Entergy

Entergy Operations, Inc.
River Bend Station
5485 U.S. Highway 61N
St. Francisville, LA 70775
Tel 225-381-4374

Eric Olson
Site Vice President

RBG-47464

May 8, 2014

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: License Amendment Request - Response to NRC RAI
Changes to Technical Specification 2.1.1, "Reactor Core SLs"
River Bend Station, Unit 1
Docket No. 50-458
License No. NPF-47

References
1. GE- Nuclear Energy, "10 CFR 21 Reportable Condition Notification: Potential to Exceed Low Pressure Technical Specification Safety Limit", MFN 05-021, March 29, 2005

2. Grand Gulf Nuclear Station Unit 1, Issuance of Amendment No. 191, RE.: Extended Power Uprate (pages 324-325), dated July 18, 2012 (TAC NO. ME 4679)

3. Changes to Technical Specification 2.1.1, "Reactor Core SLs" Dated May 28, 2013. (TAC No. MF1948)

4. NRC Request for Information (RAI) Email dated April 15, 2014. (TAC No. MF1948)

Dear Sir or Madam:

In Reference 3 Entergy Operations, Inc. (Entergy) is submitted a request for an amendment to the River Bend Station (RBS) Technical Specifications (TS). The proposed amendment reduces the minimum reactor dome pressure associated with the critical power correlation from 785 psig to 685 psig in TS 2.1.1 Safety Limits, and associated Bases, and adds references to address the condition reported by GE Nuclear Energy in Reference 1.

In Reference 4 the NRC requested additional information. Attachment 1 provides a response to the NRC requested information.

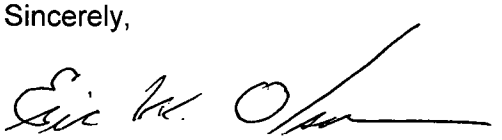
There are no Regulatory Commitments in this letter.

ADD1
NRR

If you have any questions or require additional information, please contact Mr. Joseph A. Clark at (225) 381-4177.

I declare under penalty of perjury that the foregoing is true and correct. Executed on May 8, 2014.

Sincerely,



EWO/JAC/bmb

Attachments:

1. Response to NRC Request for Information

LAR 2013-07
RBF1-14-0066

cc: Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
1600 E. Lamar Blvd.
Arlington, TX 76011-4511

NRC Senior Resident Inspector
P. O. Box 1050
St. Francisville, LA 70775

U. S. Nuclear Regulatory Commission
Attn: Mr. Alan Wang
MS 0-8B1
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Louisiana Department of Environmental Quality
Office of Environmental Compliance
Radiological Emergency Planning and Response Section
JiYoung Wiley
P. O. Box 4312
Baton Rouge, LA 70821-4312

Public Utility Commission of Texas
Attn: PUC Filing Clerk
1701 N. Congress Avenue
P. O. Box 13326
Austin, TX 78711-3326

Attachment 1

RBG-47464

Response to NRC Request for Information

NRC RAI 1:

Provide a summary data base used for development and verification of the GEXL critical power correlation, and justify that the data used are enough to support the proposed lower pressure range to 685 psig.

ENTERGY RESPONSE:

The data used for development and verification of the GEXL critical power correlation is based on the following GE documents:

1. NEDC-32851P-A, GEXL14 Correlation for GE14 Fuel, Rev.4, September 2007 (Reference Table 2, Page 6).

2. NEDC-33292P, GEXL17 Correlation for GNF2 Fuel, Rev. 3, June 2009 (Reference Table 3-1, Page 3-4).

These GE documents state that Stern Laboratory test data extended the pressure range from 700 to 1400 psia. This data was used to create the GEXL Correlations. Therefore valid test data forms the basis of the extended range of applicability for GEXL Correlation from 700 to 1400 psia. These GE documents are referenced in the Grand Gulf Nuclear Station Unit 1 License Amendment No. 191 (Pages 324-325).

NRC RAI 2:

Provide a detailed description of the analytic analysis for the Pressure Regulator Failure Open (PRFO) – maximum demand anticipated operational occurrence (AOO) transient to support the proposed LAR including a sequence of event in relation to the set point for turbine control valves, safety-relief valves (SRVs) and main steam isolation valves (MSIVs) to justify that the event cause the critical power ratio (CPR) to increase.

ENTERGY RESPONSE:

Analysis of pressure regulator fail-open (PRFO) transient is described in River Bend Station Updated Safety Analysis Report (USAR), Section 15.1.3. The sequence of events during the PRFO transient is as follows:

At the start of the event, a steam flow demand of 130% of rated is simulated. This results in the turbine bypass valves fully opening and shortly after, the turbine control valves to fully open. This causes a rapid vessel depressurization. When reactor pressure reaches 825 psig, the low pressure isolation setpoint analytical limit, the main steam isolation valves (MSIVs) begin to close. When the MSIVs are approximately 15% closed (85% open), a position driven reactor scram occurs, which terminates the event. MSIVs are fully closed 5 seconds from the start of motion, which in turn terminates pressure reduction. Note that the RBS amendment request to lower the low pressure Technical Specification limit from 785 psig to 685 psig offers a greater range for pressure to reduce further while MSIVs are closing.

The pressure reduction causes creation of large voids in the core, which introduce negative reactivity and lower power. At lower pressure, the latent heat of vaporization is larger than that at higher pressure. Therefore the critical heat flux is greater at lower pressure. Both of these factors cause the critical power ratio (critical power / actual power) to rise during depressurization. Therefore the PRFO transient has no adverse safety consequence as the critical power ratio actually rises during the event.