REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8612230230 DOC. DATE: 86/12/12 NOTARIZED: YES DOCKET #
FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylva 05000387
AUTH. NAME AUTHOR AFFILIATION
KEISER, H. W. Pennsylvania Power & Light Co.
RECIP. NAME RECIPIENT AFFILIATION
ADENSAM, E. BWR Project Directorate 3

SUBJECT: Forwards application for amend to License NPF-14, extending GE MAPLHGR limits to 40,675 MWD/MT, increasing Exxon Nuclear Co MAPLHGR limits to be based only on LOCA analysis & revising MCPR limits. Fee paid.

DISTRIBUTION CODE: A001D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 9+20
TITLE: OR Submittal: General Distribution

NOTES: 1cy NMSS/FCAF/PM. LPDR 2cys Transcripts. 05000387

| | RECIPIENT ID CODE/NAME | | COPIES LTTR | COPIES ENCL | RECIPIENT ID CODE/NAME | | COPIES LTTR | COPIES ENCL |
|---|---|---|---|---|---|---|---|---|
| | BWR EB | | 1 | 1 | BWR EICSB | | 2 | 2 |
| | BWR FOB | | 1 | 1 | BWR PD3 LA | | 1 | 0 |
| | BWR PD3 PD | 01 | 5 | 5 | THADANI, M | | 1 | 1 |
| | BWR PSB | | 1 | 1 | BWR RSB | | 1 | 1 |
| INTERNAL: | ADM/LFMB | | 1 | 0 | ELD/HDS4 | | 1 | 0 |
| | NRR/DHFT/TSCB | | 1 | 1 | NRR/ORAS | | 1 | 0 |
| | REG FILE | 04 | 1 | 1 | RGN1 | | 1 | 1 |
| EXTERNAL: | EG&G BRUSKE, S | | 1 | 1 | LPDR | 03 | 2 | 2 |
| | NRC PDR | 02 | 1 | 1 | NSIC | 05 | 1 | 1 |
| NOTES: | | | 3 | 3 | | | | |

Recd w/check $150.00

TOTAL NUMBER OF COPIES REQUIRED: LTTR 27 ENCL 23

[illegible]

PP&L Pennsylvania Power & Light Company
Two North Ninth Street • Allentown, PA 18101 • 215 / 770-5151

Harold W. Keiser
*Vice President-Nuclear Operations*
215/770-7502

DEC 12 1986

Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Project Director
BWR Project Directorate No. 3
Division of BWR Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENT 89 TO LICENSE NO. NPF-14
PLA-2768 FILES A17-2, R41-2 Docket No. 50-387

Dear Ms. Adensam:

The purpose of this letter is to propose the following changes to the SSES Unit 1 Technical Specifications:

1) GE MAPLHGR limits are extended from an exposure of 33,069 MWD/MT to 40,675 MWD/MT,

2) due to the addition of ENC LHGR Technical Specification limits, Exxon Nuclear Company (ENC) MAPLHGR limits are increased to be based only on the LOCA analysis,

3) MCPR operating limits are revised to reflect the results of the XCOBRA-T analyses,

4) the Single Loop Operation (SLO) MAPLHGR multiplier for ENC fuel is set to 0.0 to preclude extended operation with one recirculation loop out-of-service,

5) the Bases were changed to provide consistency between Unit 1 and Unit 2 Technical Specification Bases.

NO SIGNIFICANT HAZARDS CONSIDERATIONS

The following questions are addressed below for each of the proposed changes:

I. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

II. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

A001
1/1



Rec'd w/ check $150.00

III. Does the proposed change involve a significant reduction in a margin of safety?

o GE MAPLHGR Limits

The current GE MAPLHGR limits are provided in the Technical Specifications to an average planar exposure of 33,069 MWD/MT. However, the GE fuel bundles are projected to attain average planar exposures greater than 33,069 MWD/MT in both Cycle 3 and Cycle 4 operation.

I. No. GE performed a LOCA analysis to determine the MAPLHGR limits for an average planar exposure of 40,675 MWD/MT. The analysis was performed based on the same plant conditions and systems analysis that were used as a basis for the derivation of the current MAPLHGR limits defined in the FSAR. Using a MAPLHGR limit of 9.2 kw/ft at an average planar exposure of 40,675 MWD/MT, the Peak Cladding Temperature (PCT) is 1621°F and the local oxidation fraction is 0.3%. These values are well within the 10CFR50.46 limits of 2200°F and 17% local oxidation. Table 1 presents a comparison to the LOCA results in the FSAR.

In addition, the projected peak bundle average exposure at the End-of-Cycle (EOC) 3 and 4 was calculated to assure the fuel does not exceed the limits of the fuel mechanical design analysis (NEDE-20944-P, Revision 1, "Licensing Topical Report: BWR/4 and BWR/5 Fuel Design," October 1976). The projected EOC3 and EOC4 peak bundle average exposure for the GE fuel is 26,000 MWD/ST (28,600 MWD/MT) which is well within the design bundle average exposure limit of 30,000 MWD/ST.

II. No. Based on the methods and results described in I above, no new events are postulated.

III. No. Based on the results of the LOCA analysis presented above and the projected EOC exposures, the change to the GE MAPLHGR curve does not reduce the margin of safety.

o ENC MAPLHGR Limits

The current MAPLHGR limits for ENC fuel are provided to assure that the PCT result from the LOCA analysis is less than 2200°F and that during steady state operation, the fuel remains within the assumptions of the fuel mechanical design analyses. In the Unit 1 Cycle 3 (U1C3) reload analysis Technical Specification revision (Amendment 57 to License No. NPF-14, dated April 11, 1986), a Linear Heat Generation Rate Limit was added for the Exxon fuel to assure the fuel operates within the assumptions of the mechanical design analysis for steady state operation and anticipated operational occurrences. Therefore, the MAPLHGRs are proposed to be based only on the LOCA analysis.

I. No. Table 2 summarizes the ENC LOCA analysis results which are documented in XN-NF-85-132, Revision 1, "Susquehanna Unit 1 Cycle 3

Reload Analysis," December 1985. Since the LHGR limit currently in the Technical Specifications assures the fuel remains within the assumptions of the fuel mechanical design analysis and since the 10CFR50.46 limits are not exceeded with the revised MAPLHGR limits, the proposed change to the MAPLHGR limits for ENC fuel does not increase the probability or consequences of any accident previously evaluated.

II. No. See I above.

III. No. Based on the discussion in I above, it is evident that the MAPLHGR limit is simply being revised in recognition of the fact that the mechanical design analysis assumptions are already protected by the existing LHGR limit. Since the revised MAPLHGR limits continue to protect the LOCA analysis PCT results, no margin of safety is reduced.

o <u>MCPR Operating Limits</u>

During the review of the Unit 2 Cycle 2 reload analysis, the ENC method for calculating the MCPR operating limits was shown to be non-conservative for transients which involved recirculation pump trips (RPT). Therefore, administrative MCPR limits were implemented to assure that the Unit 1 core did not exceed the Safety Limit MCPR during a transient which resulted in a recirculation pump trip.

I. No. ENC has reanalyzed the U1C3 transients with an improved computer code, XCOBRA-T, to determine conservative MCPR operating limits. As shown in the XCOBRA-T documentation (XN-NF-84-105, Volume 1 and Revision 1 of Supplements 1 and 2, "XCOBRA-T: A Computer Code for BWR Transient Thermal-Hydraulic Core Analysis," May, 1985 and March, 1986), XCOBRA-T has been benchmarked against power increase and flow decrease boiling transition tests. The results show that XCOBRA-T is conservative for predicting the onset of transition boiling. The results of the U1C3 XCOBRA-T analyses are shown in Table 3. The $\Delta$CPRs listed in Table 3 and the Rod Withdrawal Error $\Delta$CPR shown in XN-NF-85-132, Rev. 1 are added to the MCPR Safety Limit to obtain the MCPR operating limits shown in the new Technical Specification Figures 3.2.3-1 and 3.2.3-2. In addition, the Rod Block Monitor (RBM) setpoint Technical Specification can be changed since the MCPR operating limit is not decreased for a reduced setpoint. With these MCPR operating limits 99.9% of the fuel rods are not expected to experience transition boiling during normal operation and anticipated operational occurrences. Therefore, the revised RBM setpoint and MCPR operational limit Technical Specifications do not increase the probability or consequences of any accident previously evaluated.

II. No. The methodology described can only be evaluated for its affect on the consequences of analyzed events; it cannot create new ones. The consequences of analyzed events were evaluated in I above.

III. No. The methodology described in I above has been approved for use in this application by NRC and has provided acceptable results. Therefore, no margin of safety has been reduced.

o Single Loop Operation (SLO) MAPLHGR Multiplier

The Unit 1 Technical Specifications were revised to allow extended operation with one recirculation loop out-of-service. GE performed single loop safety analyses and ENC provided justification that the GE operating limits were applicable to the ENC fuel. However, while implementing the SLO Technical Specification, it was found that no explicit analyses were available to support ENC's justification of the applicability of the GE operating limits. Therefore, administrative limits were implemented which precluded extended single loop operation. This Technical Specification change set the SLO MAPLHGR limit for ENC fuel to 0.0 which precludes extended operation with one recirculation pump out-of-service until ENC can perform the requires analyses to determine operating limits for the ENC fuel.

I. No. This specification has been changed to preclude extended operation with one recirculation loop out-of-service. Since this specification previously allowed such operation, this change constitutes an additional restriction which is much more conservative than the current provisions. Therefore, it will not increase the probability or consequences of any previously evaluated event.

II. No. See I above.

III. No. See I above.

o Technical Specification Bases

Section 3/4 7.8 Bases were revised to provide a direct reference to the transient analyses. This change was made to provide a consistent description of the Bases between the Unit 1 and Unit 2 Technical Specifications. Since this change is editorial and does not change the intent of the Technical Specification Bases, the margin of safety is not reduced.

IMPLEMENTATION SCHEDULE

It was noted above that the GE fuel is expected to exceed the current average planar exposure limitation of 33,069 MWD/MT during Cycle 3 operation. This could occur as early as March 15, 1987. Therefore, we request that your approval be granted before this date.

Any questions on this proposal should be directed to Mr. R. Sgarro at (215) 770-7855. Pursuant to 10CFR170, the appropriate fee is enclosed.

Very truly yours,

H. W. Keiser
Vice President-Nuclear Operations

Attachments

cc: L. R. Plisco - USNRC
M. C. Thadani - USNRC

T. M. Gerusky, Director
Bureau of Radiation Protection
PA Dept. of Environmental Resources
P.O. Box 2063
Harrisburg, PA 17120