



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 7, 2013

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

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT NO. 2 - REQUEST FOR
ADDITIONAL INFORMATION REGARDING PROPOSED LICENSE
AMENDMENT TO TEMPORARILY CONNECT SEISMIC TO NON-SEISMIC
PIPING UNDER ADMINISTRATIVE CONTROLS (TAC NO. MF1440)

Dear Sir or Madam:

By letter dated April 15, 2013, Entergy Nuclear Operations, Inc., the licensee, submitted a license amendment request to temporarily connect the seismic piping of the refueling water storage tank (RWST) to the non-seismic piping of the boric acid recovery system for the purpose of purifying the contents of the RWST prior to the Spring 2014 refueling outage.

The Nuclear Regulatory Commission's Accident Dose Branch, the Component Performance, NDE, and Testing Branch, and the Health Physics and Human Performance Branch are reviewing the submittal and have determined that additional information is needed to complete its review. The specific questions are found in the enclosed request for additional information (RAI). Based on our discussions we understand that a response to the RAI will be provided within 30 days of the date of this letter.

Please contact me at (301) 415-1364 if you have any questions on this issue.

Sincerely,

A handwritten signature in black ink that reads "Douglas V. Pickett".

Douglas V. Pickett, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-247

Enclosure:

1. Request for Additional Information – Accident Dose Branch
2. Request for Additional Information – Component Performance, NDE, and Testing Branch
3. Request for Additional information – Health Physics and Human Performance Branch

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

ACCIDENT DOSE BRANCH

ENERGY NUCLEAR OPERATIONS, INC.

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2

DOCKET NO. 50-247

- 1) Final Safety Analysis Report (FSAR) Section 14.3.6.6, "External Recirculation," provides a description of the analyses used to justify the proposed change (2.0 gallon per hour limit for Emergency Core Cooling System (ECCS) leakage).

FSAR Section 14.3.6.6 states:

Since the leakage is initiated at 6.5 hours after the LOCA [loss of coolant accident], it does not contribute to the 2 hour site boundary dose [exclusion area boundary dose or EAB].

Standard Review Plan (SRP) 15.0.1, "Radiological Consequence Analyses Using Alternative Source Terms," states:

The methodology and assumptions for calculating the radiological consequences should reflect the regulatory positions of RG-1.183 [Regulatory Guide 1.183].

Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," Regulatory Position 4.1.5, states:

The TEDE [total effective dose equivalent] should be determined for the most limiting person at the EAB. The maximum EAB TEDE for any two-hour period following the start of the radioactivity release should be determined and used in determining compliance with the dose criteria in 10 CFR 50.67.¹⁴ The maximum two-hour TEDE should be determined by calculating the postulated dose for a series of small time increments and performing a "sliding" sum over the increments for successive two-hour periods. The maximum TEDE obtained is submitted. The time increments should appropriately reflect the progression of the accident to capture the peak dose interval between the start of the event and the end of radioactivity release (see also Table 6).

This is consistent with Title 10 of the Code of Federal Regulations [10 CFR], Section 50.67, "Accident Source Term," that states:

*An individual located at any point on the boundary of the exclusion area for **any** [emphasis added] 2-hour period following the onset of the postulated fission*

product release, would not receive a radiation dose in excess of 0.25 Sv (25 rem)² total effective dose equivalent (TEDE).

- a) Please confirm whether the dose due to ECCS leakage is excluded from the FSAR Section 14.3.6.6 EAB dose calculation.
- b) If so, please explain how this is consistent with 10 CFR 50.67. The SRP 15.0.1 and 10 CFR 50.67 both state that the worst dose for any 2 hour period is to be used to determine the EAB dose. This would typically mean the ECCS dose should be added to the time dependent EAB dose and the worst 2 hour dose should be determined from this time dependent dose profile. Please justify why the ECCS leakage is not considered in the determination of the EAB dose, or include the ECCS leakage in the EAB dose calculation.

2) UFSAR Section 14.3.6.6 states:

The releases would be subject to filtration by the filtered ventilation system provided for the primary auxiliary building which houses the portions of the ECCS located outside containment. However, filtration of the releases is not credited in the analysis.

- a) Are releases from non-seismic piping (postulated to fail) subject to the filtered ventilation system in the primary auxiliary building?
- 3) The Nuclear Regulatory Commission's safety evaluation, which reviewed the conversion to 10 CFR 50.67, reviewed an analysis which appears to have different assumptions than those provided in FSAR Section 14.3.6.6.
- a) Has the NRC staff reviewed the analysis provided in FSAR Section 14.3.6.6 or were these changes made using 10 CFR 50.59, "Changes, tests and experiments"? If a staff evaluation of this analysis has not been performed, please provide the inputs, assumptions, methodology and results of the analysis that is to be used to support the proposed change.
 - b) FSAR Section 14.3.6.6 provides design basis dose values for two different assumptions (assuming a boundary layer effect and assuming no boundary layer effect). Which assumption is used for the licensing basis calculation?

4) Page 3 of 8 of the submittal states:

The RWPP [Refueling Water Purification Pump] will take suction through manual isolation valve 855 on line ...

- a) Please confirm whether this sentence should state valve 845 or whether valve 855 is correct.

- 5) RG 1.183, Regulatory Position 5.1.2 states:

5.1.2 Credit for Engineered Safeguard Features

Credit may be taken for accident mitigation features that are classified as safety related, are required to be operable by technical specifications, are powered by emergency power sources, and are either automatically actuated or, in limited cases, have actuation requirements explicitly addressed in emergency operating procedures. The single active component failure that results in the most limiting radiological consequences should be assumed. Assumptions regarding the occurrence and timing of a loss of offsite power should be selected with the objective of maximizing the postulated radiological consequences.

- a) Please describe how the valves credited to isolate the non-seismic pathways after a design basis accident meet the above regulatory position. For those valves that do not meet the regulatory position please explain the differences between the design features, analytical techniques and procedural methods proposed and the regulatory position and justify how the proposed alternatives to the regulatory position proved an acceptable method for complying with the NRC regulations (10 CFR 50.67).

- 6) Page 4 of 8 of the submittal states:

Another potential for sump fluid leakage to impact BARS [Boric Acid Recovery System] would be leakage through the 2 inch SI mini-flow line back to the RWST [refueling water storage tank] that is connected to valve 350. However, this would be limited to leakage through MOV 842/843, which are tested by 2-PT-R048 and have an acceptance criterion of 0.5 gallons per hour (gph).

- a) Are MOV 842/843 always closed when the potential for this leakage pathway exists? If not, explain the timing involved for closing MOV 842/843 and valve 350. Can the timing of the closure of these valves cause the 0.5 gph leakage limit to the non-seismic piping to be exceeded for any time period after the start of the postulated accident.

- 7) Page 4 of 8 of the submittal states:

*Following the injection phase of a large break LOCA (about 20 minutes) the **preferred** [emphasis added] means of cold leg recirculation is to use the internal recirculation pumps. This results in the fluid being kept inside containment until hot leg recirculation [at 6.5 hours].*

RG 1.183, Regulatory Position 5.1.3 states:

The numeric values that are chosen as inputs to the analyses required by 10 CFR 50.67 should be selected with the objective of determining a conservative postulated dose.

- a) Confirm that plant procedures do not allow the recirculation of sump fluids outside containment prior to 6.5 hours.
- b) If plant procedures do allow the recirculation of sump fluids outside of containment prior to 6.5 hours why aren't these methods of recirculation considered in the determination of the ECCS leakage dose calculation?
- c) RG 1.183, Regulatory Position 1.3 defines the scope of required analyses which include post accident access shielding (NUREG-0737, "Clarification of TMI Action Plan Requirements," Action Item II.B.2, "Post-Accident Access Shielding"). If plant procedures do allow the recirculation of sump fluids outside of containment prior to 6.5 hours please state whether vital area access (Action Item II.B.2) necessary to close valves 845, 727A and 350 and trip the refueling water storage tank (RWST) purification pump is maintained.

REQUEST FOR ADDITIONAL INFORMATION
COMPONENT PERFORMANCE, NDE, AND TESTING BRANCH
ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
DOCKET NO. 50-247

Reference:

Letter NL-13-015, dated April 15, 2013, from John A. Ventosa of Entergy Nuclear Northeast to NRC, "Proposed License Amendment Regarding Connection of Non Seismic Boric Acid Recovery System to the Refueling Water Storage Tank"

RAI 1

In the referenced letter it is indicated that valves 845, 727A and 350 will be part of the Inservice Test Program with a test frequency of two years. Will these valves be classified as manual, active valves and, therefore, be subject to ASME OM Code exercise testing requirements? Will these valves be further classified as Category A and, therefore, be subject to ASME OM Code leakage testing requirements? (The discussion of post-accident dose consequences indicates that these valves could be exposed to sump fluid.)

REQUEST FOR ADDITIONAL INFORMATION REGARDING REQUEST TO AMEND
TECHNICAL SPECIFICATION 3.5.4, REFUELING WATER STORAGE TANK
FOR INDIAN POINT NUCLEAR GENERATING UNIT 2 (IP2), DOCKET NO. 50-247,
ENTERGY NUCLEAR NORTHEAST, TAC# MF1440

1.0 INTRODUCTION

By letter dated April 15, 2013 (ADAMS Accession Number ML13116A007), Entergy Nuclear Operations, Inc., the licensee for Indian Point Nuclear Generating Unit 2 (IP2), submitted a license amendment request (LAR) to revise Technical Specification (TS) 3.5.4, "Refueling Water Storage Tank (RWST)". The proposed change would revise the TS to allow the non-seismically qualified piping of the temporary Boric Acid Recovery System (BARS) to be connected to, and isolated from, the RWST's seismically qualified piping by manual operation of RWST seismically qualified boundary valves. This would be done under administrative controls and only for limited periods of time. These limited periods are specified as up to 30 days per fuel cycle for filtration for removal of suspended solids from the RWST water. This change will only be applicable until Refueling Outage R22 (Spring 2016) ends. Manual connection of the RWST seismically qualified piping to non-seismically qualified piping shall not be allowed after the end of R22. The Health Physics and Human Performance Branch (AHPB) has done a preliminary review of the LAR regarding the operator performance aspects and finds that the following additional information is required to complete the review.

1. As described in Section 2 of the licensee's submittal, the change requested for TS 3.5.4 is a proposed Note, that states, "The RWST isolation valves 350, 727A and 845 connected to non-safety related piping may be opened under administrative controls for up to 30 days per fuel cycle for filtration until the end of refuel outage 22." Later in Section 3, it is stated that, "Prior to refueling outage (RO) 2R20 the RWST was recirculated for a duration of 13 days. After recirculation the total concentration of silica was less than 1.1 ppm. Prior to RO 2R19 the RWST was recirculated for a duration of 11 days. A sample taken after recirculation had total concentration of silica of 1.3 ppm." Based on this statement the NRC staff assumes that clarity was sufficient after, at most, 13 days, and at a silica concentration of 1.3 ppm.
 - a. What concentration of silica/clarity is acceptable for operators to perform their required tasks during shutdown? Why isn't this criterion included in the proposed TS? How will operators know when it is okay to disengage the BARS?
 - b. If prior to the previous two refueling outages, it only took 11 days and 13 days to achieve acceptable clarity, why is the licensee requesting allowance for up to 30 days? In order to minimize the time spent in a seismically vulnerable configuration, why wouldn't a duration of 15 days be sufficient?
2. Does IP2 have a Time-critical Action Program to protect high-risk, time-limited actions from inadvertent change? If yes, is the proposed task sequence included in that program? If no, what controls are used to prevent inadvertent changes to the proposed

operator actions or the time available to perform them? Does the licensee's configuration control system have a way to identify Tech-Spec-related actions in procedures?

3. In the general discussion of the ingress/egress paths taken by the operators to accomplish the isolation of seismic from non-seismic systems, the licensee states that a card reader is in the intended path.
 - a. Does this card reader require a different card than an operator would have for plant access? If yes, will the dedicated operator routinely keep this other card on his person? If no, where will it be stored?
 - b. Did the simulation that was performed to ascertain required time vs. available time include accessing the card reader?
 - c. Is the card reader designed to work under seismic conditions? SBO? How much additional time would be involved if the operator had to deal with a non-operational card reader?
4. What method(s) will be used to monitor the continuing effectiveness and safety of the current method of purification of reactor water until the final resolution is implemented in 2016? Will the Corrective Action Program be used to track the status and effectiveness of current process?

August 7, 2013

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

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT NO. 2 - REQUEST FOR ADDITIONAL INFORMATION REGARDING PROPOSED LICENSE AMENDMENT TO TEMPORARILY CONNECT SEISMIC TO NON-SEISMIC PIPING UNDER ADMINISTRATIVE CONTROLS (TAC NO. MF1440)

Dear Sir or Madam:

By letter dated April 15, 2013, Entergy Nuclear Operations, Inc., the licensee, submitted a license amendment request to temporarily connect the seismic piping of the refueling water storage tank (RWST) to the non-seismic piping of the boric acid recovery system for the purpose of purifying the contents of the RWST prior to the Spring 2014 refueling outage.

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Sincerely,

/ra/

Douglas V. Pickett, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-247

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