November 24, 1987

Docket No. 50-387

Mr. Harold W. Keiser
Vice President
Nuclear Operations
Pennsylvania Power and Light Company
2 North Ninth Street
Allentown, Pennsylvania 18101

Dear Mr. Keiser:

SUBJECT: REVISION TO SAFETY EVALUATION FOR AMENDMENT NO. 72

RE: Susquehanna Steam Electric Station, Unit 1

We have reviewed your submittal dated October 15, 1987, correcting your previously submitted analysis related to the subject amendment for the Unit 1 Cycle 4 operation.

Based on our review, we find that our conclusions reached in the Safety Evaluation for the Amendment No. 72 are unchanged. However, the numerical changes in your revised submittal must be reflected in the Safety Evaluation. Accordingly, we have revised page 7 of the Safety Evaluation for the Amendment No. 72 to reflect your revised submittal. Please replace the page 7 of the Safety Evaluation with the attached revision.

Sincerely,

/s/
Mohan C. Thadani, Project Manager
Project Directorate I-2
Division of Reactor Projects I/II

Enclosure

cc: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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Sincerely,

Mohan C. Thadani, Project Manager
Project Directorate I-2
Division of Reactor Projects I/II

Enclosure

cc: See next page

The LOCA analyses for SSES Unit 2 Cycle 2 performed for a full core of ANF 9X9 fuel is applicable for the S1C4 residual and reload ANF fuel. These analyses have covered an acceptable range of conditions, have been performed with approved methodology, and the resulting Technical Specification MAPLHGR values for the ANF fuel remain acceptable.

Reactivity Insertion Transients

The control rod withdrawal error, the fuel loading error and the rod drop accident were evaluated for Cycle 4. The licensee used methods described in XN-NF-80-19, Volume 4. Using a Rod Block Monitor setting of 108 percent of full power results in a delta-CPR of 0.18 for the control rod withdrawal error transient for 9X9 fuel. The change in CPR due to a fuel loading error is 0.08. These values are comparable to previous reloads and are not limiting.

The rod drop accident was analyzed with approved ANF methodology. The resulting maximum fuel enthalpy of 191 cal/gm is within the established limit of 280 cal/gm and the estimated number of failed rods is within the previously accepted limit of 770 failed rods. The staff finds that the licensee's analysis and results are acceptable.

2.4 TECHNICAL SPECIFICATION CHANGES

The following Susquehanna Steam Electric Station Unit 1 Technical Specification changes have been proposed for operation during reload Cycle 4:

(1) DEFINITIONS pages 1-2 and 1-3, parts of Bases pages B 2-1 and B 2-2, Limiting Conditions for Operating (LCO) pages 3/4 2-1, 3/4 2-10a and 3/4 4-1c, Figure 3.2.1-2, Bases pages B 3/4 1-1, B 3/4 2-1 and B 3/4 4-1, and Design Features page 5-6:

Changes were made to reflect the corporate change from Exxon Nuclear Company (ENC) to Advanced Nuclear Fuels (ANF) Corporation, to identify and describe the new fuel design and to incorporate editorial changes. These changes are administrative only with no safety significance and are therefore acceptable.

(2) Bases pages B 2_1 and B 2_2, Section 2.1.1 - THERMAL POWER, Low Pressure or Low Flow:

The changes provide a basis for the range of validity for use of the critical heat flux correlation for the reload 9X9 fuel type. The basis was approved as part of a generic review and is acceptable.

(3) Figure 3.2.1-3:

The MAPLHGR limits for the new fuel are added. This addition is acceptable.

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King of Prussia, Pennsylvania 19406

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

OCT 27 1987

MEMORANDUM FOR: W. Butler, Project Director
Project Directorate I-2
Division of Reactor Projects - I/II

FROM: M. W. Hodges, Chief
Reactor Systems Branch
Division of Engineering & Systems Technology

SUBJECT: REVISION TO SAFETY EVALUATION FOR SUSQUEHANNA UNIT NO. 1 CYCLE 4 RELOAD

REFERENCES:
1. Letter PLA-2930, H. W. Keiser (PPLCo) to Director (ONRR), dated October 15, 1987, "Corrections to Proposed Amendment No. 100 to License No. NPF-14."
2. Memorandum, M. W. Hodges (SRXB/DEST) to W. Butler (PD I-2), SE for Susquehanna Unit No. 1 Cycle 4 Reload, dated September 17, 1987.

Plant Name:	Susquehanna Steam Electric Station Unit No. 1
Docket No.:	50-387
TAC No.:	65636
Project Directorate:	Project Directorate I-2
Project Manager:	M. C. Thadani
Review Branch:	SRXB/DEST
Review Status:	Modification to SE

Based on information submitted by the Pennsylvania Power and Light Company in Reference 1 related to corrected analyses for the Cycle 4 reload of Susquehanna Unit No. 1, we find that some revision to the Safety Evaluation transmitted to you in Reference 2 is necessary. The licensee's reanalyses are in the areas of thermal-hydraulic stability and the rod drop accident. The enclosed SE Supplement prepared by the Reactor Systems Branch finds the conclusions of the original evaluation are unchanged but a text change is required to account for the new information. No changes to the proposed Technical Specifications in the original submittal are required. Our SALP for this TAC is unchanged.

M. Wayne Hodges

M. W. Hodges, Chief
Reactor Systems Branch
Division of Engineering & Systems Technology

Enclosure: As stated

cc w/enclosure:
A. Thadani B. Boger SRXB Members
S. Varga M. C. Thadani

Contact: M. McCoy, SRXB, x29483

8710300151 XA

SUPPLEMENT TO SAFETY EVALUATION FOR
SUSQUEHANNA UNIT 1 CYCLE 4 RELOAD

By memorandum, M. W. Hodges (SRXB) to D. L. Wigginton (DRP) dated September 17 1987, the Reactor Systems Branch provided a safety evaluation (SE) of the proposal by Pennsylvania Power and Light Company (the licensee) to reload and operate the Susquehanna Unit 1 for Cycle 4. The original proposal was submitted by letter dated June 19, 1987. In a later submittal dated October 15 1987, the licensee informed the NRC that revised analyses in the areas of thermal-hydraulic stability and the Control Rod Drop Accident result in necessary corrections in the basis documentation for the licensee's reload safety analysis.

In the first change, the cycle-specific stability analysis was redone to correct a code input error in the void coefficient for the 68/45 power/flow setpoint. The calculated statepoint value has changed from 0.66 to 0.70. Since the revised value remains within the acceptable range for this evaluation the staff conclusion remains unchanged. Since the numerical value for this statepoint was not identified in the original SE (Section 3.2, first paragraph), no text change is required.

In the second change, the Control Rod Drop Accident was reanalyzed using a more conservative control rod pattern. This resulted in a change in peak deposited enthalpy from 91 to 191 cal/gm and number of failed fuel rods from zero to less than 60. The staff notes that the Safety Evaluation Report for the Susquehanna Unit 1 Operating License (NUREG-0776) dated April 30, 1981, concluded that a previous conservative analysis assuming 770 failed fuel rods resulted in calculated doses which are within 10 CFR Part 100 guidelines. The staff conclusion that the Susquehanna Unit No. 1 is effectively designed to control the release of radioactive fission products following a postulated control rod drop accident is unchanged. The revised numbers do however require a text change in our September 17 SE which is as follows:

Section 4.3, second paragraph should be replaced in its entirety to read:

"The control rod drop accident was analyzed with approved ANF methodology. The resulting maximum fuel enthalpy of 191 cal/gm is within the established

limit of 230 cal/gm and the estimated number of failed rods is within the previously reviewed and accepted FSAR analysis value of 770 failed rods. The analysis and results, as identified in the licensee's October 15, 1987 submittal (Ref. 17), are acceptable."

The following Reference should be added:

17. Letter, H. W. Keiser (PPLCo) to Director (ONRR), "Corrections to Proposed Amendment No. 100 to License No. NPF-14," dated October 15, 1987 (PLA-2930).

Finally, we note that no changes to the original proposed TS changes for the Cycle 4 reload are required as a result of the revised analyses.