Entergy

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July 27, 2004
JAFP-04-0117

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: **James A. FitzPatrick Nuclear Power Plant**
Docket No. 50-333
Response to Request for Additional Information Regarding Proposed License Amendment to Safety Limit Minimum Critical Power Ratio (SLMCPR) (TAC No. MC3391)

References: 1) Entergy Nuclear Operations, Inc. letter to USNRC (JAFP-04-0083) Proposed License Amendment to Safety Limit Minimum Critical Power Ratio (SLMCPR), dated June 4, 2004
2) USNRC letter to Entergy Nuclear Operations, Inc., Request for Additional Information Concerning Safety Limits for Minimum Critical Power Ratio (TAC NO. MC3391), dated July 6, 2004.

Dear sir:

By letter dated June 4, 2004 (Reference 1), Entergy Nuclear Operations, Inc. (ENO) proposed to amend the Technical Specifications (TS) for the James A. FitzPatrick Nuclear Power Plant (JAFNPP) by revising the Safety Limit Minimum Critical Power Ratio (SLMCPR) for both single and dual recirculation loop operation.

On July 6, 2004, ENO received a request for additional information (RAI) from the NRC with four questions concerning our SLMCPR submittal. Attachment 1 to this letter provides the response to the RAI questions.

This supplement to the license amendment request does not change the scope or conclusions in the original application, nor does it change the no significant hazards consideration determination.

There are no commitments contained in this letter.

If you have any questions in this regard, please contact Mr. Richard Plasse at (315) 349-6793.

A001

I declare under penalty of perjury that the forgoing is true and correct.

Executed on this the 27th day of July, 2004.

Sincerely,

T.A. Sullivan
Site Vice President

TS:TP:dmr

Attachment: 1. Response to Request for Additional Information

cc: Regional Administrator, Region I
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ATTACHMENT 1 to JAFP-04-0117

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION (RAI)

RAI 1:

"Provide the values for power and non-power distribution uncertainties listed in Table 1 of Attachment 4 to the June 4 application. Justify that the proposed reduction of the MCPR value is still providing enough margin for Cycle 17 operation with respect to the results shown in Table 4.1 of General Electric Company (GE) Topical Report NEDC-32601P-A, "Methodology and Uncertainties for Safety Limit MCPR Evaluations." Explain why the reduction in the calculated MCPR value due to using the improved/revised methodology is greater for Cycle 17 than the reduction shown in Table 4.1 of NEDO-32601P-A."

Response to RAI 1:

The values for the power and non-power distribution uncertainties used to determine the calculated SLMCPR values provided in Table 1 of Attachment 4 to the June 4 application are as noted in the Table 2a rows with column 1 designations of "Power distribution uncertainty" and "Non-power distribution uncertainty".

Cycle 17 was first evaluated using the Cycle 16 uncertainties to provide results for comparison on the same uncertainty basis. Specifically, for the Cycle 16 evaluation and the Cycle 17 evaluation SLMCPR results provided in Table 1, columns 2 and 3, respectively, the uncertainties used were provided in Table 2a, column 2. Note that these Standard Uncertainties are consistent with those that are listed in Table 2.1, NEDC-32601P-A. The "Non-power Distribution Uncertainties" in Table 2a are the Revised Uncertainties provided in Table 2.1, column 3; and the "Power Distribution Uncertainties" are the GETAB Uncertainties provided in Table 2.1, column 2. This is completely consistent with the NRC approved methodology as described in NEDC-32601P-A.

Similarly, the Cycle 17 SLMCPR was also evaluated using Revised Methodology and Reduced power uncertainties, consistent with the NRC approved methodology described in both NEDC-32601P-A and NEDC-32694P-A, "Power Distribution Uncertainties for Safety Limit MCPR Evaluation." Specifically for the Cycle 17 SLMCPR evaluation results provided in Table 1, column 4 of Attachment 4 to the June 4 application, the uncertainties used were consistent with those provided in Table 2a, column 3, with the exception of the R-factor uncertainty used in the evaluation that was provided in Table 2b. Note that Table 2b identifies any value that was used in the evaluation that is not consistent with the "Standard Uncertainties" provided in NEDC-32601P-A and 32694P-A. In this case, the R-factor uncertainty was increased from the NEDC-32601P-A value to account for the effect of increased channel bow consistent with current GNF fuel performance.

Note that the Standard Uncertainties provided in Table 2a, column 3, are consistent with those that are listed in Table 2.1, NEDC-32601P-A and Tables 4.1 and 4.2, NEDC-32694P-A. The "Non-power Distribution Uncertainties" in Table 2a are the Revised Uncertainties provided in Table 2.1, column 3 (same as for Cycle 16 evaluation); and the "Power Distribution Uncertainties" are the Reduced power uncertainties consistent with uncertainties provided in Table 4.2, column 2, NEDC-32694P-A. This is also completely consistent with the NRC approved methodology as described in NEDC-32601P-A and NEDC-32694P-A.

Table 4.1 NEDC-32601P-A results are only applicable to an evaluation that uses only "Revised Methodology". The Cycle 17 results, provided in Table 1, column 4 of Attachment 4 to the June 4 application used both the Revised Methodology and Reduced Power uncertainties. The 0.03 reduction from the Cycle 16 1.09 value to the Cycle 17 1.06 value is consistent with reductions observed in SLMCPR evaluations for other GE BWRs that have applied both Revised Methodology and Reduced power uncertainties. The 1.06 value being requested in the June 4 application was calculated using the approved methodology and is appropriate for Cycle 17 operation.

<u>RAI 2</u>:

> "Provide the relationship (in terms of the product of bundle-by-bundle MCPR distribution and the bundle pin-by-pin power/R-factor distribution) between the calculated MCPR and the power distribution uncertainty methodology and values that were used. Explain how these influenced the calculated MCPR and why a higher product number in Cycle 17 results with a lower calculated MCPR value than that in Cycle 16, as shown in Table 1 of Attachment 4. Also, explain the reason for obtaining a lower bundle-by-bundle MCPR distribution for Cycle 17 under revised Bases with respect to a higher number for Cycle 17 under the GE Thermal Analysis Basis (GETAB)."

<u>Response to RAI 2</u>:

There is no relationship between the product of bundle-by-bundle MCPR distribution and the bundle pin-by-pin power/R-factor distribution and the specific power distribution methodology used for the SLMCPR evaluation. The product value and the bundle-by-bundle MCPR distribution for Cycle 17 using GETAB uncertainties were 440 and 3.60, respectively. These values are only dependent on the Cycle exposure point for the most limiting SLMCPR value during the cycle, since the MCPR and pin-by-pin power distributions vary with exposure. Note for this evaluation that the SLMCPR value was highest at MOC (as designated by the entry in row 2, table 1). The cycle exposure point most limiting for Cycle 17 using Revised methodology and Reduced power uncertainties was BOC. At BOC for both the Reduced and the GETAB uncertainties evaluations, the product value and bundle-by-bundle MCPR distribution were 324 and 3.00, respectively.

Note that the Cycle 16 product value and the Cycle 17 product value (using revised methodology and reduced power uncertainties) are about the same (312 and 324) for respective limiting cycle points. Therefore, the contribution of this difference is not expected to perturb the difference in SLMCPR between the Cycle 16 to Cycle 17 beyond that expected from application of Revised methodology and Reduced power uncertainty (0.03) as discussed in the response to RAI 1 provided above.

RAI 3:

"Describe the core monitoring methods to be used in Cycle 17 operation at JAFNPP and its interface with reduced power distribution uncertainties and other related input parameters as given in Table 2a of Attachment 4. Also, describe how the GEXL correlation R-factor uncertainty shown in Table 2b is generated. Discuss whether this uncertainty is a constant or is fuel-dependent, and provide a justification showing that the proposed value is conservative for this calculation."

Response to RAI 3:

The core monitoring method that will be used for Cycle 17 operation at JAFNPP is 3D Monicore using PANAC11. This methodology is completely consistent with use of the reduced power uncertainties and other parameters given in Table 2a (and Table 2b) of Attachment 4.

The channel bow contribution to R-factor is the only part of the R-factor that was perturbed. The updated R-factor uncertainty was generated using the same methodology that is described in Appendix C, pages C-1 through C-6 of NEDC-32601P-A. This uncertainty is a constant which is not fuel dependent, since a value was determined for each of the fuel types that GNF models, and a conservative value that covers all fuel types is currently used in all GNF SLMCPR evaluations.

RAI 4:

"Describe the issue related to outlet-peaked power shapes at any exposure in the cycle and its safety limit MCPR penalty associated with a top-peaked power shape in GE14 bundles for Cycle 17 operation."

Response to RAI 4:

No outlet-peaked power shapes were observed in GE14 bundles at any of the SLMCPR cycle evaluation points during Cycle 17 as was cited in the last paragraph on page 2 of Attachment 4 to the June 4 application. Therefore, no penalty was applied to the calculated SLMCPR for outlet-peaked power shapes.