

April 22, 2003

Mr. John L. Skolds, President  
Exelon Nuclear  
Exelon Generation Company, LLC  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNIT 2 - ISSUANCE OF  
AMENDMENT FOR SAFETY LIMIT MINIMUM CRITICAL POWER RATIO  
(TAC NO. MB7523)

Dear Mr. Skolds:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 199 to Facility Operating License No. DPR-19 for Dresden Nuclear Power Station, Unit 2. The amendment is in response to your application dated January 31, 2003, as supplemented by letter dated March 7, 2003.

The amendment revises the safety limit minimum critical power ratio for two recirculation loop operation and single recirculation loop operation for Unit 2.

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

*/RA/*

Lawrence W. Rossbach, Project Manager, Section 2  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-237

Enclosures: 1. Amendment No. 199 to DPR-19  
2. Safety Evaluation

cc w/encls: See next page

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**/RA/**

Lawrence W. Rossbach, Project Manager, Section 2  
Project Directorate III  
Division of Licensing Project Management  
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Docket No. 50-237

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cc w/encls: See next page

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\*SE input dated 04/03/03

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EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-237

DRESDEN NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 199  
License No. DPR-19

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by the Exelon Generation Company, LLC (the licensee) dated January 31, 2003, as supplemented by letter dated March 7, 2003, 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. DPR-19 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 199, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Anthony J. Mendiola, Chief, Section 2  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: April 22, 2003

ATTACHMENT TO LICENSE AMENDMENT NO. 199

FACILITY OPERATING LICENSE NO. DPR-19

DOCKET NO. 50-237

Replace the following page of the Appendix "A" Technical Specifications with the attached page. The revised page is identified by amendment number and contains a line in the margin indicating the area of change.

Remove Page

2.0-1

Insert Page

2.0-1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 199 TO FACILITY OPERATING LICENSE NO. DPR-19

EXELON GENERATION COMPANY, LLC

DRESDEN NUCLEAR POWER STATION, UNIT 2

DOCKET NO. 50-237

## 1.0 INTRODUCTION

By application dated January 31, 2003 (Reference 1), as supplemented by letter dated March 7, 2003 (Reference 2), Exelon Generation Company, LLC (the licensee), requested changes to the Technical Specifications (TSs) for the Dresden Nuclear Power Station (Dresden), Unit 2. The supplement dated March 7, 2003, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on March 4, 2003 (68 FR 10279).

The licensee requested this TS change to correct an error discovered by Global Nuclear Fuel (GNF) during validation of the calculation for the safety limit minimum critical power ratio (SLMCPR) values. The proposed changes to the previously approved SLMCPR values in TS 2.1.1.2, will be implemented prior to Dresden Unit 2 Cycle 18 reaching a cycle exposure greater than 12,000 megawatt days/metric ton uranium (MWD/MTU). The Dresden Unit 2 Cycle 18 core has 724 fuel assemblies, of which there are 280 fresh GE14 fuel bundles, 248 once burned ATRIUM9 fuel bundles, 168 twice burned ATRIUM9 fuel bundles, and 28 thrice burned ANF9x9-2 fuel bundles.

## 2.0 REGULATORY EVALUATION

Section 50.36 of Title 10 of the Code of Federal Regulations (10 CFR 50.36) provides that nuclear plant TSs will be derived from the analyses and evaluations included in the safety analysis report, and amendments thereto, submitted pursuant to 10 CFR 50.34 (which addresses, among other things, contents of the Final Safety Analysis Report). The existing TS requirements, as well as the licensee's proposed amendment, are based on such analyses and evaluations.

General Design Criterion (GDC) 10 of Appendix A, 10 CFR Part 50, requires that the reactor core and associated coolant, control, and protection systems be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences. The SLMCPR is developed to assure compliance with GDC 10 for fuel cladding integrity. The SLMCPR ensures sufficient margin to the onset of transition boiling (a departure from nucleate boiling, MCPR=1.00) so that, during normal operation and in the event of an anticipated

operational occurrence, at least 99.9 percent of the fuel rods in the core do not experience transition boiling. At every refueling, the SLMCPR is recalculated due to fuel replacement. The licensee requested the amendment in accordance with the provisions of 10 CFR 50.90. The U.S. Nuclear Regulatory Commission (NRC) staff's evaluation is set forth below.

### 3.0 TECHNICAL EVALUATION

The staff has reviewed the licensee's regulatory and technical analyses in support of its proposed license amendment which are described in the licensee's submittal. The detailed evaluation below will support the conclusion 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.

The licensee requested a change to the Dresden Unit 2 TSs for Cycle 18 in accordance with 10 CFR 50.90. Specifically, the licensee proposed to change the SLMCPR values in TS 2.1.1.2 from 1.08 to 1.11 for two recirculation loop operation and from 1.09 to 1.12 for single recirculation loop operation with the reactor vessel steam dome pressure greater than or equal to 785 psig and core flow greater than or equal to 10 percent of rated core flow.

In its submittals (References 1 and 2), the licensee described the approved methodologies used to calculate the proposed SLMCPR values. The Cycle 18 SLMCPR analysis was performed by GNF using plant-specific 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), NEDC-32981P, Revision 0 (GEXL Correlation for ATRIUM-9B Fuel), and Amendment 25 to NEDE-24011-P-A (GESTAR II).

In References 1 and 2, the licensee stated that the root cause of the error was that: (1) an input error was made in defining the transversing incore probes (TIP) inputs required as part of the SLMCPR calculation; and (2) a penalty factor used to account for a specific axial power shape was identified 9 months after the original SLMCPR calculations were completed. The licensee also stated that three GNF preventive actions have been identified to prevent similar errors in the future (Reference 2). The staff has reviewed: (1) the root cause of the error and review process leading to discovery of the error, and (2) the justification for the changes to the SLMCPR from 1.08 to 1.11 for two recirculation loop operation and from 1.09 to 1.12 for single recirculation loop operation using the approach stated in Amendment 25 to GESTAR II. Based on the results of the NRC staff's review of the licensee's application (Reference 1) and supplement (Reference 2), including the detailed summary results of the analysis for Dresden Unit 2 Cycle 18 operation in Tables 1 and 2 of Attachment D of Reference 1, and Tables 1, 2 and 3 of Attachment A of Reference 2, the staff has found that the justification for the proposed TS changes is acceptable because: (1) approved methodologies were used in conjunction with the plant- and cycle-specific parameters; (2) the penalty for GE14 fuel was appropriately considered for the entire core through Cycle 18 operation; (3) the TIP inputs were corrected for Cycle 18 SLMCPR calculation; and (4) two GNF corrective actions and three preventive actions

have been identified to provide assurance against recurrence of this error (Reference 2). The proposed Dresden Unit 2 Cycle 18 SLMCPR values will ensure that 99.9 percent of the fuel rods in the core will not experience boiling transition, which satisfies the requirements of GDC 10 of Appendix A to 10 CFR Part 50 regarding acceptable fuel design limits. Therefore, the staff concludes that the licensee's proposed change of SLMCPR value to 1.11 for two recirculation loop operation and 1.12 for single recirculation loop operation is acceptable for Unit 2 Cycle 18.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois 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 (68 FR 10279). Accordingly, the amendments meet 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 amendments.

#### 6.0 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.

#### 7.0 REFERENCES

1. Letter (RS-03-023) from Patrick R. Simpson to NRC, "Request for License Amendment Regarding Minimum Critical Power Ratio Safety Limit," January 31, 2003.
2. Letter (RS-03-051) from P. R. Simpson to NRC, "Additional Information Supporting the Request for License Amendment Regarding Minimum Critical Power Ratio Safety Limit," March 7, 2003.

Principal Contributor: T. Huang, NRR

Date: April 22, 2003