

April 5, 2001

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, UNITS 1 AND 2 - ISSUANCE OF  
AMENDMENT RE: CONTROL ROD TESTING (TAC NOS. MB1000 AND  
MB1001)

Dear Mr. Kingsley:

The Commission has issued the enclosed Amendments Nos. 149 and 112 to Facility Operating License Nos. NPF-39 and NPF-85 for the Limerick Generating Station, Units 1 and 2. These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated January 18, 2001, and supplemented February 20, and March 26, 2001.

These amendments change TS Table 1.2, "Operational Conditions," and TS 3/4.9.1, "Reactor Mode Switch," to allow movement of a single control rod with the reactor in hot shutdown or cold shutdown for post-maintenance and surveillance testing of the control rod and the control rod drive. The TS had previously permitted movement of a control rod in these operational conditions to recouple a control rod to its drive. The amendments also change TS Table 3.3.1-1 to require the nuclear instrumentation system intermediate range monitors (IRMs) to be operable when moving a control rod in hot shutdown or cold shutdown. TS Table 4.3.1.1-1 is changed to add surveillance requirements for the IRMs in hot or cold shutdown.

A copy of the 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 Nos. 50-352 and 50-353

Enclosures: 1. Amendment No. 149 to NPF-39  
2. Amendment No. 112 to NPF-85  
3. Safety Evaluation

cc w/encls: See next page

Limerick Generating Station, Units 1 & 2

cc:

Mr. Edward Cullen  
Vice President & General Counsel  
Exelon Generation Company, LLC  
300 Exelon Way  
Kennett Square, PA 19348

Manager-Limerick Licensing  
Exelon Generation Company, LLC  
Nuclear Group Headquarters  
Correspondence Control  
P.O. Box 160  
Kennett Square, PA 19348

Mr. William Levis, Vice President  
Limerick Generating Station  
P.O. Box 2300  
Sanatoga, PA 19464

Plant Manager  
Limerick Generating Station  
P.O. Box 2300  
Sanatoga, PA 19464

Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

Senior Resident Inspector  
U.S. Nuclear Regulatory Commission  
Limerick Generating Station  
P.O. Box 596  
Pottstown, PA 19464

Chairman  
Board of Supervisors  
of Limerick Township  
646 West Ridge Pike  
Linfield, PA 19468

Chief-Division of Nuclear Safety  
PA Dept. of Environmental Resources  
P.O. Box 8469  
Harrisburg, PA 17105-8469

Library  
U.S. Nuclear Regulatory Commission  
Region I  
475 Allendale Road  
King of Prussia, PA 19406

Dr. Judith Johnsrud  
National Energy Committee  
Sierra Club  
433 Orlando Avenue  
State College, PA 16803

Mr. Jeffrey A. Benjamin  
Licensing - Vice President  
Exelon Corporation  
1400 Opus Place, Suite 900  
Downers Grove, IL 60515

Mr. James A. Hutton  
Director-Licensing  
Exelon Generation Company, LLC  
Nuclear Group Headquarters  
Correspondence Control  
P. O. Box 160  
Kennett Square, PA 19348

Correspondence Control Desk  
Exelon Generation Company, LLC  
200 Exelon Way, KSA 1-N-1  
Kennett Square, PA 19348

Mr. John Skolds  
Chief Operating Officer  
Exelon Generation Company, LLC  
1400 Opus Place, Suite 900  
Downers Grove, IL 60515

Mr. William Bohlke  
Senior Vice President, Nuclear Services  
Exelon Generation Company, LLC  
1400 Opus Place, Suite 900  
Downers Grove, IL 60515

Limerick Generating Station, Units 1 & 2

cc:

Mr. John Cotton  
Senior Vice President, Operations Support  
Exelon Generation Company, LLC  
1400 Opus Place, Suite 900  
Downers Grove, IL 60515

Mr. Joseph Hagan  
Senior Vice President  
Mid-Atlantic Regional Operating Group  
Exelon Generation Company, LLC  
200 Exelon Way, KSA 3-N  
Kennett Square, PA 19348

Mr. W. Levis  
Site Vice President  
Limerick Generating Station  
P.O. Box 2300  
Sanatoga, PA 19464

Mr. R. Braun  
Plant Manager  
Limerick Generating Station  
P.O. Box 2300  
Sanatoga, PA 19464

Mr. K. Gallogly  
Regulatory Assurance Manager  
Limerick Generating Station  
P.O. Box 2300  
Sanatoga, PA 19464

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

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These amendments change TS Table 1.2, "Operational Conditions," and TS 3/4.9.1, "Reactor Mode Switch," to allow movement of a single control rod with the reactor in hot shutdown or cold shutdown for post-maintenance and surveillance testing of the control rod and the control rod drive. The TS had previously permitted movement of a control rod in these operational conditions to recouple a control rod to its drive. The amendments also change TS Table 3.3.1-1 to require the nuclear instrumentation system intermediate range monitors (IRMs) to be operable when moving a control rod in hot shutdown or cold shutdown. TS Table 4.3.1.1-1 is changed to add surveillance requirements for the IRMs in hot or cold shutdown.

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Sincerely,  
**/RA/**

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

Docket Nos. 50-352 and 50-353

Enclosures: 1. Amendment No. 149 to NPF-39  
2. Amendment No. 112 to NPF-85  
3. Safety Evaluation

cc w/encls: See next page

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EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-352

LIMERICK GENERATING STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 149  
License No. NPF-39

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Exelon Generation Company, LLC (Exelon Generation Company) (the licensee) dated January 18, 2001, as supplemented February 20, and March 26, 2001, 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. 149, are hereby incorporated in the license. Exelon Generation 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

**/RA/ R. B. Ennis 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: April 5, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 149

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

1-10  
3/4 3-2  
3/4 3-4  
3/4 3-7  
3/4 9-1

Insert

1-10  
3/4 3-2  
3/4 3-4  
3/4 3-7  
3/4 9-1

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-353

LIMERICK GENERATING STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 112  
License No. NPF-85

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Exelon Generation Company, LLC (Exelon Generation Company) (the licensee), dated January 18, 2001, as supplemented February 20, and March 26, 2001, 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-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. 112, are hereby incorporated in the license. Exelon Generation Company shall operate the facility in accordance with the Technical Specifications.

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/ R. B. Ennis 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: April 5, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 112

FACILITY OPERATING LICENSE NO. NPF-85

DOCKET NO. 50-353

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

1-10  
3/4 3-2  
3/4 3-4  
3/4 3-7  
3/4 9-1

Insert

1-10  
3/4 3-2  
3/4 3-4  
3/4 3-7  
3/4 9-1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NOS. 149 AND 112 TO FACILITY OPERATING  
LICENSE NOS. NPF-39 and NPF-85  
EXELON GENERATION COMPANY, LLC  
LIMERICK GENERATING STATION, UNITS 1 AND 2  
DOCKET NOS. 50-352 AND 50-353

## 1.0 INTRODUCTION

By letter dated January 18, 2001, as supplemented February 20, and March 26, 2001, Exelon Generation Company, LLC (Exelon or the licensee) submitted a request for changes to the Limerick Generating Station (LGS), Units 1 and 2, Technical Specifications (TSs). The requested changes would change TS Table 1.2, "Operational Conditions," and TS Limiting Condition for Operation (LCO) 3.9.1, "Reactor Mode Switch," to allow movement of a single control rod with the reactor in hot shutdown or cold shutdown for venting, post-maintenance testing, or surveillance testing of the control rod and the control rod drive. The TS had previously permitted movement of a control rod in these operational conditions to recouple a control rod to its drive. The requested change would also change TS Table 3.3.1-1 to require the nuclear instrumentation system intermediate range monitors (IRMs) to be operable when moving a control rod in hot shutdown or cold shutdown. TS Table 4.3.1.1-1 would be changed to add surveillance requirements for the IRMs in hot or cold shutdown. The February 20, and March 26, 2001, letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination or expand the application beyond the scope of the original *Federal Register* notice.

Currently a single rod full withdrawal is permitted, as part of recoupling the rod to its drive, in the hot shutdown or cold shutdown condition. This is done by placing the mode switch in the Refuel position, provided that the one-rod-out interlock (which only permits the withdrawal of a single rod) is operable. Provision for the recoupling is provided in the TS by a footnote to the Condition 3 (Hot Shutdown) and Condition 4 (Cold Shutdown) mode switch position requirement statements in TS Table 1.2. Exelon proposes to change this by replacing the word "recoupled" with "moved" in the footnote. This would allow movement of a single rod in those operational conditions for purposes other than recoupling, e.g., for venting, post-maintenance testing, or surveillance testing.

In TS Table 1.2 there is currently no TS-required surveillance linked to operability of the one-rod-out interlock. Therefore, Exelon proposes to augment the Applicability statement of TS LCO 3.9.1 to include Operational Conditions 3 and 4 when the reactor mode switch is in the

Refuel position. This would extend the applicability of the TS surveillance requirements for the one-rod-out interlock to Operational Conditions 3 and 4 when the reactor mode switch is in the Refuel position.

In TS Table 3.3.1-1, there is currently no requirement for the IRMs to be operable in hot shutdown or cold shutdown. Exelon proposes to add an operability requirement for the IRMs when moving a rod in hot or cold shutdown, and to add surveillance requirements for the IRMs to TS Table 4.3.1-1. The operability and surveillance requirements for the IRMs will be identical to the current IRM requirements for moving a control rod in the refueling mode.

## 2.0 EVALUATION

The Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's submittal, considering the factors that are discussed below.

The proposed changes to TS Table 1.2 and LCO 3.9.1 are similar to existing approved TSs in other boiling water reactors, e.g., Nine Mile Point and Grand Gulf. These were the result of an approved TS change similar to that proposed for LGS.

Since the mode switch in the Shutdown position interlocks all rods in the fully inserted position, the switch must be placed in the Refuel position (or Startup or Run) in order to move a control rod for recoupling or any other purpose. When the mode switch is in the Refuel position, the one-rod-out interlock limits rod movement to a single rod. Uncoupling and recoupling a control rod to its rod drive is necessary in Operational Condition 4 if a rod drive is removed for maintenance, such as is permitted by TS LCO 3.9.10.1. It is possible to defer post-maintenance testing and surveillance testing to Operational Condition 2 (Startup), but for reactor safety concerns it is desired to test the control rod as soon as possible after maintenance to verify the rod is fully operable.

The proposed change to TS Table 1.2 does not change the current requirements for withdrawal of a single rod in Operational Conditions 3 and 4, but it does expand the permitted testing activities for withdrawal (e.g., post-maintenance testing). While this might increase the frequency of rod withdrawals in Operational Conditions 3 and 4, it does not increase the probability of inadvertent rod withdrawal events since the rod withdrawals for testing would occur in Operational Conditions 1, 2, or 5, if not in Operational Conditions 3 or 4.

The Updated Final Safety Analysis Report for LGS indicates that the safety analyses for permitting a single control rod to be withdrawn relies on two factors in Operational Conditions 3, 4, and 5 to prevent inadvertent criticality. The first is that the required shutdown margin includes a margin for the control rod of highest reactivity worth to be fully withdrawn from the core. Therefore, inadvertent criticality will not occur due to the withdrawal of one control rod. Per TS LCO 3.1.1, the shutdown margin requirements must be met in all Operational Conditions. If the rod being tested is withdrawn and disabled such that it cannot be fully inserted, then LCO 3.1.1 and Surveillance Requirement (SR) 4.1.1 require that the worth of the untrippable rod be subtracted in the shutdown margin calculation, in addition to the rod of highest reactivity worth. An exception to this is given in LCO 3.9.10.1, in Operational Conditions 4 or 5, where the withdrawn rod can be assumed to be the highest worth rod specified in the shutdown margin analysis as long as all other control rods in a five-by-five array centered on the control rod being withdrawn are inserted and electrically or hydraulically

disarmed, or the four fuel assemblies surrounding the withdrawn rod are removed from the core cell, and all other control rods are inserted. These conditions ensure that the subcriticality margin established by LCO 3.1.1 is not adversely impacted by rod maintenance in Operational Conditions 3, 4, or 5.

The second factor that is relied upon is the operability of the one-rod-out interlock. This interlock is inserted in the rod control circuitry when the mode switch is placed in the Refuel position. TS LCO 3.9.1, with the requested changes, will ensure surveillance testing is performed to verify the operability of the one-rod-out interlock prior to withdrawing a control rod with the mode switch in the Refuel position. The requirement to have the one-rod-out interlock operable is also stated in TS Table 1.2. Since the vessel head is installed in Operational Conditions 3 and 4, fuel movement is not possible. Therefore, this change cannot introduce adverse consequences such as inadvertent criticality related to the movement of fuel while a rod is withdrawn.

A change is proposed to TS Table 3.3.1-1 to require three channels of IRMs per trip system to be operable when moving a rod in hot or cold shutdown. Although the one-rod-out interlock will prohibit the withdrawal of more than one rod, and the required shutdown margin maintains the core subcritical with the most reactive rod withdrawn, the IRMs provide a reactor scram on high neutron flux which inserts any withdrawn rod to enhance safety. The operators can monitor changes in the neutron flux using the source range monitors, which are required to be operable per LCO 3.3.7.6.

The factors discussed above indicate that the changes to TS Table 1.2 and LCO 3.9.1 to permit single rod movement in Operational Conditions 3 and 4 for purposes in addition to recoupling is not significantly different from the currently permitted rod withdrawal for recoupling, and does not significantly increase the probability of an inadvertent rod withdrawal event or an inadvertent criticality event. The changes to TS Table 3.3.1-1 and TS Table 4.3.1.1-1 require the IRMs to be operable, which provides reactor scram protection and are the same as the IRM operability and surveillance requirements when moving a control rod in the refueling condition. The change to LCO 3.9.1 provides additional and appropriate surveillance requirements for rod withdrawals in Operational Conditions 3 and 4. Therefore, the NRC staff concludes that the proposed changes to the LGS TSs are acceptable.

### 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 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 (66 FR 11060). 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.

## 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 Contributor: John P. Boska

Date: April 5, 2001