

Mr. Garrett D. Edwards
 Director-Licensing, MC 62
 PECO Energy Company
 Nuclear Group Headquarters
 Correspondence Control Desk
 P.O. Box No. 195
 Wayne, PA 19087-0195

January 12, 1999

SUBJECT: LIMERICK GENERATING STATION (LGS), UNIT 2, REACTOR VESSEL
 SURVEILLANCE PROGRAM (TAC NO. MA3590)

Dear Mr. Edwards:

The Commission has issued the enclosed Amendment No. 94 to Facility Operating License No. NPF-85 for the Limerick Generating Station, Unit 2. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated September 14, 1998.

This amendment revises LGS, Unit 2, Technical Specification (TS) Table 4.4.6.1.3-1, "Reactor Vessel Material Surveillance Program - Withdrawal Schedule." The revision changes the schedule for withdrawing the first surveillance capsule from 8 Effective Full Power Years (EFPY) to 15 EFPY, and the second surveillance capsule from 20 EFPY to 30 EFPY. A revision to the TS Surveillance Requirement (SR) is also being made. This revision removes the reference to flux wire removal and analysis that was originally required following the first cycle of operation. TS SR 4.4.6.1.4 is being changed to refer to the flux wires that are located within the surveillance capsules, which will be removed and analyzed in accordance with the surveillance capsule removal schedule located in Table 4.4.6.1.3-1.

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

This completes our effort on this issue and we are, therefore, closing out TAC No. MA3590.

Sincerely,

/s/
 Bartholomew C. Buckley, Senior Project Manager
 Project Directorate I-2
 Division of Reactor Projects - I/II
 Office of Nuclear Reactor Regulation

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Docket No. 50-353

- Enclosures: 1. Amendment No.94 to License No. NPF-85
 2. Safety Evaluation

cc w/encls: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

January 12, 1999

Mr. Garrett D. Edwards
Director-Licensing, MC 62A-1
PECO Energy Company
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P.O. Box No. 195
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Sincerely,

Bartholomew C. Buckley

Bartholomew C. Buckley, Senior Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-353

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2. Safety Evaluation

cc w/encls: See next page

Mr. Garrett D. Edwards
PECO Energy Company

Limerick Generating Station, Units 1 & 2

cc:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

PECO ENERGY COMPANY

DOCKET NO. 50-353

LIMERICK GENERATING STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 94
License No. NPF-85

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by PECO Energy Company (the licensee) dated September 14, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-85 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 94 , are hereby incorporated into this license. PECO Energy Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



William M. Dean, Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: January 12, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 94

FACILITY OPERATING LICENSE NO. NPF-85

DOCKET NO. 50-353

Replace the following pages of the Appendix A Technical Specifications with the attached page. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

Remove

3/4 4-19

3/4 4-21

Insert

3/4 4-19

3/4 4-21

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

4.4.6.1.2 The reactor coolant system temperature and pressure shall be determined to be to the right of the criticality limit line of Figure 3.4.6.1-1 curve C and curve C' within 15 minutes prior to the withdrawal of control rods to bring the reactor to criticality and at least once per 30 minutes during system heatup.

4.4.6.1.3 The reactor vessel material surveillance specimens shall be removed and examined, to determine changes in reactor pressure vessel material properties, as required by 10 CFR Part 50, Appendix H in accordance with the schedule in Table 4.4.6.1.3-1. The results of these examinations shall be used to update the curves of Figure 3.4.6.1-1.

4.4.6.1.4 The reactor flux wire specimens located within the surveillance capsules shall be removed and examined to determine reactor pressure vessel fluence as a function of time and power level and used to modify Figure B 3/4 4.6-1 in accordance with the schedule in Table 4.4.6.1.3-1. The results of these fluence determinations shall be used to adjust the curves of Figure 3.4.6.1-1, as required.

4.4.6.1.5 The reactor vessel flange and head flange temperature shall be verified to be greater than or equal to 70°F:

- a. In OPERATIONAL CONDITION 4 when reactor coolant system temperature is:
 1. $\leq 100^{\circ}\text{F}$, at least once per 12 hours.
 2. $\leq 90^{\circ}\text{F}$, at least once per 30 minutes.
 - b. Within 30 minutes prior to and at least once per 30 minutes during tensioning of the reactor vessel head bolting studs.
-

TABLE 4.4.6.1.3-1

REACTOR VESSEL MATERIAL SURVEILLANCE PROGRAM-WITHDRAWAL SCHEDULE

<u>CAPSULE NUMBER</u>	<u>VESSEL LOCATION</u>	<u>LEAD FACTOR*</u>	<u>WITHDRAWAL TIME (EFPY)</u>
131C 7717 G003	30°	1.20	15
131C 7717 G002	120°	1.20	30
131C 7717 G001	300°	1.20	Spare

*At 1/4 T.

LIMERICK - UNIT 2

3/4 4-21

Amendment No. 94



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED AMENDMENT NO.94 TO FACILITY OPERATING LICENSE NO. NPF-85

PECO ENERGY COMPANY

LIMERICK GENERATING STATION, UNIT 2

DOCKET NO. 50-353

1.0 INTRODUCTION

In a letter dated September 14, 1998, PECO Energy Company (the licensee) submitted a request for changes to the Limerick Generating Station, Unit 2, Technical Specifications (TSs) (Change Request No. 98-04-2). The requested change would revise TS Table 4.4.6.1.3-1 to change the withdrawal schedule for the first capsule to be withdrawn from 10 Effective Full Power Years (EFPY) to 15 EFPY. Also, the requested change will revise the withdrawal schedule for the second capsule to be withdrawn from 20 EFPY to 30 EFPY.

In addition, the licensee requested, for NRC approval, a revision to TS Surveillance Requirement 4.4.6.1.4. This revision will remove the references to flux wire removal and analysis that was originally required following the first cycle of operation. The referenced flux wires were removed following the first cycle of operation, but were misplaced before they were able to be analyzed. The proposed TS Surveillance requirement will be changed to refer to the flux wires that are located within the surveillance capsules, which will be removed and analyzed in accordance with the surveillance capsule removal schedule located in TS Table 4.4.6.1.3-1.

2.0 BACKGROUND

The surveillance program for Limerick Unit 2 was implemented to monitor the radiation-induced changes in the mechanical and impact properties of the pressure vessel materials. The original surveillance program was established in accordance with 10 CFR Part 50, Appendix H, and ASTM E185-73. Case A of ASTM E 185-73 applies to Limerick Unit 2, since the vessel has a predicted shift in the reference nil-ductility temperature of less than 100 °F and will be exposed to a neutron fluence of less than 5×10^{18} n/cm² over the design lifetime of the plant. The original withdrawal schedule specifies the removal of the first and second surveillance capsules at 8 and 20 EFPY, respectively. The surveillance program for Limerick Unit 2 also includes a third capsule, which is a spare without a specific withdrawal schedule.

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3.0 EVALUATION

Appendix H to 10 CFR Part 50, "Reactor Vessel Material Surveillance Program Requirements," include criteria to monitor changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region of light water nuclear power reactors which result from exposure of these materials to neutron irradiation and the thermal environment. Appendix H to 10 CFR Part 50 endorses ASTM E185, "Surveillance Tests for Nuclear Reactor Vessels." Appendix H states that "the design of the surveillance program and the withdrawal schedule must meet the requirements of the edition of ASTM E185 that is current on the issue date of the ASME Code to which the reactor vessel was purchased. In addition, 10 CFR Part 50, Appendix H, states that a proposed withdrawal schedule must be submitted with a technical justification as specified in 10 CFR 50.4. The proposed schedule must be approved prior to implementation.

By ASTM E185-73, it is recommended that the capsules be withdrawn according to application by either one of these cases: Case A - where both the predicted increase in transition temperature of the reactor vessel steel is 100 °F or less and the calculated peak neutron fluence ($E > 1$ MeV) of the reactor vessel is 5×10^{18} n/cm² or less or Case B - where the predicted increase in transition temperature of the reactor vessel steel is greater than 100 °F or where the calculated peak neutron fluence ($E > 1$ MeV) of the reactor vessel is greater than 5×10^{18} n/cm². Case A applies to the Limerick Unit 2 surveillance program. Case A of ASTM E185-73 requires the first and second capsules be withdrawn at a capsule fluence corresponding to the calculated exposure of the reactor wall at approximately 100 to 125 percent of the reactor design life. The third capsule is to be a standby capsule.

In the submittal of September 14, 1998, PECO Energy Company submitted a proposed withdrawal schedule with a technical justification as specified in 10 CFR 50.4. The licensee's justification for revising the withdrawal schedule for the first capsule from 8 EFPY to 15 EFPY is that, at 8 EFPY, the data may not be useful because the expected shift in RT_{NDT} is small and may be indistinguishable from the data scatter that would typically be experienced from the testing of an unirradiated specimen. The licensee's justification is the same for revising the withdrawal schedule for the second capsule from 20 EFPY to 30 EFPY. However, it was noted that the removal of the second capsule at 30 EFPY will meet the withdrawal requirements of Case A of ASTM E185-73. The third capsule also meets the withdrawal requirements of Case A of ASTM E185-73.

In addition, PECO Energy Company requested, for NRC approval, a revision to TS Surveillance Requirement 4.4.6.1.4. This revision will remove the references to flux wire removal and analysis that was originally required following the first cycle of operation. The referenced flux wires were removed following the first cycle of operation, but were misplaced before they were able to be analyzed. The proposed TS surveillance requirement will be changed to refer to the flux wires that are located within the surveillance capsules, which will be removed and analyzed in accordance with the surveillance capsule removal schedule located in TS Table 4.4.6.1.3-1. The NRC has determined that the deletion of removal and analysis of flux wires is acceptable because the analysis can be performed using the flux wires in the surveillance capsules.

4.0 SUMMARY

PECO Energy Company provided an acceptable justification, as specified in 10 CFR 50.4, for the revised withdrawal schedule of the first capsule in the Limerick Unit 2 surveillance program. Section III.B.3 of Appendix H indicates that a proposed withdrawal schedule must be approved prior to implementation. Although the first capsule does not satisfy the schedule recommendations of ASTM E185-73, the staff noted that its removal at 15 EFY is acceptable because it will receive a sufficient amount of neutron fluence to monitor the amount of radiation embrittlement. In addition, the staff noted that the second and third capsules meet the recommended withdrawal schedule of ASTM E185-73. Therefore, the staff approves the revised withdrawal schedule, as indicated in TS Change Request No. 98-04-2, for Limerick Unit 2. Moreover, we find the proposed revision to TS Surveillance Requirement 4.4.6.1.4 acceptable.

5.0 STATE CONSULTATION

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

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes the surveillance requirement. The NRC staff has determined that the amendment involves no 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (63 FR 56253). Accordingly, the amendment meets the 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 amendment.

7.0 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Attachment: Table Describing Status of Limerick, Unit 2 Surveillance Capsules

Principal Contributor: M. Khanna

Date: January 12, 1999

8.0 REFERENCES:

1. Letter from Mr. Garrett D. Edwards, PECO Energy Company, to NRC Document Control Desk, dated September 14, 1998, "Limerick Generating Station, Unit 2, Technical Specifications Change Request No. 98-04-2."
2. Code of Federal Regulations, Title 10, Part 50, Appendix H, "Reactor Vessel Material Surveillance Program Requirements."
3. American Society for Testing and Materials, "Standard Recommended Practice for Surveillance Tests for Nuclear Reactor Vessels," ASTM E 185-73.
4. NUREG-1511, "Reactor Pressure Vessel Status Report," December 1994.

STATUS OF LIMERICK UNIT 2 SURVEILLANCE CAPSULES

CAPSULE	WITHDRAWAL TIME	STATUS
131C7717G003	15 EFPY	TO BE TESTED
131C7717G002	30 EFPY	TO BE TESTED
131C7717G001	----	STANDBY