

January 18, 2005

Mr. Christopher M. Crane  
President and Chief Nuclear Officer  
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: PROPOSED CHANGE TO THE REACTOR COOLANT  
SYSTEM PRESSURE ISOLATION VALVE LEAKAGE REQUIREMENTS  
(TAC NOS. MC1413 AND MC1414)

Dear Mr. Crane:

The Commission has issued the enclosed Amendment No. 172 to Facility Operating License No. NPF-39 and Amendment No. 134 to Facility Operating License No. 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 November 25, 2003.

These amendments revise TS 3.4.3.2 and the associated TS Bases for Units 1 and 2 by adding a footnote to TS 3.4.3.2.e to indicate that reactor coolant system (RCS) pressure isolation valve leakage is excluded from any other allowable RCS operational leakage specified in TS 3.4.3.2.

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/*

Travis L. Tate, 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. 172 to  
License No. NPF-39  
2. Amendment No. 134 to  
License No. NPF-85  
3. Safety Evaluation

cc w/encls: See next page

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Dear Mr. Crane:

The Commission has issued the enclosed Amendment No. 172 to Facility Operating License No. NPF-39 and Amendment No. 134 to Facility Operating License No. 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 November 25, 2003.

These amendments revise TS 3.4.3.2 and the associated TS Bases for Units 1 and 2 by adding a footnote to TS 3.4.3.2.e to indicate that reactor coolant system (RCS) pressure isolation valve leakage is excluded from any other allowable RCS operational leakage specified in TS 3.4.3.2.

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

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 Travis L. Tate, Project Manager, Section 2  
 Project Directorate I  
 Division of Licensing Project Management  
 Office of Nuclear Reactor Regulation

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cc w/encls: See next page

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Accession Number: ML043170463 \*SE provided 9/8/04. No significant changes made.

OFFICE	PDI-2/PM	PDI-2/LA	IROB/SC*	EMEB/SC	SPLB/SC	OGC	PDI-2/SC
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Official Record Copy

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-352

LIMERICK GENERATING STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 172  
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 November 25, 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. 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. 172, 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 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Darrell J. Roberts, 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: January 18, 2005

ATTACHMENT TO LICENSE AMENDMENT NO. 172

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

3/4 4-9

B3/4 4-3e

Insert

3/4 4-9

B3/4 4-3e

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-353

LIMERICK GENERATING STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 134  
License No. NPF-85

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Exelon Generation Company, LLC (the licensee) dated November 25, 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. 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. 134, 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. The license amendment is effective as of its date of issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Darrell J. Roberts, 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: January 18, 2005



ATTACHMENT TO LICENSE AMENDMENT NO. 134

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

3/4 4-9

B3/4 4-3e

Insert

3/4 4-9

B3/4 4-3e

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NOS. 172 AND 134 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 application dated November 25, 2003 (Accession No. ML033430395), Exelon Generation Company, LLC (Exelon or the licensee) requested changes to the Technical Specifications (TSs) for Limerick Generating Station (LGS), Units 1 and 2. The proposed changes would revise LGS Units 1 and 2 TS 3.4.3.2 and the associated TS Bases. Specifically, the proposed changes would revise TS 3.4.3.2.e by adding a footnote to indicate that reactor coolant system (RCS) pressure isolation valve (PIV) leakage is excluded from any other allowable RCS operational leakage specified in TS 3.4.3.2.

The proposed changes would make the treatment of LGS RCS operational leakage and PIV leakage consistent with other Exelon stations and industry boiling-water reactors (BWRs). The proposed changes would also facilitate consistent RCS leakage assessment and monitoring for the Reactor Oversight Process performance indicator.

## 2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.2, 10 CFR 50.55a, and General Design Criterion (GDC) 55, "Reactor Coolant Pressure Boundary Penetrating Containment" of 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," describes the reactor coolant pressure boundary (RCPB), which the RCS operational leakage limits and PIV leakage limits protect. The main purpose of the limit on allowable PIV leakage rate is to prevent overpressure failure of the low pressure portions of connecting systems. PIV leakage is an indication that the PIVs between the RCS and the connecting systems are degraded or degrading.

GDC 30, "Quality of Reactor Coolant Pressure Boundary," of Appendix A to 10 CFR Part 50 requires that means be provided for detecting and, to the extent practical, identifying the location and source of reactor coolant leakage. Regulatory Guide (RG) 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems," provides acceptable methods for implementing the requirements of GDC 30 with regard to the selection of leakage detection systems for the RCPB. RG 1.45 states:

The safety significance of leaks from the reactor coolant pressure boundary (RCPB) can vary widely depending on the source of the leak as well as the leakage rate and duration. Therefore, the detection and monitoring of leakage of reactor coolant into the containment area is necessary. In most cases, methods for separating the leakage from an identified source from the leakage from an unidentified source are necessary to provide prompt and quantitative information to the operators to permit them to take immediate corrective action should a leak be detrimental to the safety of the facility. Identified leakage is: (1) leakage into closed systems, such as pump seal or valve packing leaks that are captured, flow metered, and conducted to a sump or collecting tank, or (2) leakage into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of unidentified leakage monitoring systems or not to be from a flaw in the RCPB. Unidentified leakage is all other leakage.

### Leakage Separation

A limited amount of leakage is expected from the RCPB and from auxiliary systems within the containment such as from valve stem packing glands, circulating pump shaft seals, and other equipment that cannot practically be made 100% leak tight. The reactor vessel closure seals and safety and relief valves should not leak significantly; however, if leakage occurs via these paths or via pump and valve seals, it should be detectable and collectable and, to the extent practical, isolated from the containment atmosphere so as not to mask any potentially serious leak should it occur. These leakages are known as identified leakage and should be piped to tanks or sumps so that the flow rate can be established and monitored during plant operation.

Uncollected leakage to the containment atmosphere from sources such as valve stem packing glands and other sources that are not collected increases the humidity of the containment. The moisture removed from the atmosphere by air coolers together with any associated liquid leakage to the containment is known as "unidentified leakage" and should be collected in tanks or sumps where the flow rate can be established and monitored during plant operation. A small amount of unidentified leakage may be impractical to eliminate, but it should be reduced to a small flow rate, preferably less than one gallon per minute (gpm), to permit the leakage detection systems to detect positively and rapidly a small increase in flow rate. Thus a small unidentified leakage rate that is of concern will not be masked by a larger acceptable identified leakage rate.

Substantial intersystem leakage from the RCPB to other systems across passive barriers or valves is not expected. However, should such leakage occur, it may not be detectable through the above-mentioned detection systems, and other alarm and detection methods should be employed.

The Nuclear Regulatory Commission's (NRC or the Commission) regulatory requirements related to the content of TSs are set forth in 10 CFR 50.36. This regulation requires that the TSs include items in five specific categories. These categories include: 1) safety limits, limiting safety system settings and limiting control settings, 2) limiting conditions for operation (LCOs), 3) surveillance requirements (SRs), 4) design features, and 5) administrative controls. However, the regulation does not specify the particular items to be included in a plant's TSs.

Additionally, 10 CFR 50.36(c)(2)(ii) sets forth four criteria to be used in determining whether an LCO is required to be included in the TSs. These criteria are as follows:

1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
2. A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
4. A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

Existing LCOs and related surveillances included as TS requirements which satisfy any of the criteria stated above must be retained in the TSs. RCS PIV leakage limits satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

NUREG-1433, "Standard Technical Specifications, General Electric Plants (BWR/4)," (STS) contains the improved specifications for General Electric BWR/4 plants and were developed based on the criteria in the Final Commission Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors, dated July 22, 1993 (58 FR 39132), which was subsequently codified by changes to 10 CFR 50.36 (60 FR 36953). The improved specifications for RCS PIV leakage requirements are contained in STS 3.4.5, "RCS Pressure Isolation Valve (PIV) Leakage."

### 3.0 TECHNICAL EVALUATION

The licensee proposed changes to revise LGS TS 3.4.3.2.e by adding a footnote to indicate that RCS PIV leakage is excluded from any other allowable RCS operational leakage specified in TS 3.4.3.2. The associated Bases will also be modified to be consistent with the proposed footnote. The LGS TSs are custom specifications and are not consistent with the STS content and format. LGS TS 3/4.4.3.2 contains the LCO requirements applicable to RCS operational leakage, including RCS PIV leakage limits and SRs. The Bases for LGS TS 3/4.4.3.2 states, "Leakage from the RCS pressure isolation valves is IDENTIFIED LEAKAGE and will be considered as a portion of the allowed limit." Identified leakage is defined in RG 1.45 as leakage into closed systems, such as pump seal or valve packing leaks that are captured, flow metered, and conducted to a sump or collecting tank, or leakage into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of unidentified leakage monitoring systems or not to be from a flaw in the RCPB. In Section 4.0 of the November 25, 2003, submittal, the licensee stated, "the LGS TS definitions for identified and unidentified leakage in TS Section 1.0 are consistent with the definitions provided in [RG] 1.45."

RCS PIVs are located between the RCS and the connecting low pressure systems. The

function of these PIVs is to provide protection for the RCPB described in 10 CFR 50.2, 10 CFR 50.55a(c), and GDC 55 by separating the high pressure RCS from the attached low pressure system. Normal operational wear or mechanical deterioration of the PIVs can produce varying amounts of reactor coolant leakage. RCS PIV leakage is not considered in any design-basis accident analyses. The main purpose of the limit on allowable PIV leakage rate is to prevent overpressure failure of the low pressure portions of connecting systems. PIV leakage at the allowable limit is an indication that the PIVs between the RCS and the connecting systems are degraded or degrading, which could result in an overpressure of the low pressure piping or components. The associated failure consequences could be a loss-of-coolant accident (LOCA) outside of containment, which is an unanalyzed event that could degrade the ability for low pressure injection. To prevent this scenario from occurring, continued RCS high pressure operation is allowed only when leakage through the PIVs exists in amounts that do not compromise safety, as controlled by the PIV allowable limits in the TSs.

As described above, RCS PIV leakage is leakage into closed systems connected to the RCS and does not meet the definition of identified leakage because the RCS PIV leakage is not captured and measured or released to the containment atmosphere. The licensee proposed to add a footnote to LCO 3.4.3.2.e which would state the following: "Pressure isolation valve leakage is not included in any other allowable operational leakage specified in Section 3.4.3.2." The licensee also proposed to modify the associated TS Bases to be consistent with the proposed footnote. The NRC staff finds the addition of the proposed footnote to the TSs acceptable because RCS PIV leakage does not meet the definition of identified leakage as defined in RG 1.45 or the LGS TSs. In addition, the proposed change does not modify the function of the RCS leakage detection system which will continue to meet the requirements of GDC 30. Further, LGS TS 3.4.3.2.e will continue to provide the requirements for monitoring the condition of the RCPB to detect RCS PIV degradation that has the potential to cause a LOCA outside of containment. Thus, the requirements of 10 CFR 50.36 will continue to be met.

### 3.1 Conclusion

The NRC staff has reviewed the licensee's application with the supporting documentation. Based on its review, the NRC staff concludes that the addition of the proposed footnote to LGS TS 3.4.3.2.e is acceptable because the proposed changes provide clarity and consistency with the definition of identified leakage as presented in the LGS TSs and RG 1.45. The staff's review also concluded that RCS PIVs and leakage limits will continue to meet the requirements of GDC 30 and 10 CFR 50.36. Additionally, the proposed addition of the footnote to TS 3.4.3.2.e is consistent with the intent of TS 3.4.5 of the STSs. The NRC staff concludes that there is reasonable assurance that plant operation in this manner poses no undue risk to the health and safety of the public.

### 4.0 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.

## 5.0 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 (69 FR 5203). 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Kerri Kavanagh

Date: January 18, 2005