

NRR-DMPSPeM Resource

From: Regner, Lisa
Sent: Thursday, August 16, 2018 2:11 PM
To: SCHENK, TIM
Cc: Jones, Brian A. (RBS); Regner, Lisa
Subject: Final Request for Additional Information for P-T Curves - NON-PROPRIETARY VERSION
Attachments: final RAI PT Limits LAR - PUBLIC.docx

Final Request for Additional Information (L-2017-LLS-0002)

On July 19, 2018, the U.S. Nuclear Regulatory Commission (NRC) staff sent Entergy (the licensee) a draft Request for Additional Information (RAI). These RAI questions relate to a license amendment request (LAR) that proposes to modify the Pressure-Temperature Limit Curves and make technical specification changes as necessary to support operation using these new reactor pressure vessel curves.

Entergy informed the NRC staff that a clarification call was needed, and this call was held on August 16, 2018. Subsequently, Entergy informed the NRC staff that the questions were understood and Mr. Brian Jones agreed to provide a response to this final RAI on or before October 1, 2018. If Entergy does not respond by this date, the requested completion date for the LAR decision may not be met by the NRC.

The NRC staff notes that this RAI contains proprietary information; however, a non-proprietary version is attached and this version will be placed in the NRC's Agencywide Documents Access and Management System (ADAMS).

By letter dated April 2, 2018, (ADAMS Accession No. ML18092B187), the licensee requested an amendment to the Operating License for River Bend Station. The proposed amendment requests modification of the reactor pressure vessel pressure-temperature limit curves. The NRC staff requires additional information to complete its review of this request as detailed in the attached document.

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REQUEST FOR ADDITIONAL INFORMATION
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO LICENSE AMENDMENT REQUEST
OF FACILITY OPERATING LICENSE NO. NPF-47
ENTERGY OPERATIONS, INC.
RIVER BEND STATION, UNIT 1
DOCKET NOS. 50-458

Background and Regulatory Basis for all RAIs

On April 2, 2018, Entergy Operations, Inc. (Entergy or the licensee), submitted a license amendment request (LAR) to change the existing pressure-temperature (P-T) limits for River Bend Station for applicability through 54 effective full power years (54 EFPY). The P-T limit curves are as provided in Figure 3.4.11-1, which is included as part of the Limiting Conditions of Operation (LCOs) requirements contained in Section 3.4.11 in the plant-specific Technical Specifications (TS) for the facility. The LAR includes submittal of General Electric-Hitachi Company (GEH) Proprietary Report No. NEDC-33882P Revision 1 (Ref. 1, hence NEDC-33882P, Rev. 1). NEDC-33882P, Rev. 1 in turn references use of the following staff-approved generic GEH methodologies for the calculations: (a) GEH Proprietary Report No. NEDC-33178P-A, Rev. 1, as the generic methodology for calculating the P-T points for ferritic reactor pressure vessel (RPV) shell, nozzle and bottom head components (and associated pressure retaining welds), and (b) GEH Proprietary Report No. NEDC-32983P-A, Revision 2, as the RPV fluence methodology for the calculations. The staff is performing its review of the LAR in accordance with the following regulations:

- A. The regulation in 10 CFR 50.90, which provides the Commission's regulation for submitting changes to plant-specific operating license requirements (including TS requirements) as facility license amendment requests for staff approval. The current operating license is given in Facility Operating License No. NPF-47 and includes the TS requirements for River Bend Station.
- B. The regulation in 10 CFR 50.36, which provides the Commission's regulation for definitions and requirements that must be included in plant-specific TS. The rule includes the bases for LCOs and surveillance requirements (SRs) that must be included in the TS.
- C. The regulation in 10 CFR Part 50, Appendix G, "Fracture Toughness Requirements," which provides the staff requirements for calculating the P-T limits that need to be included as design limits in the LCOs and for incorporating minimum safety margin requirements and minimum temperature/lowest service temperature requirements that must be incorporated into the calculation of P-T limits.
- D. The regulation in 10 CFR Part 50, Appendix H, "Reactor Vessel Material Surveillance Program Requirements," which provides the staff requirements for implementing the licensee's reactor vessel integrated surveillance program (ISP) for River Bend Station.

- E. The regulation in 10 CFR 2.390, which provides the Commission's process and basis for determining whether docketed proprietary information, trade secrets, or confidential financial information should be withheld from disclosure to members of the general public.

The staff requests submittal of responses to the following requests for additional information (RAIs) in order to confirm that the proposed P-T limit curves in TS Figure 3.4.11-1 are acceptable for implementation by the licensee. Information in the RAIs that is considered to be **“proprietary”** in content is identified in the RAIs using a **[[bolded, double bracketed format]]** and will be protected from disclosure to members of the general public in accordance with the Commission's withholding requirements in 10 CFR 2.390.

RAI 1

The staff is aware that instruments used to monitor reactor coolant system (RCS) pressures and temperatures during TS required P-T monitoring may include some degree of uncertainty in accuracy of pressure or temperature readings taken by the instruments. The updated P-T limit curves proposed in Attachment 2 of the LAR and the contents of NEDC-33882P, Rev. 1, both indicate that the P-T limit curves for 54 EFPY were developed

P-T **[[** Clarify where the treatment or assessment of **]]** will be accounted for if they have not been accounted for in the calculational bases for the proposed P-T limits in Attachment 2 of the LAR.

RAI 2

The current SR in TS Section 3.4.11.1 requires the licensee to perform P-T monitoring during non-nuclear heatup and cooldown operations (Service Level B conditions) and during inservice leak rate or hydrostatic pressure testing (Service Level A conditions) of the RCS, and to verify that the “RCS pressure and temperature are within the limits of Figure 3.4.11-1....” If this LAR is approved by the staff, TS Figure 3.4.11-1 will be amended to include P-T limit curves for Service Level A and B loading conditions of both the beltline and bottom head regions of the RPV. Clarify how Entergy will be capable of distinguishing the specific types of P-T monitoring activities to be performed against the P-T limits for the RPV bottom head from those for the RPV beltline region under these loading conditions. Clarify whether the SR in TS Section 3.4.11.1 needs to be amended (as part of this LAR) in order to better define specific SR P-T monitoring requirements for the RPV bottom head and for the RPV beltline region under Service Level A and B loading conditions.

RAI 3

In NEDC-33882P, Rev. 1, GEH adjusted the [[

]], even though this type basis was defined and performed in GEH Proprietary Report No. NEDC-33178P-A, Revision 1 only for the generic stress assessment of the [[
]]. Explain your basis for applying [[]] in
the sample, plant-specific stress analysis [[]]. If there is a valid technical basis
for performing [[]] for the [[]], provide a sample
[[]] and the [[]] over the
entire range of pressures evaluated in the stress and P-T limit analysis for the component (i.e.,
0 psi to 1400 psi).

RAI 4

In the LAR, the licensee developed proposed P-T limit curves for the RPV bottom head region
using the generic methodology for [[]] in GEH
Proprietary Report No. NEDC-33178P-A, Revision 1. The staff-approved generic methodology
in NEDC-33178P-A, Revision 1, states that it is valid to use the [[

]]. Provide the plant-specific [[]] for the design
of the RPV bottom head at River Bend Station so that the staff can confirm that the [[
]].