January 28, 2008

Mr. Michael A. Balduzzi
Senior Vice President and COO
Entergy Nuclear Operations, Inc.
Regional Operations, NE
440 Hamilton Avenue
White Plains, NY 10601

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3, LICENSE RENEWAL APPLICATION – REACTOR COOLANT SYSTEM AND STRUCTURES

Dear Mr. Balduzzi:

By letter dated April 23, 2007, as supplemented by letters dated May 3, 2007, and June 21, 2007, Entergy Nuclear Operations, Inc., submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, to renew the operating licenses for Indian Point Nuclear Generating Unit Nos. 2 and 3, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review. Further requests for additional information may be issued in the future.

Items in the enclosure were discussed with Mr. Robert Walpole, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-1627, or via e-mail at KJG1@nrc.gov.

Sincerely,

/RA/

Kimberly Green, Safety Project Manager
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-247 and 50-286

Enclosure:
As stated

cc w/encl: See next page

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OFFICE	LA/DLR	PM/DLR/RPB2	BC/DLR/RPB2
NAME	S. Figueroa for I. King	K. Green	R. Franovich
DATE	01/24/08	01/24/08	01/28/08

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INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
LICENSE RENEWAL APPLICATION (LRA)
REQUEST FOR ADDITIONAL INFORMATION (RAI)
REACTOR COOLANT SYSTEM AND STRUCTURES

REACTOR COOLANT SYSTEM

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

RAI 2.3A.1.3-2 Reactor Coolant Pressure Boundary

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

RAI 2.3A.1.3-3

Level sensor vents in the reactor vessel level indication system are not highlighted as components that are subject to an AMR (ref: license renewal drawing LRA-208798-0). The sensor vents appear to provide a reactor coolant pressure boundary. Please state whether the vents associated with the level sensors, as shown on license renewal drawing LRA-208798-0, have a pressure boundary function and, therefore, should be subject to an AMR. If not, justify their exclusion.

STRUCTURES

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) Pipe Penetration Tunnel (Ref. IP2 FSAR Section 1.11.4.10)
(ii) Liquid Waste Storage Building (Ref. IP3 FSAR Sections 16.1.2 & 9.6.4)
(iii) Condenser Tube Withdrawl/Removal Pit (Ref. IP3 FSAR, Chapter 1, Site Plan Drawing 64513 and IP2 FSAR Figure 10.2-3)
(iv) Fuel Oil Storage Tank and its foundation at Buchanan Substation (since it provides backup fuel oil for emergency diesels and gas turbines)

If the above structures are within the scope of license renewal, provide their scoping, screening and AMR results, as appropriate. If not, provide a justification for their exclusion. Also, update LRA Tables 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, or indicate where these structures and their components are addressed.

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.

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.

RAI 2.4.1-3

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.

RAI 2.4.1-4

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 are 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.

RAI 2.4.1-5

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 AMR. 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.

RAI 2.4.2-1

LRA Table 2.4-2 does not include the debris wall, fixed coarse screens, fine mesh traveling screens, and gates 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 excluding them. Please clarify explicitly what the "structural steel" component type 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)." LRA Section 2.1.2.2, "Screening of Structures," states that the screening of structural components and commodities was based primarily on whether they perform an intended function. LRA Table 3.5.2-3, "Turbine Building, Auxiliary Building, and Other Structures Structural Components and Commodities (IP2 and IP3)," identifies structural components

subject to aging management based on materials of construction and intended functions for components of structures including the fuel storage buildings. The intended functions listed in Table 3.5.2-3 (e.g., pressure boundary, missile barrier, and shelter or protection) agree with the intended functions listed in LRA Table 2.0-1, "Intended Functions: Abbreviations and Definitions." However, the intended function for the fuel storage building listed in LRA Section 2.4.3 does not agree with the listed intended functions in LRA Tables 2.0-1 and 3.5.2-3.

Pursuant to 10 CFR 54.21, the LRA must identify and list those structures and components subject to an AMR. Clarify the LRA Section 2.4.3 description of the intended function(s) of the fuel storage building components using the list of intended functions from LRA Table 2.0-1. To satisfy the requirements of 10 CFR 54.21, the clarification must be adequate to reasonably identify the fuel building structural components subject to aging management by the component/commodity, material of construction, and intended functions listed in LRA Table 3.5.2-3.

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.

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.

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.

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.

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) Expansion Anchors
(ii) Vibration Isolation elements
(iii) Flood Curbs
(iv) Waterproofing membrane
(v) 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.

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.

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).

Letter to Michael Balduzzi from Kimberly Green, dated January 28, 2008

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NMcNamara, RI
DScrenci, RI OPA
NSheehan, RI OPA
DJackson, RI

Indian Point Nuclear Generating
Units 2 and 3

cc:

Mr. Michael R. Kansler
President & CEO/CNO
Entergy Nuclear Operations, Inc.
1340 Echelon Parkway
Jackson, MS 39213

Mr. John T. Herron
Senior Vice President
Entergy Nuclear Operations, Inc.
1340 Echelon Parkway
Jackson, MS 39213

Sr. Vice President
Engineering & Technical Services
Entergy Nuclear Operations, Inc.
1340 Echelon Parkway
Jackson, MS 39213

Mr. Fred R. Dacimo
Site Vice President
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249

Mr. Anthony Vitale - Acting
General Manager, Plant Operations
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
450 Broadway
P.O. Box 249
Buchanan, NY 10511-0249

Mr. Oscar Limpias
Vice President Engineering
Entergy Nuclear Operations, Inc.
1340 Echelon Parkway
Jackson, MS 39213

Mr. Joseph P. DeRoy
Vice President, Operations Support
Entergy Nuclear Operations, Inc.
1340 Echelon Parkway
Jackson, MS 39213

Mr. John A. Ventosa
GM, Engineering
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601

Mr. John F. McCann
Director, Nuclear Safety & Licensing
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601

Ms. Charlene D. Faison
Manager, Licensing
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601

Mr. Ernest J. Harkness
Director, Oversight
Entergy Nuclear Operations, Inc.
1340 Echelon Parkway
Jackson, MS 39213

Mr. Patric W. Conroy
Director, Nuclear Safety Assurance
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249

Mr. T.R. Jones - Acting
Manager, Licensing
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanana, NY 10511-0249

Mr. William C. Dennis
Assistant General Counsel
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601

cc:

Mr. Paul D. Tonko
President and CEO
New York State Energy Research and
Development Authority
17 Columbia Circle
Albany, NY 12203-6399

Mr. John P. Spath
New York State Energy, Research and
Development Authority
17 Columbia Circle
Albany, NY 12203-6399

Mr. Paul Eddy
New York State Department
of Public Service
3 Empire State Plaza
Albany, NY 12223-1350

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Senior Resident Inspector's Office
Indian Point 2
U.S. Nuclear Regulatory Commission
P.O. Box 59
Buchanan, NY 10511

Senior Resident Inspector's Office
Indian Point 3
U.S. Nuclear Regulatory Commission
P.O. Box 59
Buchanan, NY 10511

Mr. Charles Donaldson, Esquire
Assistant Attorney General
New York Department of Law
120 Broadway
New York, NY 10271

Mayor, Village of Buchanan
236 Tate Avenue
Buchanan, NY 10511

Mr. Raymond L. Albanese
Four County Coordinator
200 Bradhurst Avenue
Unit 4 Westchester County
Hawthorne, NY 10532

Mr. William DiProfio
PWR SRC Consultant
48 Bear Hill Road
Newton, NH 03858

Mr. Garry Randolph
PWR SRC Consultant
1750 Ben Franklin Drive, 7E
Sarasota, FL 34236

Mr. William T. Russell
PWR SRC Consultant
400 Plantation Lane
Stevensville, MD 21666-3232

Mr. Jim Riccio
Greenpeace
702 H Street, NW
Suite 300
Washington, DC 20001

Mr. Phillip Musegaas
Riverkeeper, Inc.
828 South Broadway
Tarrytown, NY 10591

Mr. Mark Jacobs
IPSEC
46 Highland Drive
Garrison, NY 10524

Mr. R. M. Waters
Technical Specialist Licensing
450 Broadway
P.O. Box 0249
Buchanan, NY 10511-0249

cc:

Mr. Sherwood Martinelli
351 Dyckman
Peekskill, NY 10566

Ms. Susan Shapiro, Esq.
21 Perlman Drive
Spring Valley, NY 10977

John Sipos
Assistant Attorney General
New York State Department of Law
Environmental Protection Bureau
The Capitol
Albany, NY 12224

Robert Snook
Assistant Attorney General
Office of the Attorney General
State of Connecticut
55 Elm Street
P.O. Box 120
Hartford, CT 06141-0120

Ms. Kathryn M. Sutton, Esq.
Morgan, Lewis & Bockius, LLP
1111 Pennsylvania Avenue, NW
Washington, DC 20004

Mr. Paul M. Bessette, Esq.
Morgan, Lewis & Bockius, LLP
1111 Pennsylvania Avenue, NW
Washington, DC 20004

Mr. Martin J. O'Neill, Esq.
Morgan, Lewis & Bockius, LLP
1111 Pennsylvania Avenue, NW
Washington, DC 20004

The Honorable Nita Lowey
222 Mamaroneck Avenue, Suite 310
White Plains, NY 10605