



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 126 TO FACILITY OPERATING LICENSE NO. NPF-14
AMENDMENT NO. 95 TO FACILITY OPERATING LICENSE NO. NPF-22
PENNSYLVANIA POWER & LIGHT COMPANY
ALLEGHENY ELECTRIC COOPERATIVE, INC.
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2
DOCKET NOS. 50-387 AND 388

1.0 INTRODUCTION

By letter dated December 18, 1992, as supplemented by telecopy dated January 28, 1993, and by letters dated March 25, and May 20, 1993, the Pennsylvania Power and Light Company and Allegheny Electric Cooperative, Inc. (the licensees) submitted a request for changes to the Susquehanna Steam Electric Station, Units 1 and 2, Technical Specifications (TS). The requested changes would remove cycle-specific parameter limits from the TSs in accordance with NRC Generic Letter (GL) 88-16 and modify Section 5.3.1 in accordance with NRC GL 90-02. The January 28, 1993, telecopy provided a corrected page 3 to the application to delete two superfluous words ("are anticipated") in the last line of item 1 of the licensee's No Significant Hazards Consideration determination. The January 28, 1993, correction did not, in any way, modify the TS application but, for completeness, was referenced in the staff's initial notice published in the FEDERAL REGISTER on February 17, 1993. As discussed in more detail subsequently, the March 25, 1993, letter removed a figure that was still in the NRC's "authority" file that should have been removed by an amendment issued almost 4 years ago. Removal of the meaningless figure did not change the TSs and thus, had no effect on the staff's No Significant Hazards Consideration Determination.

As also discussed in more detail at the end of this safety evaluation, as requested by the NRC staff, the May 20, 1993 submittal retained a sentence on fuel enrichment that was in the model TSs issued with GL 90-02, but was inadvertently omitted in the model TSs issued with Supplement 1 to GL 90-02. The sentence is in the present Susquehanna, Units 1 and 2 TSs, so the effect of the May 20, 1993, submittal was to keep a present requirement. The change is thus not substantive and did not change the staff's No Significant Hazards Consideration Determination. The May 20, 1993, submittal also substituted a power/flow map figure from the Unit 2 TSs in the Unit 1 TSs since this

represented the version most recently approved by the Commission for Siemens 9X9 fuel. (The figure for Unit 2 was approved by Amendment 91 issued October 28, 1992, whereas, the figure for Unit 1 was approved by Amendment No. 118, issued on May 7, 1992). The substitution was not a substantive change and did not affect the staff's proposed No Significant Hazards Consideration Determination.

As noted above, these amendments would change the TSs to remove cycle-specific parameter limits in accordance with NRC Generic Letter (GL) 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specifications" issued October 4, 1988. The proposed changes would replace the values of cycle-specific parameter limits with a reference to the Core Operating Limits Report, which contains the values of those limits. In addition, the Core Operating Limits Report (COLR) has been included in the Definitions Section of the TSs to note that it is the unit-specific document that provides these limits for the current operating reload cycle. Furthermore, the definition notes that the values of these cycle-specific parameter limits are to be determined in accordance with the Specification 6.9.3. This specification requires that the Core Operating Limits be determined for each reload cycle in accordance with the referenced NRC-approved methodology for these limits and consistent with the applicable limits of the safety analysis. Finally, this report and any mid-cycle revisions shall be provided to the NRC upon issuance.

Guidance on the proposed changes was developed by NRC on the basis of the review of a lead-plant proposal submitted on the Oconee plant docket that was endorsed by the Babcock and Wilcox Owners Group. This guidance was provided to all power reactor licensees and applicants by GL 88-16, dated October 4, 1988.

On February 1, 1990, the NRC staff issued GL 90-02, a line-item technical specification improvement, "Alternative Requirements for Fuel Assemblies in the Design Features Section of Technical Specifications." The change endorsed by the NRC staff provides flexibility in the repair of fuel assemblies containing damaged and leaking fuel rods by reconstituting the assemblies. Based on the NRC staff experience with implementation of GL 90-02, the staff issued "Supplement 1 to Generic Letter 90-02" on July 31, 1992. The supplement provided specific guidance for fuel reconstitution and, on page 4, provided specific wording for a specification that could be substituted for the present paragraph on "Fuel Assemblies" in Section 5 of the TSs. As part of this application, the licensee is proposing to substitute the paragraph in GL 90-02, Supplement 1, for the present Section 5.3.1, but also retain a sentence which is in the present Susquehanna TSs limiting the weight percent U-235 in reload fuel. The licensee is also proposing to revise Section 5.3.2 on Control Rod Assemblies by deleting reference to the stainless steel tubes used in the initial core and specifically stating that "control rod assemblies shall be limited to those control rod designs approved by the NRC for use in BWRs."

2.0 EVALUATION

The licensee's proposed changes to the TS are in accordance with the guidance provided by GL 88-16 and are addressed below.

1. The Definitions section of the TS (Section 1.7) was modified to include a definition of the COLR that requires cycle/reload-specific parameter limits to be established on a unit-specific basis in accordance with an NRC-approved methodology that maintains the limits of the safety analysis. The definition notes that plant operation within these limits is addressed by individual specifications.
2. The following specifications were revised to replace the values of cycle-specific parameter limits with a reference to the COLR that provides these limits.
 - a. Revise the Index.
 - i. Add Section 1.7A - Core Operating Limits Report
 - ii. Change current page 3/4 2-5 on APRM setpoints to 3/4 2-2
 - iii. Change current page 3/4 2-5 to 3/4 2-3
 - iv. Change current page 3/4 2-7 on Minimum Critical Power Ratio to 3/4 2-4
 - v. Change current page 3/4 2-10a on Linear Heat Generation Rate to 3/4 2-5
 - vi. Add new section 6.9.3 describing the Core Operating Limits Report on pages 6-20 and add pages 6-20a and 6-20b
 - b. Section 1.13 was revised to specify that the Fraction of Limiting Power Density shall be specified in the Core Operating Limits Report.
 - c. Sections 3.2.1, 3.2.2, 3.2.3 and 3.2.4 were revised to delete all figures and to state that the Average Planar Linear Heat Generation Rates, the APRM Setpoints, the Minimum Critical Power Ratio and the Linear Heat Generation Rate shall not exceed the limits specified in the Core Operating Limits Report.
 - d. For Unit 1, replace the present Figure 3.4.1.1.1-1 on "Thermal Power Restrictions" with the figure that is in the Unit 2 TSs and which was approved for Unit 2 by Amendment No. 91 issued October 28, 1992.
 - e. Modify Bases 3/4 1.3, 3/4 1.4, 3/4 2.1, 3/4 2.2, 3/4 2.3 and 3/4 4.1 to reference the Core Operating Limits Report.

- f. , Revise Section 5.3.1 on Fuel Assemblies to substitute the suggested wording in NRC GL 90-02, Supplement 1.
- g. Revise Section 5.3.2 to state that "Control rod assemblies shall be limited to those control rod designs approved by the NRC for use in BWRs".
- h. Add Section 6.9.3 to the Administrative Controls Section, "Special Reports" to describe the Core Operating Limits Report (COLR). This section specifies the information to be included in the COLR and the requirement to submit the COLR to the NRC. Specifically, this specification requires that the COLR be submitted, upon issuance, to the NRC Document Control Desk with copies to the Regional Administrator and Resident Inspector. The report provides the values of cycle-specific parameter limits that are applicable for the current fuel cycle. Furthermore, this specification requires that the values of these limits be established using the NRC-approved methodology in the specific topical reports which the NRC has approved for the Susquehanna Steam Electric Station (SES) (which are listed in this section of the TSs). Finally, the specification requires that all changes in cycle-specific parameter limits be documented in the COLR before each reload cycle or remaining part of a reload cycle and submitted upon issuance to the NRC.

On the basis of the review of the above items, the NRC staff concludes that the licensee provided an acceptable response to those items as addressed in the NRC guidance in GL 88-16 on modifying cycle-specific parameter limits in TS. Because plant operation continues to be limited in accordance with the values of cycle-specific parameter limits that are established using an NRC-approved methodology, the NRC staff concludes that this change is administrative in nature and there is no impact on plant safety as a consequence. Accordingly, the staff finds the proposed changes acceptable. As part of the implementation of GL 88-16, the staff has also reviewed the two sample COLRs that were provided by the licensee as part of the subject application. Both COLRs were dated November 1992. One was for Susquehanna SES Unit 1, Cycle 7 (PL-NF-92-004). The NRC approved the Unit 1 Cycle 7 core reload values by Amendment No. 118 issued May 7, 1992. Unit 1 started up in the current fuel cycle 7 on May 17, 1992, with shutdown scheduled for the seventh refueling in October 1993. The second sample COLR was for Susquehanna SES, Unit 2, Cycle 6 (PL-NR-92-008). The NRC approved the Unit 2 Cycle 6 reload values by Amendment No. 91 issued October 28, 1992. Unit 2 began the sixth fuel cycle on November 13, 1992, when the main generator was synchronized to the grid. The sixth refueling outage is scheduled to start March 12, 1994. On the basis of this review, the staff concludes that the format and content of the sample COLRs are acceptable.

As noted in the Introduction, the licensee proposes to substitute the paragraph in GL 90-02, Supplement 1, for the present wording in Section 5.3.1 on "Fuel Assemblies". The proposed revision is acceptable.

On May 15, 1989, we issued Amendment No. 90 to support Unit 1, Cycle 5 operations with Advanced Nuclear Fuel (ANF) Corporation's 9x9 reload fuel. As part of the changes, Figure 3.2.1-1 was deleted. Figure 3.2.1-2 was changed to Figure 3.2.1-1 and Figure 3.2.1-3, which was on page 3/4 2-4a, was changed to Figure 3.2.1-2 and relocated to page 3/4 2-3. However, the licensee's submittal of February 2, 1989, did not request deletion of page 3/4 2-4a so that there were two identical figures in the TSs, one on page 3/4 2-3 and one on page 3/4 2-4a. The specific figure was titled "Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) versus Average Bundle Exposure, ANF 9x9 Fuel." On November 2, 1990, we issued Amendment No. 102 to support the Unit 1, Cycle 6 reload, but did not delete the superfluous Figure 3/4 2-3 on page 3/4 2-4a, even though this figure was not mentioned in Section 3.2.1 of the TSs. On May 7, 1992, the staff issued Amendment No. 118 to support the Unit 1, Cycle 7 reload. The previous Figure 3.2.1-1 on MAPLHGR versus average bundle exposure for ANF 8x8 fuel was deleted and the previous Figure 3.2.1-2 was revised to become Figure 3.2.1-1 and to reflect that the fuel was supplied by Siemens Nuclear Power Corporation, which was formerly ANF. The text in Section 3.2.1 (page 3/4 2-1) of the present TSs refers only to the one figure - Figure 3.2.1-1. The superfluous Figure 3.2.1-3 remained on page 3/4 2-4a of the TSs. During our review of the subject application, we noted this meaningless page and discussed it with the licensee. By letter dated March 25, 1993, the licensee requested we delete page 3/4 2-4a as we suggested. This is a purely administrative action to remove a page that should have been removed by Amendment No. 90 almost 4 years ago. The deletion has no effect on the staff's No Significant Hazards Consideration Determination (NSHCD) since it is not referred to in the TSs. There was also one other minor administrative change (i.e., to change the word function to functions), with the licensee's concurrence and likewise does not change the NSHCD.

In the application of December 18, 1992, the licensee proposed to relocate Figure 3.4.1.1.1-1, "Thermal Power Restrictions," to the COLR and to revise and repaginate Sections 3.4.1.1.1 and 3.4.1.1.2 on Two-Loop and Single-Loop operation to reflect the proposed deletion of this figure from the TSs.

On March 9, 1988, a thermal hydraulic instability event occurred at LaSalle, Unit 2. The NRC discussed this event in Information Notice 88-39, "LaSalle, Unit 2 Loss of Recirculation Pumps with Power Oscillation Event," and Bulletins 88-07 and 88-07, Supplement 1, "Power Oscillations in Boiling Water Reactors." In the first bulletin, the NRC requested licensees to establish procedures and give training to reactor operators to enable them to recognize oscillations and to take appropriate actions. In the supplement, the NRC requested the licensees to implement the General Electric (GE) Interim Recommendations for Stability Actions, designated the Interim Corrective Actions (ICA) which GE issued in November 1988.

On August 15, 1992, Washington Nuclear Power, Unit 2 (WNP-2) experienced power oscillations during startup. The event occurred early in cycle 8 operation. During cycle 8, the licensee had two previous startups without incident. The reactor core consisted primarily of Siemens fuel, with about 74 percent of

this fuel in 8x8 fuel assemblies and about 25% in 9x9 fuel assemblies, and with the remainder of the core consisting of various lead test assemblies. The 9x9 fuel assembly used in WNP-2, designated 9x9-9x, has a higher flow resistance than the 8x8 fuel assembly with a difference of about 10% in pressure drop. Susquehanna, Units 1 and 2, are entirely fueled by the Siemens 9x9 fuel assemblies. The WNP-2 event was discussed at length in NRC Information Notice 92-74, dated November 10, 1992.

As noted previously, on October 28, 1992, the Commission issued Amendment No. 91 for SSES, Unit 2, approving the Unit 2, Cycle 6 reload. The amendment included new thermal-hydraulic limits on the Siemens Nuclear Power Corporation on the (SNP) 9x9 fuel, including a new Figure 3.4.1.1.1-1 on Thermal Power Restrictions. The latter reflected the staff's evaluation of the August 15, 1992 incident at WNP-2. Pending resolution of the instability issue, we advised the licensee that the present figure on thermal power restrictions should remain in the TSs. We also discussed with the licensee the possibility of using the figure recently approved for Unit 2 for Unit 1 as well, since both units are fueled by the same 9x9 fuel. The licensee's letter of May 20, 1993, withdrew all changes to Sections 3.4.1.1.1 and 3.4.1.1.2 except to substitute the present Unit 2 figure 3.4.1.1.1-1 for the figure with the same title and number in the Unit 1 TS. As a result, the renumbering of pages in Sections 3.4.1.1.1 and 3.4.1.1.2 proposed in the licensee's initial application of December 18, 1992, was rescinded by the letter of May 20, 1993. Since there is no change to the present TSs in these two sections, the May 20, 1993 letter does not change the staff's initial no significant hazards consideration.

When the staff issued GL 90-02, the last sentence in the "Model Technical Specification Change" for Section 5.3.1 stated: "Reload fuel shall be similar in physical design to the initial core loading and shall have a maximum enrichment of 4.0 weight percent U-235." This sentence was inadvertently omitted when Supplement 1 to GL 90-02 was issued. In the application of December 18, 1992, the licensee had proposed the wording for Section 5.3.1 that was in the Supplement. We requested the licensee to also add the sentence on enrichment that was in the initial GL 90-02, which they did with their letter of May 20, 1993. The same sentence is in the present Susquehanna TSs, so the retention in the revised Section 5.3.1 does not change the staff's no significant hazards consideration.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendments. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no

100

significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (58 FR 8776). Accordingly, the amendments meet eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

These amendments also change recordkeeping, reporting, or administrative procedures or requirements. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(10). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: R. Clark, T. Dunning, H. Richings

Date: August 4, 1993

