

March 12, 2002

Mr. Oliver D. Kingsley, President
Exelon Nuclear
Exelon Generation Company, LLC
200 Exelon Way, KSA 3-E
Kennett Square, PA 19348

SUBJECT: LIMERICK GENERATING STATION, UNIT 1 - ISSUANCE OF AMENDMENT
RE: LICENSE AMENDMENT REQUEST 01-01092, SAFETY LIMIT MINIMUM
CRITICAL POWER RATIO CHANGE (TAC NO. MB3708)

Dear Mr. Kingsley:

The Commission has issued the enclosed Amendment No. 156 to Facility Operating License No. NPF-39 for the Limerick Generating Station, Unit 1. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated December 21, 2001, as supplemented by letter dated February 15, 2002.

This amendment revises TS Section 2.1 to incorporate revised safety limit minimum critical power ratios due to the cycle-specific analysis performed by Global Nuclear Fuel for Limerick Generating Station, Unit 1, Cycle 10.

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

Sincerely,

/RA/

Christopher Gratton, Sr. Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-352

Enclosures: 1. Amendment No. 156 to
License No. NPF-39
2. Safety Evaluation

cc w/encls: See next page

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DOCUMENT NAME: C:\Program Files\Adobe\Acrobat 4.0\PDF Output\AMD MB3708 MCPR
U1.wpd

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EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-352

LIMERICK GENERATING STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 156
License No. NPF-39

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Exelon Generation Company, LLC (the licensee) dated December 21, 2001, as supplemented February 15, 2002, 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.

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-39 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. 156, are hereby incorporated in the license. Exelon Generation Company, LLC 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

/RA VNerses for/

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: March 12, 2002

ATTACHMENT TO LICENSE AMENDMENT NO. 156

FACILITY OPERATING LICENSE NO. NPF-39

DOCKET NO. 50-352

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

2-1

B 2-1

Insert

2-1

B 2-1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 156 TO FACILITY OPERATING LICENSE NO. NPF-57

EXELON GENERATION COMPANY, LLC

LIMERICK GENERATING STATION, UNIT 1

DOCKET NO. 50-352

1.0 INTRODUCTION

By letter dated December 21, 2001, as supplemented by letter dated February 15, 2002, the Exelon Generation Company, LLC (the licensee), submitted a request for changes to the Limerick Generating Station (LGS), Unit 1, Technical Specifications (TSs). The requested changes would revise TS 2.1.2 to incorporate revised safety limit minimum critical power ratios (SLMCPRs) due to the cycle-specific analysis performed by Global Nuclear Fuel - Americas, LLC (GNF-A), for LGS, Unit 1, Cycle 10. The February 15, 2002, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 BACKGROUND

The licensee requested the following changes to LGS Unit 1 TS 2.1.2, "THERMAL POWER, High Pressure and High Flow." The licensee proposed to change the SLMCPR values for LGS Unit 1, Cycle 10, from 1.12 to 1.10 for dual recirculation loop operation (DLO), and from 1.14 to 1.11 for single recirculation loop operation (SLO), with the reactor vessel steam dome pressure greater than 785 psig and core flow greater than 10% of rated flow. The LGS Unit 1, Cycle 10, core is comprised of 764 fuel assemblies; 280 fresh GE14 bundles, 264 once-burned GE13 fuel bundles, and 220 twice-burned GE13 fuel bundles.

The licensee described the approved methodologies used to calculate the SLMCPR value for the proposed TS change in their application dated December 21, 2001. The LGS Unit 1, Cycle 10, SLMCPR analysis was performed by GNF-A using plant- and cycle-specific fuel and core parameters, and NRC-approved methodologies including NEDC-32505P, Revision 1 (R-Factor Calculation Method for GE11, GE12 and GE13 Fuel), NEEDO-10958-A (GETAB), NEDC-32601P (Methodology and Uncertainties for Safety Limit MCPR Evaluations), NEDC-32694P (Power Distribution Uncertainties for Safety Limit MCPR Evaluation), and Amendment 25 to NEDE-24011-P-A (GESTAR II).

During the week of March 26, 2001, the NRC staff visited the GNF-A engineering and manufacturing facility in Wilmington, North Carolina, to conduct an onsite review of the safety analyses and system and component performance evaluations used to support the Duane Arnold Energy Center (DAEC) extended power uprate application. The staff's audit covered several areas, some of which had an impact on the LGS Unit 1, Cycle 10, SLMCPR TS

amendment review and will be discussed in Section 3.0 of this safety evaluation. The purpose of the GNF-A audit, the findings, and the NRC staff's resolution to those findings are documented in NRC staff letter, "Duane Arnold Energy Center - Issuance of Amendment Regarding Extended Power Uprate (TAC NO. MB0543)," dated November 6, 2001.

3.0 EVALUATION

The staff reviewed (1) issues identified during the NRC staff's audit of the GNF-A data bases for the GEXL14 correlation as they apply to the LGS Unit 1, Cycle 10, SLMCPR TS amendment review; (2) whether previously approved methodologies used to calculate SLMCPR were acceptable for calculating the SLMCPRs for reactor cores using newer GE14 fuel; and (3) the justification for the changes to the LGS Unit 1, Cycle 10, SLMCPR from 1.12 to 1.10 for DLO, and from 1.14 to 1.11 for SLO, using the approach stated in Amendment 25 to GESTAR II.

The NRC staff identified discrepancies in data bases while conducting an audit of GNF-A's GEXL14 correlation development for the DAEC plant-specific extended power uprate application. The details of the deficiencies were documented in an NRC request for additional information (RAI) to Mr. Gary Van Middlesworth of the DAEC, dated June 4, 2001. Based on the findings of that audit, the NRC staff requested that LGS provide a justification why the overall GEXL14 correlation uncertainty for LGS Unit 1, Cycle 10, remains valid. In their response to the NRC staff's RAI dated February 15, 2002, the licensee provided the results of additional analyses that indicated there was sufficient conservatism associated with the reduced power distribution uncertainties to compensate for the impact due to the outlet peaked power shape on LGS Unit 1, Cycle 10, SLMCPR values such that the SLO and DLO TS SLMCPRs did not need to be changed. The NRC staff reviewed the licensee's evaluation and found it to be acceptable because the licensee used an NRC-approved methodology to resolve the discrepancy in the GNF-A data bases for the GEXL14 correlation.

To address the audit issue of the applicability of the previously-approved methodologies to GE14 fuel, GNF-A submitted two letters for the staff's review: (1) FLN-2001-016, from Glen A. Watford, to USNRC, "Confirmation of 10x10 Fuel Design Applicability to Improved SLMCPR, Power Distribution and R-Factor Methodologies," dated September 24, 2001; and (2) FLN-2001-017, from Glen A. Watford, to USNRC, "Confirmation of the Applicability of the GEXL14 Correlation and Associated R-Factor Methodology for Calculating SLMCPR Values in Core Containing GE14 Fuel," dated October 1, 2001. The NRC staff reviewed the GNF-A's evaluation contained in the two letters and found that the approach, supplemented by the approach dealing with a proposed higher interim GEXL14 correlation uncertainty discussed in the licensee's RAI response, dated February 15, 2002, is acceptable for this application because the licensee used an NRC-approved methodology to resolve the audit issue regarding the application of the proposed higher, interim GEXL14 correlation uncertainty to the reload analyses.

The NRC staff reviewed the licensee's application dated December 21, 2001, and the response to the NRC staff's RAI dated February 15, 2002, including the detailed summary results of the analysis for LGS Unit 1, Cycle 10, operation in Table 1 of Attachment 4 of the application, and Table 1 of Attachment 2 in the response to the RAI, to determine whether the proposed changes to the LGS Unit 1 SLMCPR values were justified. The staff found that the proposed LGS Unit 1, Cycle 10, SLMCPR values will ensure that 99.9% of the fuel rods in the core will

not experience boiling transition, which satisfies the requirements of Generic Design Criterion 10 of Appendix A to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50 regarding acceptable fuel design limits. Therefore, the staff concludes that the SLMCPR analysis for LGS Unit 1, Cycle 10, operation, which uses plant- and cycle-specific parameters in conjunction with an approved method, is acceptable. The staff also concludes that the SLMCPR values of 1.10 for DLO and 1.11 for SLO are acceptable for LGS Unit 1, Cycle 10, since previously approved methodologies were used.

The NRC staff reviewed the changes to TS Bases 2.0, "Introduction," and found them consistent with the proposed changes.

4.0 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.

5.0 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. 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 (67 FR 2924). 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.

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

Principal Contributor: Tai Huang

Date: March 12, 2002