

May 28, 2008

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3, LICENSE
RENEWAL APPLICATION – INACCESSIBLE OR UNDERGROUND CABLES

Dear Sir or Madam:

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 Kimberly.green@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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ADAMS Accession No.:

OFFICE	PM:RPB2:DLR	LA:DLR	BC:RPB2:DLR
NAME	KGreen	SFigueroa	RFranovich
DATE	05/28/08	05/28/08	05/28/08

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**INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
LICENSE RENEWAL APPLICATION
REQUEST FOR ADDITIONAL INFORMATION
INACCESSIBLE OR UNDERGROUND POWER CABLES**

RAI 3.6.2.3-2

In LRA Table 3.6.2-1, the applicant states that 138kV direct burial insulated transmission cables (passive electrical for station blackout (SBO) recovery) have no aging effects requiring management and indicates (by Note J) for material, environment, aging effect, and aging management program (AMP) that neither the component nor the material and environment combination is evaluated in the GALL Report for meeting the component's electrical intended function. The plant-specific Note 602 for this item in LRA Table 3.6.2-1 states that it is not subject to water treeing, since it is designed for continuously wet conditions. Industry and plant operating experience has not provided any information on failures of this type of cable. In addition, in response to the audit team's question concerning the qualification of this cable for continuous submerged condition, the applicant stated that the aging effects caused by moisture and voltage stress are not applicable to this cable because the lead sheath prevents moisture intrusion.

Based on an initial review of the licensee's responses to Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients," the staff notes that several licensees have identified failures of XLPE cables in low and medium voltage applications. The high voltage cables could have the same failure mechanisms if the underground cables are susceptible to moisture, water, and condensation environment or have manufacturing defects or damage caused by shipping and installation, or exposure to electrical transients and abnormal operating conditions. The likelihood of failure from any of these causes increases over time as the cable insulation degrades.

10 CFR 54.21(a)(3) requires that components within the scope of license renewal and subject to an AMR must be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation. Therefore, the staff requests the applicant to provide technical justification of why an aging management program is not required to manage the potential loss of dielectric strength leading to reduced insulation resistance and electrical failure due to aging mechanisms such as moisture intrusion, water treeing, elevated operating temperature, voltage stress, and galvanic corrosion. In order to complete its review, the staff requires responses to the following requests for additional information.

1. Explain why an AMP is not required to manage the potential loss of dielectric strength leading to reduced insulation resistance and electrical failure due to aging mechanisms such as moisture and water intrusion, water treeing, elevated operating temperature, voltage stress, and galvanic corrosion. The operating experience has shown that manufacturing defects, and damage caused by shipping and installation are contributing causes resulting in water treeing and insulation breakdown.
2. State whether if any testing was performed on the cable during receipt and post-installation (include the type of testing that was performed on the cable). If so, describe the capabilities of the testing method performed on the cable, the testing results, and

ENCLOSURE

state if the testing identified any problems. State whether a current testing or maintenance program exists for this cable system, and if so, describe that program.

3. Provide details of the original cable specifications including procurement specification (include all applicable references) to support that the subject cable is comparable to submarine cable and/or that the cable is supplied with a moisture barrier or water sealant swelling material applied under the lead sheath as specified in your letter dated October 11, 2007, in response to the LRA audit team's question. Also, describe in detail the differences between the subject cable and a submarine cable.
4. Provide documentation showing that the cable can operate for the duration of the period of extended operation in submerged and wet conditions. If no periodic testing is proposed for this cable, explain how you plan to monitor the degradation of the cable or the condition of the conductor insulation (loss of dielectric strength) to preclude any potential cable failure such that the cable will perform its intended function for the period of extended operation as required by 10 CFR 54.21(a)(3).
5. Describe the AEIC or other specification that is applicable to the IP2/IP3 lead sheath power cables that are designed to be installed in wet environments for extended periods. Also, describe the conditions for which the cable was tested in accordance with specification AEIC CS7 with respect to operability in wet/submerged/humid conditions.
6. Identify the material, environment, aging mechanism, and aging effect for the pot assembly (termination ends) for this cable. Identify details of periodic visual inspections and walkdowns performed to date or planned for the period of extended operation to monitor for oil leakage, oil testing performed or any indications or alarms provided in the control room to indicate the potential loss of oil. Explain how effects of aging will be managed during the period of extended operation.

Letter to Entergy Nuclear Operating from K.Green, dated May 28, 2008

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RENEWAL APPLICATION – INACCESSIBLE OR UNDERGROUND CABLES

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RidsNrrDssSbpb

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RFranovich

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KGreen

JBoska

RAuluck

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SBurnell, OPA

DMcIntyre, OPA

TMensah, OEDO

EDacus, OCA

GMeyer, RI

MMcLaughlin, RI

NMcNamara, RI

DScrenci, RI OPA

NSheehan, RI OPA

PCataldo, RI

CHott, RI

DJackson, RI

BWelling, RI

ECobey, RI

MCox, RI

RConte, RI

Indian Point Nuclear Generating
Units 2 and 3

cc:

Senior Vice President
Entergy Nuclear Operations, Inc.
P.O. Box 31995
Jackson, MS 39286-1995

Vice President Oversight
Entergy Nuclear Operations, Inc.
P.O. Box 31995
Jackson, MS 39286-1995

Senior Manager, Nuclear Safety &
Licensing
Entergy Nuclear Operations, Inc.
P.O. Box 31995
Jackson, MS 39286-1995

Senior Vice President and COO
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601

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

Manager, Licensing
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249

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

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

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

Indian Point Nuclear Generating
Units 2 and 3

- 2 -

cc:

Mr. William DiProffio
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

Mr. Sherwood Martinelli
351 Dyckman Street
Peekskill, NY 10566

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

Mr. 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

Ms. Joan Leary Matthews
Senior Counsel for Special Projects
Office of General Counsel
NYS Department of Environmental
Conservation
625 Broadway
Albany, NY 12233-5500