

**From:** Kimberly Green  
**To:** <dtynr@entergy.com>,"MICHAEL D STROUD" <MSTROUD@entergy.com>  
**Date:** 1/7/2008 2:12:13 PM  
**Subject:** Draft RAIs on Structures, Reactor Systems, and Scoping and Screening Methodology  
**cc:** "Bo Pham" <BMP@nrc.gov>,<IPNonPublicHearingFile@nrc.gov>

Donna,

Attached are draft requests for additional information related to the Indian Point license renewal application. Please review and let me know when Entergy is available to discuss. The purpose of the telecon will be to obtain clarification on the staff's questions.

Thanks,

Kim Green  
U.S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Mail Stop O11 F1  
Rockville, Maryland 20852-2738  
phone: 301-415-1627  
fax: 301-415-3313  
email: [kjg1@nrc.gov](mailto:kjg1@nrc.gov)

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**From:** Kimberly Green  
**Created By:** KJG1@nrc.gov

**Recipients**

"Bo Pham" <BMP@nrc.gov>  
<IPNonPublicHearingFile@nrc.gov>  
<dtwyner@entergy.com>  
"MICHAEL D STROUD" <MSTROUD@entergy.com>

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Draft RAIs Reactor Systems 01-07-08.doc 1/9/2008 2:48:11 PM	39424	
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Indian Point Nuclear Generating Unit Nos. 2 and 3 (IP2 and IP3)  
License Renewal Application (LRA)  
Draft Request for Additional Information Set 10  
Reactor Systems

**D-RAI 2.3A.1.2-1** Reactor Vessel Internals

If failure of the following reactor vessel internals could potentially inhibit core coolability in an accident scenario, they would be subject to the requirement in 10 CFR 54.4(a)(2). Justify the exclusion of these components from the scope of license renewal:

- a) rectangular sample tubing
- b) sample tubing springs
- c) core energy absorber

**D-RAI 2.3A.1.3-2** Reactor Coolant Pressure Boundary

Manway covers and insert plates (see LRA Table 2.3.1-3-IP2 and 2.3.1-3-IP3) have been identified as within the scope of license renewal and subject to an aging management review (AMR) in the LRA. Please clarify whether the manways themselves are within the scope of license renewal and subject to an AMR.

**D-RAI 2.3A.1.3-3**

Level sensor housing/vents in the reactor vessel level indication system are not highlighted as components that are subject to an AMR (ref: license renewal drawing LRA-208798). The sensor housing/vents appear to provide a reactor coolant pressure boundary. Please clarify whether these components are subject to an AMR, and if not, justify their exclusion.

**D-RAI 2.3B.1.3-1**

High volume sensor housings in the reactor vessel level indication system are not highlighted as components that are subject to an AMR (ref: license renewal drawing LRA-9321-72043, Sht. 5). The sensor housings appear to provide a reactor coolant pressure boundary. Please clarify whether these components are subject to an AMR, and if not, justify their exclusion.

**D-RAI 2.3B.1.3-2**

The auxiliary pressurizer spray has a function identified within the chemical volume and control system for 10 CFR 54.4(a)(3) to provide RCS reactivity, inventory, and pressure control during an Appendix R event. Please explain whether the auxiliary pressurizer spray components that perform the above intended function are within the scope of license renewal.

**D-RAI 2.3A.2.4-1** Safety Injection System

The safety injection accumulators are highlighted on license renewal drawings LRA-235296-0 and LRA-27353-0 as subject to an AMR; however, LRA Tables 2.3.2-4-IP2 and 2.3.2-4-IP3 do not include them as component types subject to an AMR. Please clarify whether the accumulators are subject to an AMR.

**D-RAI 2.3A.4.5-2** IP2 AFW Pump Room Fire Event

Please provide a separate listing of those auxiliary steam system components subject to an AMR that support the refueling water storage tank pressure boundary.

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License Renewal Application (LRA)  
Draft Request for Additional Information Set 8  
Structures

**D-RAI 2.4-1**

LRA Table 2.2-3 lists the structures within the scope of license renewal and Section 2.4 provides the scoping and screening results for these structures. LRA Table 2.2-4 lists the structures not within the scope of license renewal. Confirm whether the following structures, that are not included in either of the above tables, are within the scope of license renewal and subject to an AMR.

- (i) Service Water Screenwell (listed as a Class I structure in IP2 FSAR Section 1.11.2)
- (ii) Pipe Penetration Tunnel (Ref. IP2 FSAR Section 1.11.4.10)
- (iii) Liquid Waste Storage Building (Ref. IP3 FSAR Sections 16.1.2 & 9.6.4)
- (iv) Condenser Tube Withdrawal/Removal Pit (Ref. IP3 FSAR, Chapter 1, Site Plan Drawing 64513 and IP2 FSAR Figure 10.2-3)
- (v) Fuel oil storage tank and its foundation at Buchanan Substation (since it provides backup fuel oil for emergency diesels and gas turbines)

If they are within the scope of license renewal, include their scoping, screening and AMR results, as appropriate. If not, provide a justification for their exclusion. Also, update Table 2.2-3 or 2.2-4 as appropriate.

The staff also notes that the structure identified as “Gas Turbine Substation Switchgear Structures and Foundation (IP3)” in LRA Table 2.2-3 is not included in the subsection titled “Description” in LRA Section 2.4.3. Include this structure in Section 2.4.3 and provide its scoping, screening and AMR results.

LRA Table 2.2-3 is referenced for “Service Water Valve Pit (IP2/3);” however, LRA Section 2.4.3, Turbine Buildings, Auxiliary Buildings and Other Structures,” does not discuss this structure. Confirm the correct reference and make any necessary changes to the LRA.

**D-RAI 2.4.1-1**

The first paragraph of Section 5.1.2.1 of the FSAR (IP2 & IP3) states that the containment structure serves as both a biological shield and a pressure container. The biological shield function is not listed among the intended functions for Containment Buildings in the “Description” paragraph of LRA Section 2.4.1 and Table 2.4-1. The definition of the shelter or protection (EN) function in LRA Table 2.0-1 is not consistent with the biological shield function (SH). The biological shield function is protection provided against radiation to plant personnel and the public, and not to safety-related equipment. Please clarify and include biological shield function as an intended function for Containment Buildings in the LRA.

**D-RAI 2.4.1-2**

From LRA Table 2.4-1, it is not clear if the following components of the Containment Buildings have been screened-in as components subject to an AMR.

- (i) Primary Shield Wall around the Reactor
- (ii) Control Rod Drive Missile Shield
- (iii) Retaining Wall at the Equipment Hatch Entrance and its Missile Shield (Fixed and Removable)
- (iv) Blowout Shield Plug
- (v) Insulation for the Containment Building Liner (limits temperature rise in liner under accident conditions)
- (vi) Protective Coating for liner
- (vii) Water proofing around fuel transfer tube
- (viii) Waterproof membrane for containment wall against backfill
- (ix) Reactor Cavity Seal Ring (see UFSAR Figures 5.1-6 and 5.1-7)
- (x) Seismic Class I Debris Screens at Containment Purge (Ref. FSAR Section 5.1.4.2.4)
- (xi) Stud anchors that anchor the containment liner plate to the concrete shell

Please confirm and clarify their inclusion in LRA Table 2.4-1 or justify their exclusion. For the components that are included within scope and subject to an AMR, identify the appropriate AMR results.

#### **D-RAI 2.4.1-3**

In the second paragraph under the title “Description” in LRA Section 2.4.1, it is stated that: “The basemat is reinforced concrete with the bottom liner plate located on top of this mat. This bottom liner plate is covered with additional concrete, the top of which forms the floor of the containment.” Please confirm and make explicit that the inaccessible bottom liner plate in the basemat and the 3 ft thick concrete fill slab above this bottom liner are included in the components listed in Table 2.4-1 that are subject to an AMR. If they are not included, please provide justification for their exclusion.

#### **D-RAI 2.4.1-4**

Please confirm if the component identified as “Structural Steel: beams, columns, plates, trusses” in LRA Table 2.4-1 includes bracings, welds and bolted connections. Also confirm if the pressurized channel shrouds that are used at liner welded joints (including those at penetrations) are included in a structure/commodity group. If not, justify their exclusion from an AMR. Also, confirm if the components identified as “bellows penetrations” in LRA Table 2.4-1 include the refueling bellows. If not, indicate where in the LRA the refueling bellows have been evaluated.

#### **D-RAI 2.4.1-5**

LRA Table 2.4-1 includes the components “Polar Crane, rails and girders” and “Manipulator Crane, crane rails and girders.” Please confirm if the column structure, bridge and trolley of the polar crane and the bridge, trolley and mast of the manipulator crane are screened-in as subject to an AMR. Also, confirm if fasteners and rail hardware associated with the polar crane and manipulator crane are within scope and subject to an AMR. If not, provide the technical bases for their exclusion. Indicate if there any other hoists and lifting devices (e.g. Reactor Vessel Head Lifting Device, Reactor Internals Lifting Device) that may need to be included as components that are within scope and subject to an AMR. If so, please include in the table and provide associated scoping, screening and AMR results information relevant to the LRA.

#### **D-RAI 2.4.1-6**

LRA Table 2.4-1 lists the Equipment Hatch and Personnel Lock as Containment components subject to an AMR. It is not explicitly clear from Table 2.4-1 if the flange double-gaskets, hatch locks, hinges and closure mechanisms that help prevent loss of sealing/leak-tightness for these listed hatches are included within the scope of license renewal and subject to an AMR. Please confirm the inclusion or exclusion of these components within the scope of license renewal. If they were not included, but should be, please provide a description of their scoping and aging management review. If they are included elsewhere in the LRA, please indicate the location. If they are excluded from the scope of license renewal, please provide the basis for their exclusion.

#### **D-RAI 2.4.2-1**

For the Water Control Structures listed in the first paragraph of LRA Section 2.4.2, please indicate the Units to which these structures belong (e.g. IP1, IP2, IP3) or indicate if they are common to Units 2 and 3.

#### **D-RAI 2.4.2-2**

LRA Table 2.4-2 does not include the debris wall, fixed coarse screens, fine mesh traveling screens, gates and strainers at the intake structure. It also does not include metal decking, metal siding, grating and ventilation panels for the intake structure enclosure and manhole, ladder and sump of the service water valve pit. Please confirm if these components should be included within the scope of license renewal and subject to an AMR or not. If not, provide justification for not including them. Please clarify explicitly what the "structural steel" component in LRA Table 2.4-2 includes (e.g. beams, plates, welded/bolted connections etc.).

#### **D-RAI 2.4.3-1**

Section 2.4.3 of the LRA states that the fuel storage buildings have the following intended functions for 10 CFR 54.4(a)(1) and (a)(2): "Maintain integrity of non-safety related components such that safety functions are not affected by maintaining pool water inventory (Units 2 and 3)." This intended function does not correlate with the intended functions listed in LRA Table 2.4-3 for corresponding components of the fuel storage buildings, e.g., pressure boundary, missile barrier, and shelter or protection.

Clarify the intended functions performed by the spent fuel pit concrete structures, e.g., exterior walls, exterior walls-below grade, and floor slabs, interior walls, and ceilings, and clarify the intended functions performed by the spent fuel pool liner plate and gate.

#### **D-RAI 2.4.3-2**

Section 2.4.3 of the LRA states that the top of the spent fuel pit wall forms the north wall of each unit's fuel building. Unit 2 UFSAR Figure 1.2-4, "Cross Section of Plant," indicates that at least part of the fuel building exterior wall is below grade. LRA Table 2.4-3 lists pressure boundary as an intended function for the concrete component "exterior walls" but does not list pressure boundary as an intended function of the concrete component, "exterior walls-below grade," that represents the fuel building wall.

Update LRA Table 2.4-3 to include the pressure boundary intended function for the spent fuel

pit wall that is below grade or provide justification for excluding this intended function.

#### **D-RAI 2.4.3-3**

LRA Table 2.4-3 does not include the leak chase channel of the IP3 spent fuel pit as a component subject to an AMR. Include this as a component as subject to an AMR or provide justification for its exclusion.

#### **D-RAI 2.4.3-4**

LRA Table 2.4-3 lists “Cranes rails and girders” as a component type subject to AMR. It is not clear if this component refers to just crane rails and girders or also refers to the cranes themselves. If it includes the cranes, identify which cranes have been determined to be within the scope of license renewal and if all relevant sub-components (“...including bridge and trolley, rails, and girders”) of these in-scope crane systems have been screened in as items requiring an AMR. Identify the specific cranes in each of these structures that are included within the above component type as within scope and subject to an AMR, and those that are excluded, with technical bases. Confirm if fasteners and rail hardware associated with this component type are in-scope and subject to AMR. If not, provide the technical bases for their exclusion. Are there any other hoists and lifting devices that may need to be included in-scope and subject to AMR? If so, include in the table and provide associated scoping, screening and AMR results information relevant to the LRA.

#### **D-RAI 2.4.3-5**

Please confirm if the component identified as “Structural Steel: beams, columns, plates” in LRA Table 2.4-3 includes bracings, welds and bolted connections. If yes, explicitly state so. If not, indicate where they are included. If “Battery Racks” are used as a component (e.g. for emergency diesels), include it as a component subject to an AMR. Also identify Turbine Generator Pedestals and their structural bearing pads, Diesel Generator (DG) Pedestals and the concrete curb around DG foundations as being subject to an AMR.

#### **D-RAI 2.4.4-1**

From LRA Table 2.4-4, it is not clear if the following bulk commodities have been screened-in as components subject to an AMR.

- (i) HVAC duct supports
- (ii) Racks
- (iii) Expansion Anchors
- (iv) Vibration Isolation elements
- (v) Flood Curbs
- (vi) Compressible joints and seals
- (vii) Waterproofing membrane
- (viii) Sliding support bearings and sliding support surfaces

Confirm if the above component types apply to the LRA and should be included and screened in as subject to an AMR or justify their exclusion. If they are in scope, include them in LRA Table 2.4-4 and provide AMR results. Also, explicitly state the specific materials that are classified as “Other Materials” in LRA Table 2.4-4.

#### **D-RAI 2.4.4-2**

Clarify the phrase within parentheses “(insulation, or Insulation)” in the description provided for intended function (1) for insulation in the fourth paragraph of LRA Section 2.4.4.

Further, LRA Table 2.4-4 includes bulk commodity component types “insulation jacket” and “insulation” that are subject to an AMR. Based on information provided in LRA Table, it is unclear which insulation (with material) and insulation jacket are included in license renewal scope and are included in LRA Table 2.4-4. It is also unclear whether insulation and jacketing on the containment liner, reactor vessel, reactor coolant system, main steam and feed water systems have been included. Please provide the following information, limited to insulation that is used to control the maximum temperature of safety-related structural elements.

- (a) Specifically, identify the structures and structural components designated within the license renewal scope that have insulation and/or insulation jacketing, and identify their location in the plant. Identify locations of the thermal insulation that serves an intended function in accordance with 10 CFR 54.4(a)(2) and describe the scoping and screening results of thermal insulation and provide technical basis for its exclusion from the scope of license renewal.
- (b) For insulation and insulation jacketing materials associated with item (a) above that do not require aging management, submit the technical basis for this conclusion, including plant-specific operating experience.
- (c) For insulation and insulation jacketing materials associated with item (a) above that require aging management, indicate the applicable LRA sections that identify the aging management program(s) credited to manage aging.

#### **D-RAI 3.5A.2-1**

Table 3.5.1, item 3.5.1-46, of the LRA states that aging of the fuel pool liners will be managed by the water chemistry program and monitoring of spent fuel pool water level in accordance with Technical Specifications and leakage from the leak chase channel. The table includes the following discussion:

“Monitoring spent fuel pool water level in accordance with Technical Specifications and monitoring leakage from the leak chase channels (Unit 3) will also continue during the period of extended operation.”

The monitoring program for Unit 2 differs from that specified for Unit 3 and from that credited in NUREG-1801. The Unit 3 and NUREG-1801 programs involve monitoring leakage from the leak chase channels.

Explain whether the spent fuel pool water level may be insensitive to leakage comparable to the rate of evaporation and could be masked by routine makeup water additions. If spent fuel pool leakage could be masked by evaporation and routine water additions, describe how the proposed monitoring at Unit 2 would provide acceptable indication of a degrading liner or describe an alternative monitoring method (e.g., monitoring of nearby wells).

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Scoping and Screening Methodology

**RAI 2.1-1** 10 CFR 54.4(a)(2) Scoping Criteria for Nonsafety-related SSCs

10 CFR 54.4 (a)(2) requires, in part, that all nonsafety-related systems, structures and components (SSCs) whose failure could prevent the satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1) are to be included within the scope of license renewal.

- (a) The staff noted during the audit that the applicant had included fluid-filled, nonsafety-related pipes located within a safety-related space within the scope of license renewal based on the spaces' approach and had also included portions of nonsafety-related piping attached to safety-related SSCs within the scope of license renewal. However, the applicant did not provide sufficient information in the license renewal application nor the implementing procedures to demonstrate that when the fluid-filled pipe was also attached to a safety-related SSC, an additional portion of the pipe, beyond the safety-related space, up to and including an appropriate seismic anchor, equivalent anchor or bounding condition, was also included within the scope of license renewal.

The staff requests that the applicant provide a description of the process used to ensure that fluid-filled, nonsafety-related pipe, attached to safety-related SSCs which exit the safety-related space, was included within the scope of license renewal up to and including an appropriate seismic anchor, equivalent anchor or bounding condition.

- (b) During the NRC audit, the staff reviewed the applicant's technical evaluation and on-site documentation for nonsafety-related affecting safety-related SSCs which indicated that certain nonsafety-related SSCs potentially affecting safety-related SSCs were not included within the scope of license renewal based on the proximity of the nonsafety-related SSCs to the safety-related SSCs.

The staff requests that the applicant provide the rationale and basis for not including nonsafety-related SSCs in the vicinity of safety-related SSCs within the scope of license renewal based on their proximity to safety-related SSCs. Indicate the extent of condition by providing a description of the nonsafety-related SSCs which were not included within the scope of license renewal based on their proximity to safety-related SSCs and a description of the corresponding safety-related SSCs.

- (c) During the NRC audit, the staff reviewed the applicant's technical evaluation and on-site documentation for nonsafety-related affecting safety-related SSCs which indicated that certain similar SSCs were included within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(1) for one unit and 10 CFR 54.4(a)(2) for the other unit.

The staff requests that the applicant provide the rationale and basis for including similar SSCs within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(1) for one unit and 10 CFR 54.4(a)(2) for the other unit and how the corresponding review of the adjacent or attached nonsafety-related SSCs (for inclusion within the scope of license renewal) was performed for similar systems in the two units. Indicate the extent of

condition by providing a description of the SSCs which were included within the scope of license renewal in accordance with 10 CFR 54.4(a)(1) for one unit and 10 CFR 54.4(a)(2) for the other unit and corresponding descriptions of any differences in the review of adjacent or attached nonsafety-related SSCs.

In addressing these issues, indicate if your review concludes that use of the scoping methodology precluded the identification of nonsafety-related SSCs that could interact with safety-related SSCs, and which were not specifically exempted by your current licensing basis and, therefore, should have been considered within the scope of license renewal. Describe any additional scoping evaluations to be performed to address the 10 CFR 54.4(a)(2) criteria.

As part of your response, list any additional SSCs included within the scope as a result of your efforts related to this RAI; and list those structures and components for which aging management reviews were conducted. For each structure and component, describe the aging management programs, as applicable, to be credited for managing the identified aging effects.