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10 CFR 50.90

October 11, 2004
2130-04-20233

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Oyster Creek Generating Station
Facility Operating License No. DPR-16
NRC Docket No. 50-219

Subject: Technical Specification Change Request No. 331 - Safety Limit Minimum Critical Power Ratio Response to Request for Additional Information

Reference: Letter from C. N. Swenson (AmerGen Energy Company, LLC) to USNRC, dated August 27, 2004

In the referenced letter, AmerGen Energy Company, LLC (AmerGen), requested an amendment to the Technical Specifications (TS), Appendix A of Operating License No. DPR-16 for Oyster Creek Generating Station (OCGS). This proposed change will revise Technical Specification (TS) Section 2.1.A. This section will be revised to incorporate revised Safety Limit Minimum Critical Power Ratios (SLMCPRs) due to the cycle specific analysis performed by Global Nuclear Fuel for OCGS, Cycle 20. This information is being submitted under unsworn declaration.

On October 1, 2004, a conference call was held with NRC Staff regarding our request. Attached are the questions discussed during this call, and our responses.

There are no commitments contained within this letter.

If you have any questions or require additional information, please contact Tom Loomis at (610) 765-5510.

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

Respectfully,

10/11/2004
Executed on

C. N. Swenson
Vice President, Oyster Creek Generating Station

Attachments: 1- Response to Request for Additional Information

cc: S. J. Collins, Administrator, USNRC Region I
P. S. Tam, USNRC Senior Project Manager, Oyster Creek
R. J. Summers, USNRC Senior Resident Inspector, Oyster Creek
Kent Tosch, Director, NJBNE/NJ DEP
Mayor of Lacey Township
File No. 02079

ATTACHMENT 1

OYSTER CREEK GENERATING STATION

DOCKET NO. 50-219

LICENSE NO. DPR-16

Response to Request for Additional Information

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RELATING TO PROPOSED AMENDMENT TO LICENSE NO. DPR-16

OYSTER CREEK GENERATING STATION DOCKET NO. 50-219

NRC Question 1

In Attachment 1, Page 1, of your submittal you state: "GNF has generically increased uncertainties used in the safety limit minimum critical power ratio (SLMCPR) analysis to account for the potential impact of control blade shadow corrosion induced bow." Which uncertainties have been "generically increased?" Refer to the licensing topical report that addresses the methodology used to establish the control blade corrosion induced bow. Is Oyster Creek Generating Station experiencing control blade shadow corrosion-induced bow? Did the plant recently experience control blade shadow corrosion induced bow? If Oyster Creek is experiencing control blade corrosion-induced bow, provide sufficient justification for the NRC staff to assess if the associated uncertainties are applicable and acceptable.

Response to NRC Question 1

The uncertainty referred to in the cited statement is the "R-factor Uncertainty" as defined in Table 2.1, NEDC-32601P-A licensing topical report (LTR). As shown in Table 2a of Attachment 4 of the submittal, the R-factor uncertainty that was approved for use via Table 2.1 of this LTR is shown in the Revised Uncertainty column, but a larger value, as shown in Table 2b of Attachment 4, was used in the SLMCPR evaluation for Oyster Creek, Cycle 20.

There is no evidence that Oyster Creek Generating Station is experiencing control blade shadow corrosion-induced bow. However, the more conservative value of R-factor Uncertainty has been used in recent SLMCPR evaluations and will be used for future SLMCPR evaluations, as appropriate, supporting Technical Specification change requests to generically account for increased channel bow due to control blade corrosion-induced bow that has been observed in some BWR/5 and BWR/6 nuclear power stations. Even though a nuclear station's fuel may not have indications that it is experiencing increased channel bow due to this effect, GNF has decided to conservatively account for this effect in all SLMCPR evaluations which would proactively account for this condition should it occur for a currently unaffected nuclear station.

NRC Question 2

Table 2b of Attachment 4 shows that the GEXL R-factor uncertainty has increased going from Cycle 19 to Cycle 20. Provide an explanation as to why this uncertainty increases. Provide sufficient justifications for the NRC staff to assess the adequacy of the proposed R-factor uncertainty value.

Response to NRC Question 2

Please see the Response to NRC Question 1.

NRC Question 3

Table 1 of Attachment 4 lists GETAB NEDO-10958-A as the methodology used for your power distribution uncertainties. Table 2a in the following page lists both GETAB NEDO-10958-A and Revised NEDC-32601P-A. Which method was used? Provide a tabulation of the uncertainty values used and the corresponding methods the uncertainties are based.

Response to NRC Question 3

The intent of the cited listing in Table 2a is to define that GETAB NEDO-10958-A was used to define the Power Distribution Uncertainties and the methodology that was used to apply those uncertainties was the Revised Methodology. This data is first introduced in Table 1, where the Power distribution methodology is defined as Revised NEDC-32601P-A and the Power distribution uncertainty is defined as GETAB NEDO-10958-A. Both listings are provided in Table 2a to indicate that a mixture of the two sets of Uncertainties, as listed in the bottom part of Table 2a, are used in the SLMCPR evaluation when Revised Methodology is used for the evaluation using GETAB power distribution uncertainties.

NRC Question 4

On August 24, 2004, GNF submitted a SLMCPR Part 21 Report, "Part 21 Reportable Condition and 60-Day Interim Report; Notification: Non-conservative SLMCPR," [MFN04-081]. In this report, Oyster Creek Generating Station is listed as one of the plants that requires a 60-Day Interim Report. Provide a discussion of the status of your report. What is the power vs. flow map domain to which Oyster Creek is licensed? State if the SLMCPR reported in this application is the most limiting SLMCPR value for the Cycle. Discuss how it was confirmed that the current value remains bounding for all statepoints, flow conditions in the Oyster Creek licensed operating domain and exposures. Include in your response confirmation that limiting rod pattern in terms of SLMCPR response that would bound Oyster Creek operating rod patterns were used in the SLMCPR calculation. Provide sufficient information for the NRC staff to technically evaluate that the Part 21 reporting issue would lead to higher SLMCPR value for Oyster Creek.

Response to NRC Question 4

SLMCPR evaluations for Oyster Creek Cycle 19 and Cycle 20 were performed for the lowest licensed ELLLA flow (85% rated flow) at the rated power statepoint condition as part of the 60 Day Interim Report portion of MFN04-081. These evaluations accounted for the potential non-conservatism in the GNF SLMCPR determination process that was reported in MFN04-081. As reported in MFN04-108, that was issued September 29, 2004, it was confirmed that the verification of evaluations performed for all the plants (this includes Oyster Creek Cycle 19 and Cycle 20) since the issuance of MFN04-081 did not result in additional reportable conditions other than those previously identified in the Part 21 Reportable Condition part of MFN04-081.

The SLMCPR evaluation at ELLLA conditions was performed at the cycle limiting condition, the EOC cycle exposure point. Specifically, for the Oyster Creek Cycle 20 evaluation it was determined that the SLMCPR evaluation performed at rated flow/rated power, as reported in Attachment 4 of the submittal was more limiting than the evaluation performed at the 85% rated flow/rated power ELLLA operating condition. Therefore, the current submittal that used the rated flow/rated power SLMCPR evaluation to

support the request for the SLMCPR Technical Specification change remains valid and does not require any update as a result of this issue.

The reported SLMCPR value adequately protects the plant from exceeding the boiling transition limit during the most severe AOO during offrated power operation. This has been the case for all previous SLMCPR evaluations that used either the GETAB NEDO-10958-A or the NEDC-32601P and NEDC-32694P methodologies. The MFN04-081 report demonstrated the need to expand the SLMCPR evaluation statepoint conditions to account for a decrease in rod insertion density, at lower than rated core flow/rated power that sometimes can result in more limiting rod patterns that yield a larger limiting SLMCPR value. However, SLMCPR evaluations for offrated power and flow conditions are bounded by the rated power evaluations, due to following conservatisms in both the monitoring and OLMCPR determination process.

There is only a small sensitivity in the SLMCPR calculation to power decreases during flow reduction along a rod line.

Other generic MCPR conservatisms are included in the evaluation process (See sheet 11 of letter transmittal from G. Watford to Alan Wang, FLN-2002-015, October 31, 2002).

1) 0.04 to 0.08 monitoring bias in the plant process computer

2) ~0.01 due to neglecting direct moderator heating in critical power testing

Specifically, holding the rated power nominal or limiting rod pattern constant during the decrease in power also results in about the same axial and radial power shapes and usually a slightly more peaked bundle MCPR distribution. The more peaked distribution, by itself, tends to decrease the calculated SLMCPR value compared to any value determined using the more limiting bundle MCPR distribution that occurs using the same limiting rod pattern at the rated power limiting condition. Therefore, as expected, SLMCPR evaluations performed for offrated power conditions yield about the same values as evaluations for rated power conditions within ~0.01 CPR.

The observed variance in the SLMCPR for offrated power and flow conditions is more than compensated via the conservatisms inherent to the evaluation process as discussed above.

In summary, the SLMCPR evaluated at rated power over its associated core flow range (85% - 100% rated flow for Oyster Creek) sufficiently bounds values appropriate for the entire operating domain including offrated power/flow.

NRC Question 5

State that the SLMCPR calculation for Cycle 20 complies with all the restrictions associated with the NRC-approved SLMCPR licensing methodology. Specifically state that the Oyster Creek cycle-specific SLMCPR calculations adhere to the restrictions identified on Page 3 of NRC's Safety Evaluation relating to the General Electric Licensing Topical Reports NEDC-32601P, NEDC-32694P, and Amendment 25 to NEDE-24011-P-A (March 11, 1999)

Response to NRC Question 5

The SLMCPR calculation for Cycle 20 specifically complies with all restrictions [(1) through (4)] associated with the NRC-approved SLMCPR licensing methodology.

Restrictions (1) and (2) are satisfied since the GE11 and GE9B fuel in the Oyster Creek core were specifically covered in NEDC-32601P and the change to R-factor methodology covered in Reference 2 of Attachment 4 of the submittal. Restriction (3) discusses the bundle-by-bundle MCPR distribution criteria parameter value that needs to be attained during the evaluation to assure that the limiting core conditions used in the SLMCPR evaluation will result in conservative SLMCPR values (higher values) compared to values that would be obtained for expected operation of the plant. This criterion is still considered to be applicable to current fuel and core designs. Restriction (4) refers specifically to use of the reduced power uncertainties as defined in NEDC-32694P. Oyster Creek Generating Station uses POWERPLEX-III (MICROBURN-B2) for core monitoring. The reduced power distribution uncertainties specified in NEDC-32694P are not used in the determination of SLMCPR for plants that do not utilize the 3D Monicore monitoring system unless they have been demonstrated to be applicable. The higher GETAB uncertainties (more conservative than the reduced power distribution uncertainties) were used for both Oyster Creek Cycle 19 and Cycle 20 evaluations and have been confirmed by AmerGen to bound those of the POWERPLEX-III Core Monitoring Software System.