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John A Ventosa Site Vice President Administration

NL-13-081

July 9, 2013

U.S. Nuclear Regulatory Commission ATTN: Document Control Desk 11555 Rockville Pike Rockville, MD 20852

- SUBJECT: Response to Request for Additional Information Regarding License Amendment Request concerning PT-Limits and LTOP Requirements (TAC NO. MF0634) Indian Point Unit Number 2 Docket No. 50-247 License No. DPR-26
- REFERENCES: 1. NRC Letter to Entergy, Request for Additional Information Regarding License Amendment Request concerning PT-Limits and LTOP Requirements (TAC NO. MF0634), dated June 13, 2013.
 - 2 Entergy Letter NL-13-001 to NRC, Proposed Changes to Indian Point 2 Technical Specifications Regarding Reactor Vessel Heatup and Cooldown Curves and Low Temperature Over Pressure Requirements, dated February 6, 2013.

Dear Sir or Madam:

Entergy Nuclear Operations, Inc., (Entergy) is hereby providing the attached response to the NRC Reactor Systems Branch (SRXB) request for additional information, Reference 1, associated with the proposed changes to the Indian Point 2 Technical Specifications in Reference 2.

A copy of this response and the associated attachment is being submitted to the designated New York State official in accordance with 10 CFR 50.91.

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There are no new commitments being made in this submittal. If you have any questions or require additional information, please contact Mr. Robert Walpole, Manager, Licensing at (914) 254-6710.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July \underline{Q} , 2013.

Sincerely,

JAV/ai

Attachment: Response to Request for Additional Information Regarding P-T Limits and LTOP Requirements Reactor Systems Branch (SRXB)

 cc: Mr. Douglas Pickett, Senior Project Manager, NRC NRR DORL Mr. William Dean, Regional Administrator, NRC Region 1 NRC Resident Inspectors Mr. Francis J. Murray, Jr., President and CEO, NYSERDA Ms. Bridget Frymire, New York State Dept. of Public Service

ATTACHMENT TO NL-13-081

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING P-T LIMITS AND LTOP REQUIREMENTS REACTOR SYSTEMS BRANCH (SRXB)

ENTERGY NUCLEAR OPERATIONS, INC. INDIAN POINT NUCLEAR GENERATING UNIT NO. 2 DOCKET NO. 50-247

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Response To Request For Additional Information

By letter dated February 6, 2013, Entergy Nuclear Operations, Inc., (Entergy), submitted a License Amendment request for Indian Point Nuclear Generating Unit Number 2 (IP2) Technical Specification changes regarding pressure-temperature (P-T) limits and Low Temperature Overpressure Protection (LTOP) setpoints. The Technical Specification changes are intended to replace the current P-T limits and LTOP setpoints for 29.2 effective full power years (EFPY) with the proposed P-T limits and LTOP setpoints for 48 EFPY. By letter of June 13, 2013 the Nuclear Regulatory Commission requested additional information on that request. The Reactor Systems Branch (SRXB) request and the response is addressed below.

Question

"By letter dated February 3, 2013, Entergy Nuclear Operations, Inc. (Entergy, the Licensee) proposed to revise Indian Point Nuclear Generating Unit No. 2 (IP2) Technical Specification 3.4, "Reactor Coolant System," as necessary to implement revised reactor vessel heatup and cooldown curves and low temperature overpressure (LTOP) requirements. The proposed revisions would replace the existing limits, which expire after 29.2 effective full power years (EFPY) of exposure, with new limits that are applicable up to 48 EFPY.

The Reactor Systems Branch staff has reviewed the request and determined that additional information is necessary to complete its review.

On Page 9 of 12 of Attachment 1 to the February 3, 2013, license amendment request letter, the following is stated with respect to the currently applicable TS requirements:

The WCAP [Westinghouse Commercial Atomic Power Report] (Reference 1) for normal HU [heatup] and CD [cooldown] curves identifies the methodology under which the figures were generated, and was previously transmitted to the NRC (Reference 4). These curves are based on latest available reactor vessel information and updated calculated fluences, which include the impact of Stretch Power Uprate.

The same passage then goes on to identify differences between the methods used to generate prior curves and those used to generate the proposed curves, but also states (Page 10 of 12):

The calculation for the LTOP curves uses a methodology identical to that of the existing curves, based on the source calculations for TS Amendment 262 (Reference 3). The LTOP curves in Reference 2 are based on the HU/CD curves established in Reference 1, and therefore the revised LTOP setpoints, and its family of associated curves, similarly reflect the increase in lifetime fluence for a service life of 48 EFPY.

RAI SRXB.1

Please clarify whether the proposed LTOP and HU/CD limits are based on a previously reviewed, or new, fluence calculation. Provide a description of the fluence calculation in sufficient detail to enable the staff to determine whether the calculations are acceptable (e.g., that the calculations adhere to NRC Regulatory Guide 1.190, "Calculational and Dosimetry Methods for Determining

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Pressure Vessel Neutron Fluence"), or provide a reference to previously docketed information that provides the same description."

Response to RAI SRXB.1

The information requested is separated into three parts as discussed below:

(1) Please clarify whether the proposed LTOP and HU/CD limits are based on a previously reviewed, or new, fluence calculation.

A previous License Amendment Request (LAR), submitted on March 5, 2009 (NL-09-013) included as Enclosure 1, WCAP-16752-NP Rev 0, "Indian Point Unit 2 Heatup and Cooldown Limit Curves for Normal Operation". The LAR was for Reactor Vessel Heatup and Cooldown curves and LTOP curves for a service life of 29.2 EFPY. However, the WCAP submitted with this LAR also contained Heatup and Cooldown curves for a service life of 48 EFPY. Thus the proposed LTOP and HC/CD limits are based on a previously generated fluence calculation for 48 EFPY and contained in WCAP-16752.

(2) Provide a description of the fluence calculation in sufficient detail to enable the staff to determine whether the calculations are acceptable (e.g., that the calculations adhere to NRC Regulatory Guide 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence")

A description of the fluence calculation is provided on page 12 of the WCAP:

"Table 4-1 provides neutron exposure information pertinent to the Indian Point Unit 2 (IPP) Stretch Power Uprating Program for the reactor pressure vessel. Neutron fluence information for the Indian Point Unit 2 reactor pressure vessel is based on an assessment of the projected reactor vessel fluence that accounts for a mid-cycle uprate from 3071.4 MWt to 3115 MWt during the current operating Cycle 16 design; incorporation of recently developed loading patterns that are anticipated for use in Cycles 17 through 19 operating at 3216 MWt; and utilization of the Cycle 19 loading pattern with the peripheral assembly powers increased by a factor of 1.05 operating at 3216 MWt from the onset of Cycle 20. In Table 4-1, the calculated maximum fast neutron fluence experienced by the Indian Point Unit 2 reactor pressure vessel is provided as a function of operating time.

The fluence calculations were based on the latest available nuclear cross-section data derived from ENDF/B-VI and made use of the latest available calculational tools for neutron source generation and neutron transport. Furthermore, this neutron transport methodology follows the guidance and meets the requirements of Regulatory Guide 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence" [Reference 13]."

(3) Or provide a reference to previously docketed information that provides the same description.

A reference to previously docketed information is found in the NRC Safety Evaluation for Amendment 262 – Indian Point Nuclear Generating Unit No. 2 – Issuance of Amendment RE: Reactor Vessel updated Heatup and Cooldown curves (TAC No. ME 0788), August 17, 2009, which contained the following discussion for neutron fluence:

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"3.2.2 Neutron Fluence

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Issues related to RPV neutron fluence calculations were discussed in a safety evaluation (SE) dated May 18, 2009 (ADAMS Accession No. ML0913501511), by the Office of Nuclear Reactor Regulation's Reactor Systems Branch (SRXB), Division of Safety Systems (DSS). In the SE, SRXB determined that since the neutron fluence methodology adheres to the guidance of RG 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence," dated March 2001, the neutron fluence values are acceptable for the purpose of developing P-T limit curves for IP2."