

From: Rick Ennis
To: Ronda Daflucas
Date: 8/22/05 9:13AM
Subject: VY EPU - 2nd set of Draft RAIs

Ronda,

Attached are the second set of followup draft RAIs based on your recent responses to our 7/27/05 RAIs. The only changes since the first set I sent you on 8/10 is the addition of SRXB RAIs 62 and 63.

Please let me know when we can discuss.

thanks,

Rick

CC: Antonio Fernandez; Brian Hobbs; Craig Nichols; Darrell Roberts; Jim DeVincentis;
Len Gucwa

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Subject: VY EPU - 2nd set of Draft RAIs
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MESSAGE	858	08/22/05 09:13AM
draft2 rai08 mc0761.wpd	57239	08/22/05 09:05AM

Options
Auto Delete: No
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REQUEST FOR ADDITIONAL INFORMATION
REGARDING PROPOSED LICENSE AMENDMENT
EXTENDED POWER UPRATE
VERMONT YANKEE NUCLEAR POWER STATION
DOCKET NO. 50-271

By letter dated September 10, 2003, as supplemented on October 1, and October 28 (2 letters), 2003, January 31 (2 letters), March 4, May 19, July 2, July 27, July 30, August 12, August 25, September 14, September 15, September 23, September 30 (2 letters), October 5, October 7 (2 letters), December 8, and December 9, 2004, and February 24, March 10, March 24, March 31, April 5, April 22, June 2, August 1, and August 8, 2005, (References 1 through 32), Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Entergy or the licensee), submitted a proposed license amendment to the Nuclear Regulatory Commission (NRC) for the Vermont Yankee Nuclear Power Station (VYNPS). The proposed amendment, "Technical Specification Proposed Change No. 263, Extended Power Uprate" would allow an increase in the maximum authorized power level for VYNPS from 1593 megawatts thermal (MWT) to 1912 MWT.

The NRC staff is reviewing your Extended Power Uprate (EPU) amendment request and has determined that additional information is required to complete the review. The specific information requested is addressed below.

Electrical and Instrumentation and Controls Branch (EEIB)

Electrical Engineering Section (EEIB-A)

Reviewer: Amar Pal

6. As followup to the response to request for additional information (RAI) EEIB-A-4 in Supplement 30, Attachment 4, it appears that the direct current required to close the required breakers in order to provide an alternate alternating current (AAC) power source was not considered in the original coping analysis. Additionally, 6 amps are needed to close one breaker. However, two breakers are involved for the AAC power source. Furthermore, the spring-charging current after the breakers are closed will be much higher. Please explain why the spring-charging current is not considered in the battery capacity and voltage calculations. Are there any other loads not currently considered in the coping analysis calculation?
7. As followup to the response to RAI EEIB-A-2 in Supplement 30, Attachment 4, your response indicated that "should the SBO [station blackout] event occur during a winter snow storm that could delay VHS [Vernon Hydroelectric Station] startup, the conservatism in heat sink temperature (which assumes peak summer allowable temperature) would allow for additional coping time." It appears from this statement that the coping time could be more than two hours during a snow storm. Please provide information regarding the worst-case coping time under any conditions and demonstrate

that the current coping analysis timeframe of two hours, and the associated conservatism, is bounding.

In addition, the response stated "Based on their experience, which includes off hours events in which the VHS needed to be re-started, TransCanada indicated that they had restarted the unit within the required ISO-NE response timeframe." Please provide details regarding the ISO-NE response timeframe.

8. Supplement 25, Attachment 1, Table 1, provides the timeline for AAC source startup and alignment. Step 3 describes the activities associated with notifying and staffing the VHS personnel in preparation for blackstart. The time assumed for these activities is ≤ 90 minutes. The response to RAI EEIB-A-1 in Supplement 30, Attachment 4 discusses a tabletop review of the procedures of the actions required for an SBO event. Provide additional information regarding how the tabletop review will verify this step can be accomplished in 90 minutes under worst-case conditions.

Reactor System Branch (SRXB)

Boiling Water Reactors and Nuclear Performance Section (SRXB-A)

Reviewer: Muhammad Razzaque (questions 59 - 61), George Thomas (questions 62 - 63)

59. The response to RAI SRXB-A-8 in Supplement 30, Attachment 9, is not clear regarding whether single loop operation of shutdown cooling (SDC) is assumed as part of the VYNPS Appendix R analysis. If single loop operation is assumed, has an evaluation been performed at the proposed EPU conditions to demonstrate that VYNPS can achieve cold shutdown, within the required time, with only a single SDC loop during an Appendix R fire event?
60. Clarify the distinction between the terms "equilibrium core," in the response to RAI SRXB-A-10, "representative cycle core" in Section 2.2 of the VYNPS Power Uprate Safety Analysis Report (PUSAR) (i.e., Attachment 4 of the application dated September 10, 2003), and "power uprate representative equilibrium cycle (PUREC) core design" in the response to RAI SRXB-A-9.
61. The response to RAI SRXB-A-11 in Supplement 30, Attachment 9, states that the current licensing basis requirements for new or spent fuel storage are not being changed by the proposed EPU. However, the response does not address whether any analysis was performed regarding the affect of the proposed EPU on new and spent fuel storage. Please address whether this analysis was done and, if so, the results of the analysis. The response should address the affects of enrichments levels in new fuel, and potential increase of some elements/isotopes (such as Plutonium) in spent fuels, etc..
62. The proposed changes to TS 3.4.C.3 are shown on page 8 of Attachment 1 to the application dated September 10, 2003. This TS includes a mathematical expression showing the relationship between standby liquid control (SLC) system pump flow rate, boron concentration, and boron enrichment that is required to demonstrate SLC system operability consistent with the requirements in 10 CFR 50.62(c)(4). Additional information is required to demonstrate that the proposed value of 1.29 in this mathematical expression is acceptable at EPU conditions.
63. Section 2.8.5 of the safety evaluation template in Review Standard RS-001 directs the NRC staff to evaluate the licensee's accident and transient analyses to determine if the analyses adequately account for operation of the plant at the proposed EPU power level. Please describe the transients that are analyzed at the current licensed power level for determination of the operating limit minimum critical power ratio (OLMCMPR) and discuss which transient is most limiting. In addition, please confirm that the seven transients listed in Section 9.1 of the NRC staffs safety evaluation dated March 31, 2003, for GE licensing topical report NEDC-33004P, "Constant Pressure Power Uprate," will be analyzed for the first EPU core.

REFERENCES

- 1) Entergy letter (BVY 03-80) to NRC dated September 10, 2003, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Extended Power Uprate"
- 2) Entergy letter (BVY 03-90) to NRC dated October 1, 2003, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 1, Extended Power Uprate -Technical Review Guidance"
- 3) Entergy letter (BVY 03-95) to NRC dated October 28, 2003, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 2, Extended Power Uprate - Grid Impact Study"
- 4) Entergy letter (BVY 03-98) to NRC dated October 28, 2003, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 3, Extended Power Uprate - Updated Information"
- 5) Entergy letter (BVY 04-009) to NRC dated January 31, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 4, Extended Power Uprate - NRC Acceptance Review"
- 6) Entergy letter (BVY 04-008) to NRC dated January 31, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 5, Extended Power Uprate - Response to Request for Additional Information"
- 7) Entergy letter (BVY 04-025) to NRC dated March 4, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 6, Extended Power Uprate - Withholding Proprietary Information"
- 8) Entergy letter (BVY 04-050) to NRC dated May 19, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 7, Extended Power Uprate - Confirmatory Results"
- 9) Entergy letter (BVY 04-058) to NRC dated July 2, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 8, Extended Power Uprate - Response to Request for Additional Information"
- 10) Entergy letter (BVY 04-071) to NRC dated July 27, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 9, Extended Power Uprate - Revised Containment Overpressure Envelope"
- 11) Entergy letter (BVY 04-074) to NRC dated July 30, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 10, Extended Power Uprate - Response to Request for Additional Information"

- 12) Entergy letter (BVY 04-081) to NRC dated August 12, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 11, Extended Power Uprate - Response to Request for Additional Information"
- 13) Entergy letter (BVY 04-086) to NRC dated August 25, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 12, Extended Power Uprate - Revised Grid Impact Study"
- 14) Entergy letter (BVY 04-097) to NRC dated September 14, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 13, Extended Power Uprate - Response to Steam Dryer Action Items"
- 15) Entergy letter (BVY 04-098) to NRC dated September 15, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 14, Extended Power Uprate - Response to Request for Additional Information"
- 16) Entergy letter (BVY 04-100) to NRC dated September 23, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 15, Extended Power Uprate - Response to Steam Dryer Action Item No. 2"
- 17) Entergy letter (BVY 04-101) to NRC dated September 30, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 16, Extended Power Uprate - Additional Information Related to Request for Additional Information EMEB-B-5"
- 18) Entergy letter (BVY 04-107) to NRC dated September 30, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 17, Extended Power Uprate - Response to Request for Additional Information related to 10 CFR 50 Appendix R Timeline"
- 19) Entergy letter (BVY 04-106) to NRC dated October 5, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 18, Extended Power Uprate - ECCS [emergency core cooling system] Pump Net Positive Suction Head Margin"
- 20) Entergy letter (BVY 04-109) to NRC dated October 7, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 19, Extended Power Uprate - Initial Plant Test Program"
- 21) Entergy letter (BVY 04-113) to NRC dated October 7, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 20, Extended Power Uprate - Meeting on Steam Dryer Analysis"
- 22) Entergy letter (BVY 04-129) to NRC dated December 9, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 21, Extended Power Uprate - Steam Dryer Power Ascension Testing"

- 23) Entergy letter (BVY 04-131) to NRC dated December 8, 2004, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 22, Extended Power Uprate - 10 CFR 50 Appendix R Timeline Verification"
- 24) Entergy letter (BVY 05-017) to NRC dated February 24, 2005, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 23, Extended Power Uprate - Response to Request for Additional Information"
- 25) Entergy letter (BVY 05-024) to NRC dated March 10, 2005, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 24, Extended Power Uprate - Response to Request for Additional Information"
- 26) Entergy letter (BVY 05-030) to NRC dated March 24, 2005, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 25, Extended Power Uprate - Station Blackout and Appendix R Analyses"
- 27) Entergy letter (BVY 05-034) to NRC dated March 31, 2005, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 26, Extended Power Uprate - Steam Dryer Analyses and Monitoring"
- 28) Entergy letter (BVY 05-038) to NRC dated April 5, 2005, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 27, Extended Power Uprate - Dryer Acoustic Load Methodology Benchmark"
- 29) Entergy letter (BVY 05-046) to NRC dated April 22, 2005, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 28, Extended Power Uprate - Response to Request for Additional Information"
- 30) Entergy letter (BVY 05-061) to NRC dated June 2, 2005, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 29, Extended Power Uprate - Computational Fluid Dynamics"
- 31) Entergy letter (BVY 05-072) to NRC dated August 1, 2005, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 30, Extended Power Uprate - Response to Request for Additional Information"
- 32) Entergy letter (BVY 05-074) to NRC dated August 4, 2005, "Vermont Yankee Nuclear Power Station, Technical Specification Proposed Change No. 263, Supplement No. 31, Extended Power Uprate - Response to Request for Additional Information"