



Entergy Nuclear Operations, Inc.  
Pilgrim Nuclear Power Station  
600 Rocky Hill Road  
Plymouth, MA 02360

February 19, 2009

Kevin H. Bronson  
Site Vice President

10 CFR 50.90

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

SUBJECT: Entergy Nuclear Operations, Inc  
Pilgrim Nuclear Power Station  
Docket No. 50-293  
License No. DPR-35

Proposed Change to Pilgrim's Technical Specification Concerning  
the Safety Limit Minimum Critical Power Ratio (TAC # ME0241)

- REFERENCES:
1. Entergy Letter No. 2.08.057, "Proposed Change to Pilgrim's Technical Speciation Concerning the Safety Limit Minimum Critical Power Ratio", dated December 16, 2008
  2. GNF Additional Information Regarding the Requested Changes to the Technical Specifications SLMCPR, Pilgrim Cycle 18, Proprietary Version, eDRF Section 000-0090-6001, dated October 16, 2008

LETTER NUMBER: 2.09.006

Dear Sir/Madam,

By Reference 1, Entergy proposed changes to Pilgrim's Technical Speciation section 2.1.2, concerning Safety Limit Minimum Critical Power ratio (SLMCPR). In support of this proposed change NRC Staff requested additional information by electronic mail. The attachment to this letter provides the NRC requests and Pilgrim's responses.

The additional information included in the Attachment does not invalidate the safety evaluation of the proposed changes, the Determination of No Significant Hazards Consideration, or the Environmental Assessment presented in the original application (Reference 1). Reference 2 was submitted as part of Reference 1.

There are no regulatory commitments included in this submittal.

ADD  
NRR

If you have questions regarding this subject, please feel free to contact Joseph Lynch at (508) 830-8304.

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

Executed on the 19<sup>th</sup> day of February, 2009

Sincerely,



Kevin H. Bronson  
Site Vice President

Attachment: Pilgrim Response to NRC Request for Additional Information (4 pages)

cc: Mr. James S. Kim, Project Manager  
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Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
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Mr. Robert Walker, Director  
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Mr. John Giarrusso, Jr.  
Nuclear Preparedness Manager  
Mass. Emergency Management Agency  
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Senior Resident Inspector  
Pilgrim Nuclear Power Station

ATTACHMENT TO ENTERGY LETTER 2.09.006

PILGRIM RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION (RAI)  
RELATED TO CYCLE 18 SLMCPR TECHNICAL SPECIFICATION (TS) CHANGE FOR  
PILGRIM NUCLEAR POWER STATION (PILGRIM)  
(TAC # ME0241)

**NRC RAI 1:**

Please describe the key differences that exist between the core designs for Cycles 17 and 18 which resulted the values of safety limit minimum critical power ratio (SLMCPR) for Cycle 18 to be higher than currently approved values in the Technical Specification (TS).

**Pilgrim Response:**

Cycle 18 uses 156 new GNF2 Fuel bundles. Cycle 17 has all GE14 fuel. Thus the proposed change relates to the fuel type change. Both cycles have similar design energy requirements and are control cell core designs. For each new fuel cycle, Safety Limit MCPR is calculated. When the fuel type is changed, it is not unusual to have a more restrictive SLMCPR result, as shown in the summary of core design comparisons between Cycles 17 and 18, in Table 1 of Reference 2 attached to the Entergy Letter No. 2.08.057. For Cycle 17, the MELLLA case was more limiting (SLMCPR calculated 1.061 rounded to 1.06), whereas for Cycle 18 the Rated Core Flow case is more limiting (SLMCPR 1.078 rounded to 1.08), as shown in Table 3 of the GE Report (Reference 2).

**NRC RAI 2:**

Provide the currently approved Power/Flow map for Pilgrim. If Pilgrim was authorized to operate in the Maximum Extended Load Line Limit Analysis (MELLLA) domain, please indicate for how long the plant has been operating with MELLLA.

**Pilgrim Response:**

Pilgrim Power-Flow Maps for Cycle 17 for Two Loop (Figure 2) and Single Loop (Figure 4) Operations are enclosed. PNPS has had MELLLA beginning with Cycle 11, which began on 6/7/1995. The MELLLA Analysis report is NEDC-32306P dated March 1994. MELLLA was implemented using 10 CFR 50.59.

**NRC RAI 3:**

The SLMCPR value for Single Loop Operation (SLO) in Cycle 17 is 0.02 higher than that of Two Loop Operation (TLO); whereas, the SLMCPR value for SLO in Cycle 18 is 0.03 higher than that of TLO. Please explain why a higher margin in SLMCPR is necessary in order to operate with SLO in Cycle 18, as opposed to Cycle 17.

**Pilgrim Response:**

Single Loop Operation is analyzed separately from the Two Loop Operation and GNF Nuclear rounds off results. There is no particular attempt to provide a fixed adder on to TLO analysis for SLO as shown in Table 3 (Reference 2) for SLMCPR calculations for Cycle 18.

**NRC RAI 4:**

It is required that the latest approved amendment of NEDE-24011-P-A (GESTAR II) methodology be used to perform cycle-specific reload analysis. The staff has noted that in page 1 of Attachment 1 of the submittal, it is stated that Pilgrim reload analysis for Cycle 18 followed

NEDE-24011-P-A (GESTAR II), Amendment 22 process; while in page 7 of Attachment 4 of the submittal, Amendment 25 to NEDE-24011-P-A was mentioned. Please respond to the following concerns:

- a) Clarify the above mentioned apparent inconsistency in the submittal.
- b) Confirm whether the most recent amendment to NEDE-24011-P-A (GESTAR II) methodology was used to perform Pilgrim Cycle 18 reload analysis; and if not, then why not.

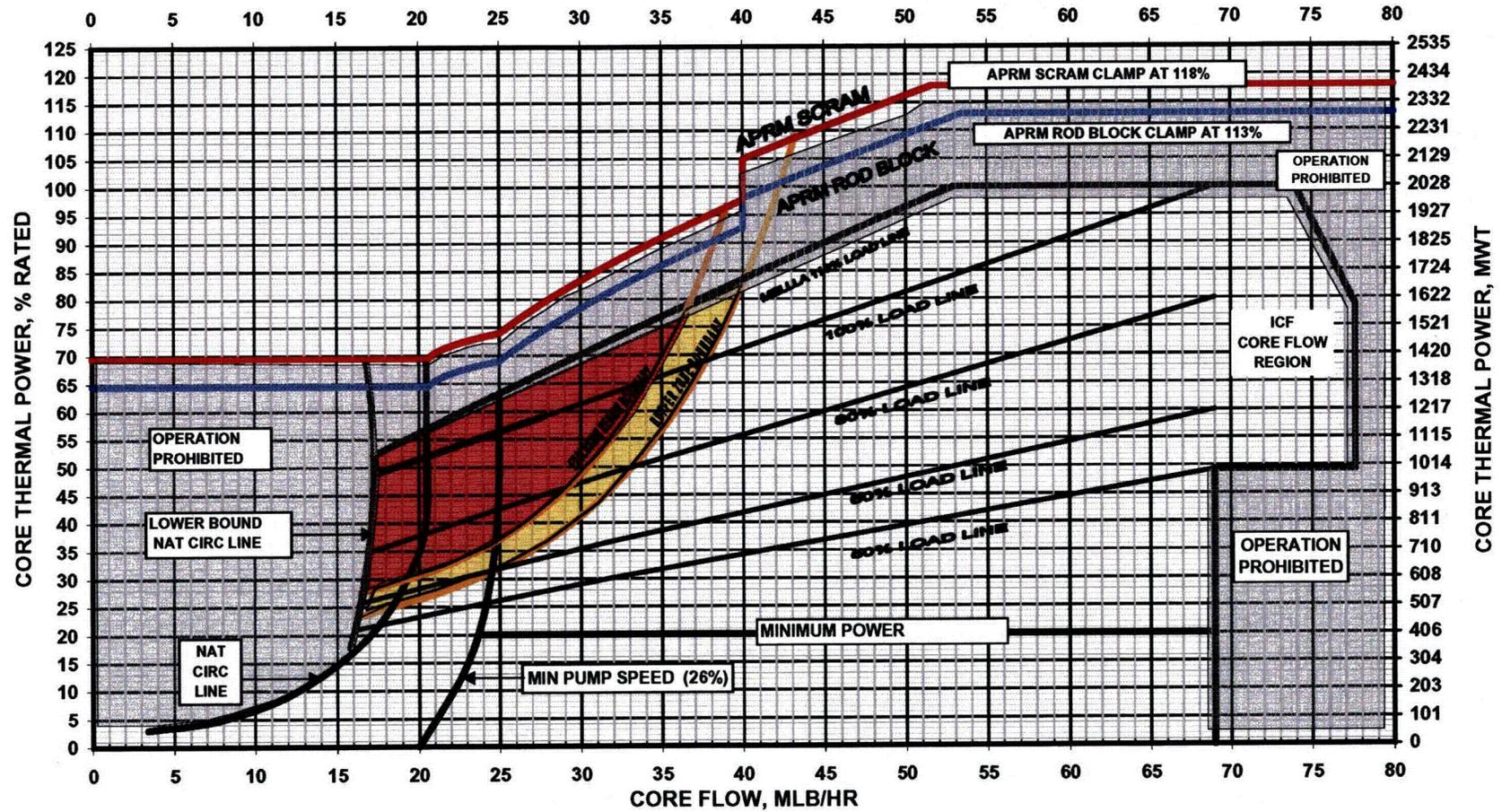
**Pilgrim Response:**

As described in the GNF Report, GESTAR II, Rev. 16 was used. This is the latest GESTAR II Revision.

GESTAR II, Revision 16 includes all GESTAR Amendments including 22 and 25. There is no inconsistency. The confusion is caused by use of Revision numbers vs. Amendment numbers. GE publishes GESTAR Revisions that may include multiple Amendments. The Amendment 22 process defines the generic activities and criteria for the licensing of a new fuel product. Future amendments have not superseded Amendment 22 process, they deal with different issues. All fuel types subsequent to establishment of Amendment 22 process were licensed using that process. GNF2, the reload fuel for Cycle 18 was licensed by GNF using the Amendment 22 process. Reload Design uses methods described in the most current Revision 16 of GESTAR II. Amendment 22 is referred to document that generic fuel licensing process was followed, not to indicate use of an older Revision of GESTAR II. Reload Design uses methods described in the most current Revision 16 of GESTAR II.

Enclosure: Figure 2, Pilgrim Power/Flow Map, dated 05/01/07  
Figure 4, Pilgrim Power/Flow Map- Single Loop Operation, dated 05/01/07

**FIGURE 2**  
**PILGRIM POWER / FLOW MAP**  
 Scram and Rod Block Data based on Nominal Trip Setpoints  
 CORE FLOW, MLB/HR



**FIGURE 4**  
**PILGRIM POWER / FLOW MAP - Single Loop Operation**  
**Scram and Rod Block Data based on Nominal Trip Setpoints**  
**CORE FLOW, MLB/HR**

