections that comprise the refrigerant lines to and from the outdoor air conditioning compressor unit ACC-3C at location C7 to the indoor air conditioner unit HVAC-3C at location C7

RAI 2.3.3.15 - 8

In Section 2.3.3.15 of the LRA, the applicant does not provide a system description for the Unit 1 fuel handling building ventilation system and does not include the associated structures and components in either Table 2.3-3 or Table 3.3-15 of the LRA. Justify why the Unit 1 fuel handling building ventilation system structures and components are considered to be outside the scope of license renewal or are not subject to an AMR.

RAI 2.3.3.15 - 9

In Section 2.3.3.15 of the LRA, the applicant does not identify the ventilation system that supports and cools the Unit 2 hot shutdown panel and computer room. Identify system and clarify whether it is within the scope of license renewal and subject to an AMR.

If applicable, provide drawing(s) showing the ventilation structures and components for the Unit 2 hot shutdown panel and computer room. Justify why these structures and components are considered to be outside the scope of license renewal or are not subject to an AMR.

2.3.4 Steam and Power Conversion Systems

RAI 2.3.4 - 1

In Table 3.4-1 of the LRA, the applicant does not list certain components of the main steam, auxiliary steam, and turbine system, although license renewal boundary drawings identify them as being within the scope of license renewal. In particular, it appears that flexible connections SZ-08-1A1, SZ-08-1A2, SZ-08-1B1, and SZ-08-1B2, which are shown on drawing 1-MS-04 at locations D3 and H3, are passive and long-lived and, as such, should be subject to an AMR. Justify why the flexible connections are considered to be outside the scope of license renewal or are not subject to an AMR.

RAI 2.3.4 - 2

The boundary of the portion of the main steam system that is within the scope of license renewal ends at valves that appear to be normally open (see drawing 1-MS-02 at locations B1, B2, F4, F5, F6, and F7; drawing 1-MS-03 at location H5; and drawing 2-MS-02 at locations B1,

B2, F4, F5, F6, and F7). Failure of the downstream piping may affect the pressure boundary intended function. In Section 2.3.4.1 of the LRA, the applicant states that this approach is acceptable because the open main steam boundary valves are only required to mitigate potential spurious valve operation in the unlikely event of certain fires, and these open boundary valves are procedurally closed for these fire scenarios.

Provide additional information to support the basis for this determination. For example, discuss the steps in the fire procedures for closing the valves, the amount of time required to complete these steps, and the availability of sufficient water inventory if the valves are not closed.

RAI 2.3.4 - 3

In Table 3.4-2 of the LRA, the applicant includes the main feedwater isolation valve accumulators (hydraulic and pneumatic end only) for Unit 2, but does not include similar components for Unit 1. On drawing 1-FW-02, the applicant indicates that the accumulators for Unit 1 are within the scope of license renewal. Explain why the Unit 1 accumulators did not receive an AMR.

RAI 2.3.4 - 4

On license renewal boundary drawings 1-AFW-01 and 2-AFW-0, the applicant indicates that piping from the condensate storage tank (at location D7) connects below the normal water level. The applicant does not indicate that this piping is within the scope of license renewal. This piping appears to connect the lower portion of the condensate storage tank with the condenser hotwell. Failure of this piping may compromise the pressure boundary intended function of the condensate storage tank. Justify why this piping is considered to be outside the scope of license renewal or are not subject to an AMR.

2.4 SCOPING AND SCREENING RESULTS — STRUCTURES

2.4.2 Other Structures

RAI 2.4.2 - 1

In Section 2.4.2.6 of the LRA, the applicant discusses the need for fire barriers to retard the spread of fire and states that fire-resistant panels (e.g., Thermo-lag, sheet metal/ceramic fiber) mounted on steel framing are used as fire barriers. Section 2.4.2.6 further references Table 3.5-8 of the LRA and Appendix 9.5A of the Unit 1 and 2 UFSARs, which state that barriers (e.g., wall, floors, ceiling) divide the plant into fire areas. In Table 3.5-8 of the LRA, the licensee notes that concrete and steel structural components that serve as fire barriers are addressed with each structure.

Although reference is made to structural steel for each structure discussed in the civil/structural sections of the LRA, no reference is made to the fire-resistive coverings on any structural steel in those structures. For each structure within the scope of license renewal, verify whether any structural steel fire barrier has been provided with fire-resistive coverings. If any barriers are identified, justify why structural steel fire barriers provided with fire-resistive coverings are considered outside the scope of license renewal or are not subject to an AMR.

RAI 2.4.2 - 2

In Section 2.4.2.6 of the LRA, the applicant discusses fire barriers that provide compartmentalization and containment. Page 9.5A-136A of the Unit 2 UFSAR indicates that guard pipes are used in the hydrogen system; however, the NRC staff is unable to identify this feature in any of the tables in the LRA. Justify why the guard pipe in the hydrogen system is considered to be outside the scope of license renewal or are not subject to an AMR.

RAI 2.4.2 - 3

In Section 9.1 of the Unit 1 and 2 UFSARs, the applicant states that the fuel storage racks are designed to maintain subcritical conditions in the fuel pool. However, Section 2.4.2.7 of the LRA does not list maintaining subcritical conditions as one of the attributes of the fuel handling building. In addition, none of the components or commodity groups listed in Table 3.5-9 of the LRA is credited with the intended function of maintaining subcritical conditions. Justify why maintaining subcritical conditions is not identified as an intended function.

RAI 2.4.2 - 4

The fuel handling building vent stacks are shown on General Arrangement Drawing 8770-G-074 at location G8. The vent stack for Unit 1 is also shown in General Arrangement Drawing 8770-G-073 at location B8. It appears that approximately 35 feet of this component or structure, which has an outer diameter of approximately 4.5 feet, runs parallel to and is supported by the new fuel storage transfer area south wall. On the basis of the limited information provided in the drawings, it appears that the vent stack sits on top of a 12-foot tall structure. On the basis of the description on page 9.4-8 of the Unit 2 UFSAR, this structure appears to be the exhaust plenum housing for a prefilter, a HEPA filter, and an exhaust fan. The vent stack and its base structure sit on top of the fuel handling building's HVAC room. The edge of the stack is approximately 4 feet from the east wall of the noble gas monitor enclosures.

The vent stack is a substantial structure in close proximity to the noble gas monitor enclosures and new fuel storage area walls, and directly on top of the HVAC room. The fuel handling buildings and noble gas monitor enclosures are within the scope of license renewal and have safety-related intended functions. Structural failure of the vent stack could cause these buildings to be unable to perform their safety-related intended functions.

On page 9.4-10 of the Unit 2 UFSAR, the applicant states that "...the Fuel Handling Building...air exhaust is vented through a stack, which minimizes the probability of the entrance of external missiles." 10 CFR 54.4(a)(2) states, in part, that all non-safety related systems, structures, and components of which failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1) should be included within the scope of license renewal.

It appears that the failure of the vent stack could potentially damage safety-related structures and components, which have a spatial relationship with the vent stack, and could allow external missiles to enter the fuel handling building. Justify why the fuel handling building stack

structures are considered to be outside the scope of license renewal or are not subject to an AMR.

RAI 2.4.2 - 5

In Section 9.6.2 of the Unit 1 UFSAR, the applicant lists a fuel pool bulkhead monorail as an overhead load handling system. Clarify if this monorail is included in LRA Table 3.5-9 on page 3.5-67 as a component of the “trolley hoists and cranes” component group. If the fuel pool bulkhead monorail is not considered to be within the scope of license renewal and subject to an AMR, justify its exclusion.

RAI 2.4.2 - 6

In Section 2.4.2.8 of the LRA, the applicant references Table 3.5-9, which indicates that only the fuel handling tools for Unit 2 are within the scope of license renewal and subject to an AMR. In Section 9.1 of the Unit 1 and 2 UFSARs, the applicant states that one of the design criteria for the new fuel and spent fuel pools is to maintain subcritical conditions. However, in Section 9.1.2.2 of the Unit 1 UFSAR, the applicant indicates that criticality is prevented, in part, by correct functioning of the fuel handling tools, including the poisoned “L” inserts and cell blocking devices. Justify why these fuel handling tools are considered to be outside the scope of license renewal.

2.5 SCOPING AND SCREENING RESULTS — ELECTRICAL AND INSTRUMENTATION AND CONTROL SYSTEMS

RAI 2.5 - 1

Assuming the unavailability of offsite systems (e.g., offsite system protective relaying), describe how onsite safety systems are protected from voltage and frequency fluctuations that may result from offsite equipment failures or from natural phenomena such as lightning. Describe how the Class 1E system is designed to ensure that any offsite system malfunction or natural phenomena, such as lightning, will not prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(2).

3.1 AGING MANAGEMENT REVIEW RESULTS: REACTOR COOLANT SYSTEMS

RAI 3.1 - 1

In LRA Section 3.1.4, "Reactor Vessel Internals Inspection Program," the applicant indicates that this program is plant-specific and is intended to supplement the reactor vessel internals inspections required by the inservice inspection programs conducted under Section XI of the Boiler and Pressure Vessel Code promulgated by the American Society of Mechanical Engineers (ASME). The applicant further indicates that it will submit an integrated report for St. Lucie Units 1 and 2 to the NRC prior to the end of the initial operating license term for St. Lucie Unit 1, and this report describe the St. Lucie inspection plan. The staff expects the inspection plan to include the St. Lucie Unit 1 long-term inspections and inservice monitoring as described in Subsections 5.1 and 5.2 of the "St. Lucie Unit 1 – Thermal Shield Recovery Program Final Core Support Barrel Inspection Report (Post-Cycle 6)," L-86-181, dated April 25, 1986. Confirm this expectation, or provide justification for its exclusion.

RAI 3.1 - 2

In LRA Table 3.1-1 on page 3.1-66, the applicant discussed aging management of U-tubes, but not tubes. In Sections 3.1.6.2.1 and 3.1.6.2.2 of the LRA, the applicant discusses aging issues related to tubes. Clarify whether the U-tubes identified in Table 3.1-1 represent the low-row (short radius) U-bend tubes or the entire tube bundle.

RAI 3.1 - 3

In Table 3.1-1, "Reactor Coolant Systems," of the LRA, the staff identified that certain aging effects, which apply to steam generator components, are absent. Explain or justify why the following aging effects are not specified in Table 3.1-1:

- On page 3.1-69 of the LRA, the applicant specified that the external surface of the primary instrument nozzles may be affected by leaking borated water. However, there was no aging effect and associated aging management program applied to the primary instrument nozzles under this external environment.

- Clarify why loss of material due to boric acid corrosion (on the external surface) was not an aging effect applied to the secondary manway and handhold closure covers, shell assembly, feedwater nozzles and safe ends, steam outlet nozzles and safe ends, and primary heads.
- Table 3.1-1 of the LRA identified cracking as an aging effect for Unit 1 stainless steel tube support lattice bars, but did not identify cracking Unit 2 carbon steel tube support lattice bars. Carbon steel is susceptible to cracking in the treated water environment. Clarify why cracking is not applicable to the Unit 2 tube support lattice bars.
- Clarify why the wall thinning attributable to erosion was not applicable as an aging effect for secondary manways and handholds.

RAI 3.1 - 4

In NRC Information Notice 90-04, "Cracking of the Upper Shell-to-Transition Cone Welds in Steam Generators," the staff states that if general corrosion or pitting of the steam generator shell is known to exist, the inspection program in Section XI of the ASME Code may not be sufficient to differentiate isolated cracks from inherent geometric conditions of the shell. Describe additional inspection procedures for the upper and lower steam generator shells, if general corrosion or pitting exists in the St. Lucie steam generator shells.

RAI 3.1 - 5

Discuss tube plugs installed in the Unit 1 and 2 steam generators, such as plug type and operating experience. Confirm that all tube plugs use thermally treated Alloy 690 material.

4.0 TIME-LIMITED AGING ANALYSES

4.6.1 Leak-Before-Break for Reactor Coolant System Piping

RAI 4.6.1 - 1

As a result of the V.C. Summer event, in which primary water stress corrosion cracking (PWSCC) was identified in an Inconel 82/182 main coolant loop-to-reactor pressure vessel weld, the NRC staff is concerned about the impact of PWSCC on licensees' leak-before-break (LBB) evaluations. NUREG-1061, Volume 3, which addresses the general methodology accepted by the NRC staff for demonstrating LBB behavior, stipulates that no active degradation mechanism (more specifically, none which would undermine the assumptions made elsewhere in the LBB analysis) may be present in a line that is under consideration for LBB approval. Draft Standard Review Plan Section 3.6.3, suggests that lines with potentially active degradation mechanisms may be considered for LBB approval provided that two mitigating actions or programs are in place to address the potential active degradation mechanism. Given this background:

- Identify the welds in the reactor coolant pressure boundary piping approved for LBB, which contain Inconel 82/182 material that is exposed to the reactor coolant system environment.
- Evaluate the impact of the V.C. Summer PWSCC issue on the St. Lucie LBB assessment for lines that contain welds manufactured from Inconel 82/182 material.
- Identify what actions will be taken during the period of extended operation to ensure that the potential for PWSCC in Inconel 82/182 lines does not undermine the assumptions of the St. Lucie LBB analyses.

4.6.4 Alloy 600 Instrument Nozzle Repairs

RAI 4.6.4 - 1

Consistent with the staff's safety evaluation dated February 8, 2002, on Combustion Engineering Owners Group (CEOG) Topical Report No. CE NPSD-1198-P, Revision 00, perform a plant-specific general corrosion rate analysis calculation for the bounding half-nozzle repair implemented at St. Lucie Units 1 and 2. Provide a discussion or evidence which demonstrates that the general corrosion rate analysis calculation provided in CEOG Topical Report No. CE NPSE-1198-P, Revision 00, is bounding relative to the plant-specific analysis.

RAI 4.6.4 - 2

Consistent with the staff's safety evaluation dated February 8, 2002, on CEOG Topical Report No. CE NPSD-1198-P, Revision 00, justify the conclusion in the topical report that existing flaws in ASME Class 1 nozzle Alloy 182 weldments will not grow into the adjacent ferritic pipes or vessels during the extended periods of operation. Review the reactor coolant system chemistry history over the last two operating cycles for the St. Lucie Units 1 and 2. Confirm that a sufficient hydrogen over-pressure for the reactor coolant system has been implemented at the facilities and that the ingress of dissolved elemental oxygen, halide, and sulfate into the reactor coolant over this period was adequately managed and controlled (i.e., minimized to acceptable levels).

B.3.1 NEW AGING MANAGEMENT PROGRAMS

B.3.1.2 Galvanic Corrosion Susceptibility Inspection Program

RAI B.3.1.2 - 1

In Section 3.1.2, "Galvanic Corrosion Susceptibility Inspection Program," of Appendix B to the LRA, the applicant states that inspections will be conducted on a sampling basis. Locations selected for inspection will represent those with the greatest susceptibility to galvanic corrosion. However, there are insufficient details in the LRA concerning the program for the NRC staff to determine with reasonable assurance that the program is acceptable. Provide additional information concerning the existing program or the planned development of the program elements in the following areas:

- Explain how the greatest susceptibility locations will be determined including whether these locations will be selected for each system or for all the systems.
- Explain what documents or information will be used to define the inspection interval, sample size, inspection criteria, and corrective actions.
- Explain how information concerning the inspections of the susceptible locations, the results of the inspections, and corrective actions will be managed, tracked, and evaluated.

B.3.2 EXISTING AGING MANAGEMENT PROGRAMS

B.3.2.1 Alloy 600 Inspection Program

RAI B.3.2.1 - 1

On March 18, 2002, the staff issued NRC Bulletin 2002-01, which requested information relevant to the type of degradation that was detected in the Davis-Besse reactor vessel head in March 2002. The applicant responded to NRC Bulletin 2002-01 in a letter dated April 2, 2002. The Scoping program attribute in the LRA does not reference NRC Bulletin 2002-01 as part of the current licensing basis for the reactor vessel head penetration nozzles. The Detection of Aging Effects program attribute in the LRA implies that only one visual examination of the bare surfaces of each unit's upper reactor vessel head will be performed. If the results of the bare-surface visual examinations indicate the presence of flaw indications, additional bare-surface visual or volumetric examinations of the reactor vessel heads would be performed. As a result of the staff's review of the Operating Experience and Demonstration program attribute, the staff is under the impression that FPL completed the December 2001 visual examinations of the bare surfaces of the Unit 2 reactor vessel head. With respect to the Alloy 600 Inspection Program:

- Update the Scoping program attribute to include your response to NRC Bulletin 2002-01 (dated April 2, 2002, in FPL letter L-2002-061).
- Summarize the scope and results of inservice inspections and augmented examinations that were performed on the Unit 1 and 2 reactor vessel heads. Describe the impact that the inspection results will have on the program attributes for the Alloy 600 Inspection Program.

B.3.2.5 Chemistry Control Program

RAI B.3.2.5 - 1

In Section 3.2.5.1 of Appendix B to the LRA, the applicant states that no special one-time inspections are required to verify the effectiveness of the Water Chemistry Control Subprogram for St. Lucie Units 1 and 2. The applicant also states that internal surfaces of components are visually inspected for loss of material and other aging effects during routine and corrective maintenance requiring equipment disassembly. Clarify that those locations inspected during

routine and corrective maintenance include representative susceptible locations (such as low flow or stagnant areas). In addition, discuss past findings that demonstrate that routine and corrective maintenance verified the effectiveness of the Water Chemistry Control Subprogram.

RAI B.3.2.5 - 2

In Section 3.2.5.1 of Appendix B to the LRA, the applicant states that the Water Chemistry Control Subprogram was developed in accordance with the guidance in TR-107396, "Closed Cycle Cooling Water System," published October 1997 by the Electric Power Research Institute (EPRI) and is consistent with the 10 attributes of the AMP X1.M21, "Closed-Cycle Cooling Water System," in the Generic Aging Lessons Learned (GALL) report, with the exception that this subprogram does not address surveillance testing and inspection. The applicant further states that the Intake Cooling Water Inspection Program implements the applicable surveillance testing and inspection aspects of the GALL program. The Intake Cooling Water Inspection Program includes inspection of only those closed-cycle cooling water (CCW) system components that are exposed to raw water, which are the CCW heat exchanger tubes, tubesheet channels, and doors. The GALL report recommends inspecting these components and other CCW system components, which are exposed to treated water and susceptible to loss of material. Explain this discrepancy between the Chemistry Control Program, as descriptions in Section 3.2.5.2 of Appendix B to the LRA and the AMP X1.M21 in the GALL report.

RAI B.3.2.5 - 3

Corrosion may occur at locations in which contaminants may accumulate, such as a tank bottom. Ultrasonic thickness measurement of the tank bottom surface ensures that significant degradation is not occurring. Identify the locations in the fuel oil components (e.g., fuel oil tank bottoms) at which periodic fuel oil samples are obtained. Indicate when thickness measurements are used to detect aging effects on the tank bottom.

RAI B.3.2.5 - 4

In Section 3.2.5.3 of Appendix B to the LRA, the applicant states that operating experience at St. Lucie Units 1 and 2 has included particulate contamination attributable to a contaminated tanker truck transfer pump and hose. However, no instances of fuel oil system component failures attributable to contamination have been identified. Discuss the corrective action taken to prevent recurrence. Also, discuss the operating experience regarding the effectiveness of the aging management program such that aging degradation, which could lead to the loss of an intended function, will be identified and addressed before it results in age-related failures of the fuel oil system components.

B.3.2.14 Systems and Structures Monitoring Program

RAI B.3.2.14 - 1

In order for the staff to conclude that the monitoring and trending activities of the Systems and Structures Monitoring Program (SSMP) are adequate to detect the aging of structures and components that credit this program, provide additional information on the inspection intervals and sample sizes used for the SSMP. In particular, provide the inspection intervals and sample sizes used for the systems and structures, listed on page B-57 of the LRA, which credit the SSMP.

RAI B.3.2.14 - 2

The SSMP is an existing program. However, in Section B.3.2.14 of the LRA, the applicant states that enhancements will be made to provide guidance for managing the aging of inaccessible concrete. In particular, the staff notes that below-grade components, such as concrete slabs or building foundations, may be subject to aggressive chemical attack as a result of the chemistry (pH, sulfides, chlorides) of the groundwater. In order for the staff to determine that the SSMP will provide for adequate aging management of inaccessible concrete, provide examples of past inspection findings related to the aging of these components.

RAI B.3.2.14 - 3

In order for the staff to conclude that the SSMP will provide adequate aging management for the systems, structures and components that credit this program, provide specific examples of enhancements and improvements that have been made to the SSMP as a result of previous inspection findings.