

July 22, 2008

Mr. Charles G. Pardee  
Chief Nuclear Officer  
and Senior Vice President  
Exelon Generation Company, LLC  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3, AND QUAD CITIES  
NUCLEAR POWER STATION, UNITS 1 AND 2 - ISSUANCE OF  
AMENDMENTS REGARDING TURBINE CONDENSER VACUUM – LOW  
SCRAM INSTRUMENTATION SETPOINT (TAC NOS. MD6250, MD6251,  
MD6252, AND MD6253)

Dear Mr. Pardee:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 227 to Renewed Facility Operating License No. DPR-19 and Amendment No. 219 to Renewed Facility Operating License No. DPR-25 for Dresden Nuclear Power Station, Units 2 and 3, and Amendment No. 239 to Renewed Facility Operating License No. DPR-29 and Amendment No. 234 to Renewed Facility Operating License No. DPR-30 for Quad Cities Nuclear Power Station, Units 1 and 2, respectively. The amendments are in response to your application dated August 1, 2007, as supplemented by letters dated February 26, and May 1, 2008.

The amendments modify technical specification requirements related to Turbine Condenser Vacuum – Low Scram Instrumentation Setpoint.

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/**

Joel Wiebe, Senior Project Manager  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-237, 50-249, 50-254 and 50-265

Enclosures:

1. Amendment No. 227 to DPR-19
2. Amendment No. 219 to DPR-25
3. Amendment No. 239 to DPR-29
4. Amendment No. 234 to DPR-30
5. Safety Evaluation

cc w/encls: See next page

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The amendments modify technical specification requirements related to Turbine Condenser Vacuum – Low Scram Instrumentation Setpoint.

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Joel Wiebe, Senior Project Manager  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-237, 50-249, 50-254 and 50-265

Enclosures:

1. Amendment No. 227 to DPR-19
2. Amendment No. 219 to DPR-25
3. Amendment No. 239 to DPR-29
4. Amendment No. 234 to DPR-30
5. Safety Evaluation

cc w/encls: See next page

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Package: ML081700415	Amendment ML081700399	

Tech Spec Pages: ML0

\*Prior Concurrence by Memorandum dated 05/29/2008

\*\*Prior Concurrence by Memorandum dated 04/17/2008

NRR-058

OFFICE	LPL3-2/PM	LPL3-2/LA	DE/EICB/BC	DSS/SRXB/BC	DIRS/ITSB/BC	OGC (NOL)	LPL3-2/BC
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EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-237

DRESDEN NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 227  
Renewed 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 August 1, 2007, as supplemented by letters dated February 26, and May 1, 2008, 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 Renewed 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. 227, are hereby incorporated into the renewed operating 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 120 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Russell Gibbs, Chief  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications and Facility Operating License

Date of Issuance: July 22, 2008

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-249

DRESDEN NUCLEAR POWER STATION, UNIT 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 219  
Renewed License No. DPR-25

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by the Exelon Generation Company, LLC (the licensee) dated August 1, 2007, as supplemented by letters dated February 26, and May 1, 2008, 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 3.B. of Renewed Facility Operating License No. DPR-25 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 219, are hereby incorporated into the renewed operating 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 120 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Russell Gibbs, Chief  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications and Facility Operating License

Date of Issuance: July 22, 2008

ATTACHMENT TO LICENSE AMENDMENT NOS. 227 AND 219

RENEWED FACILITY OPERATING LICENSE NOS. DPR-19 AND DPR-25

DOCKET NOS. 50-237 AND 50-249

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

Remove

License DPR-19  
Page 3

License DPR-25  
Page 4

TSs

3.3.1.1-5  
3.3.1.1-10

Insert

License DPR-19  
Page 3

License DPR-25  
Page 4

TSs

3.3.1.1-5  
3.3.1.1-10

- (2) Exelon Generation Company, LLC, pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear materials as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Updated Final Safety Analysis Report, as supplemented and amended;
- (3) Exelon Generation Company, LLC, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Exelon Generation Company, LLC, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) Exelon Generation Company, LLC, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2957 megawatts thermal (100 percent rated power) in accordance with the conditions specified herein.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 227, are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Operation in the coastdown mode is permitted to 40% power.

f. Surveillance Requirement 4.9.A.10 - Diesel Storage Tank Cleaning  
(Unit 3 and Unit 2/3 only)

Each of the above Surveillance Requirements shall be successfully demonstrated prior to entering into MODE 2 on the first plant startup following the fourteenth refueling outage (D3R14).

3. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations: 10 CFR Part 20, Section 30.34 of 10 CFR Part 30, Section 40.41 of 10 CFR Part 40, Sections 50.54 and 50.59 of 10 CFR Part 50, and Section 70.32 of 10 CFR Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

A. Maximum Power Level

The licensee is authorized to operate the facility at steady state power levels not in excess of 2957 megawatts (thermal), except that the licensee shall not operate the facility at power levels in excess of five (5) megawatts (thermal), until satisfactory completion of modifications and final testing of the station output transformer, the auto-depressurization interlock, and the feedwater system, as described in the licensee's telegrams; dated February 26, 1971, have been verified in writing by the Commission.

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 219, are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. Reports

The licensee shall make certain reports in accordance with the requirements of the Technical Specifications.

D. Records

The licensee shall keep facility operating records in accordance with the requirements of the Technical Specifications.

E. Restrictions

Operation in the coastdown mode is permitted to 40% power.

EXELON GENERATION COMPANY, LLC

AND

MIDAMERICAN ENERGY COMPANY

DOCKET NO. 50-254

QUAD CITIES NUCLEAR POWER STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 239  
Renewed License No. DPR-29

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Exelon Generation Company, LLC, et al. (the licensee) dated August 1, 2007, as supplemented by letters dated February 26, and May 1, 2008. 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 3.B. of Facility Operating License No. DPR-29 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 239 are hereby incorporated into the renewed operating 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 120 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Russell A. Gibbs, Chief  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications and Facility Operating License

Date of Issuance: July 22, 2008

EXELON GENERATION COMPANY, LLC

AND

MIDAMERICAN ENERGY COMPANY

DOCKET NO. 50-265

QUAD CITIES NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 234

Renewed License No. DPR-30

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Exelon Generation Company, LLC, et al. (the licensee) dated August 1, 2007, as supplemented by letters dated February 26, and May 1, 2008, 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 3.B. of Facility Operating License No. DPR-30 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 234, are hereby incorporated into the renewed operating 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 120 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Russell A. Gibbs, Chief  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications and Facility Operating License

Date of Issuance: July 22, 2008

ATTACHMENT TO LICENSE AMENDMENT NOS. 239 AND 234  
RENEWED FACILITY OPERATING LICENSES NOS. DPR-29 AND DPR-30  
DOCKET NOS. 50-254 AND 50-265

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

Remove

License DPR-29  
Page 4

License DPR-30  
Page 4

TSs

3.3.1.1-9

Insert

License DPR-29  
Page 4

License DPR-30  
Page 4

TSs

3.3.1.1-9

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 239, are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. The licensee shall maintain the commitments made in response to the March 14, 1983, NUREG-0737 Order, subject to the following provision:

The licensee may make changes to commitments made in response to the March 14, 1983, NUREG-0737 Order without prior approval of the Commission as long as the change would be permitted without NRC approval, pursuant to the requirements of 10 CFR 50.59. Consistent with this regulation, if the change results in an Unreviewed Safety Question, a license amendment shall be submitted to the NRC staff for review and approval prior to implementation of the change.

D. Equalizer Valve Restriction

Three of the four valves in the equalizer piping between the recirculation loops shall be closed at all times during reactor operation with one bypass valve open to allow for thermal expansion of water.

E. The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822), and the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined sets of plans<sup>1</sup>, which contain Safeguards Information protected under 10 CFR 73.21, is entitled: "Quad Cities Nuclear Power Station Security Plan, Training and Qualification Plan, and Safeguards Contingency Plan, Revision 2," submitted by letter dated May 17, 2006.

F. The licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report for the facility and as approved in the Safety Evaluation Reports dated July 27, 1979 with supplements dated November 5, 1980, and

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<sup>1</sup> The Training and Qualification Plan and Safeguards Contingency Plan are Appendices to the Security Plan.

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 234, are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. The licensee shall maintain the commitments made in response to the March 14, 1983, NUREG-0737 Order, subject to the following provision:

The licensee may make changes to commitments made in response to the March 14, 1983, NUREG-0737 Order without prior approval of the Commission as long as the change would be permitted without NRC approval, pursuant to the requirements of 10 CFR 50.59. Consistent with this regulation, if the change results in an Unreviewed Safety Question, a license amendment shall be submitted to the NRC staff for review and approval prior to implementation of the change.

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<sup>1</sup> The Training and Qualification Plan and Safeguards Contingency Plan are Appendices to the Security Plan.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION RELATED  
TO AMENDMENT NO. 227 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-19,  
AMENDMENT NO. 219 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-25,  
AMENDMENT NO. 239 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-29,  
AND AMENDMENT NO. 234 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-30  
EXELON GENERATION COMPANY, LLC  
AND  
MIDAMERICAN ENERGY COMPANY  
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3, AND  
QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2  
DOCKET NOS. 50-237, 50-249, 50-254 AND 50-265

1.0 INTRODUCTION

By letter to the Nuclear Regulatory Commission (NRC, the Commission) dated August 1, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML072130510), as supplemented by letter(s) dated February 26 (ADAMS Accession No. ML080570574), and May 1, 2008, (ADAMS Accession No. ML081230363), Exelon Generation Company, LLC, (EGC) requested changes to the technical specifications (TSs), facility operating licenses, and surveillance requirements (SRs) individually for Dresden Nuclear Power Station, Units 2 and 3 (DNPS), and as agent for the co-owner licensees, EGC and MidAmerican Energy Company, (the licensee) for Quad Cities Nuclear Power Station, Units 1 and 2 (QCNPS). The proposed changes would revise the TS allowable value (AV) for the Reactor Protection System (RPS) Instrumentation Function 10, "Reactor Protection System Instrumentation." The proposed amendment also revises the Channel Functional Test (CFT) and Channel Calibration (CC) Surveillance Test Interval (STI) for DNPS TS Table 3.3.1.1-1, Function 10. As part of the DNPS STI revision, SR 3.3.1.1.10, "Channel Calibration," which is specific to the Turbine Condenser Vacuum - Low instrument function, is deleted since it is no longer applicable.

The February 26, and May 1, 2008, supplements contained clarifying information and did not change the NRC staff's initial proposed finding of no significant hazards consideration.

Specifically, the requested amendment proposed the following changes:

For DNPS:

- DNPS TS Table 3.3.1.1-1, "Reactor Protection System Instrumentation," Function 10, "Turbine Condenser Vacuum - Low," specifies an AV of "≥ 21 .4 inches Hg of vacuum." This AV is being revised to "≥ 20.5 inches Hg vacuum."
- DNPS TS Table 3.3.1.1-1, "Reactor Protection System Instrumentation," Function 10, "Turbine Condenser Vacuum - Low," specifies SR 3.3.1.1.8 for the Channel Functional Test and SR 3.3.1.1.10 for Channel Calibration. These two SRs are being changed to SR 3.3.1.1.11 for the Channel Functional Test and SR 3.3.1.1.13 for Channel Calibration.
- DNPS SR 3.3.1.1.10, "Channel Calibration," is deleted.

For QCNPS:

- QCNPS TS Table 3.3.1.1-1, "Reactor Protection System Instrumentation," Function 10, "Turbine Condenser Vacuum - Low," specifies an AV of "≥ 21 .6 inches Hg vacuum." This AV is being revised to "≥ 20.6 inches Hg vacuum."

The licensee states that the purpose of the proposed AV change is to increase margin and operating flexibility during restoration of condenser heat transfer capabilities (i.e., during routine periodic cleaning of the condenser by flow reversal). The licensee also states that the implementation of these evolutions has historically resulted in a decrease in condenser vacuum levels when performed during periods of high ambient temperature. The licensee concludes that reducing the RPS Turbine Condenser Vacuum - Low AV will provide additional margin and operating flexibility during these flow reversal operations, thus minimizing the potential for inadvertent automatic scrams due to low condenser vacuum.

The licensee states that the purpose of the proposed DNPS CFT STI change is to implement recommendations from a generic evaluation (i.e., an Allowed Outage Time (AOT)/STI licensing topical report NEDC-30851-P-A) that was developed by General Electric (GE) and the Boiling Water Reactor Owners' Group and subsequently approved by the NRC (ADAMS Accession No. ML010890372). The licensee also states that the proposed DNPS CC STI change implements the results of a revised setpoint error analysis for the Turbine Condenser Vacuum - Low scram instrumentation, which establishes an increased design margin between the trip setpoint and the AV for the instrument. The licensee concludes that this increased design margin, combined with historical CC data, provides adequate assurance that the component will remain operable during an extended CC STI.

## 2.0 REGULATORY EVALUATION

### 2.1 Background

The Turbine Condenser Vacuum - Low function shuts down the reactor and reduces the energy transfer from the reactor to the main condenser in the event of a decrease in main condenser

vacuum to the Turbine Condenser Vacuum – Low setpoint. A further decrease in main condenser vacuum to the Turbine Trip setpoint initiates a closure of the turbine stop valves and turbine bypass valves, eliminating reactor heat input to the main condenser. Closure of the turbine stop and bypass valves causes a reactor pressure transient and, if a reactor shutdown had not previously occurred, a neutron flux rise and an increase in fuel surface heat flux. As a result, the turbine stop valve closure scram function (i.e., TS Table 3.3.1-1, Function 8, “Turbine Stop Valve Closure”) initiates a reactor scram to prevent the fuel cladding integrity safety limit from being exceeded. The turbine stop valve closure scram function alone is capable of preventing the fuel cladding integrity safety limit from being exceeded in the event of the most limiting transient (i.e., a turbine trip without bypass, which allows energy to bypass the turbine and flow directly to the main condenser). The Turbine Condenser Vacuum - Low scram is considered anticipatory to the Turbine Stop Valve Closure scram because it occurs prior to the turbine stop valve closure.

As described in the DNPS and QCNPS Updated Final Safety Analysis Report (UFSAR), Section 15.2.5, “Loss of Condenser Vacuum,” the loss of main condenser vacuum is classified as a moderate frequency event. The worst case for the loss of main condenser vacuum event would occur if the loss of vacuum was instantaneous. If instantaneous, the event would be identical to the turbine trip without the bypass event, and the scram signal from Turbine Condenser Vacuum - Low would be simultaneous with the turbine stop valve closure scram signal. The majority of the stored heat would be removed by relief valves, while the isolation condenser (IC) at DNPS and the reactor core isolation cooling (RCIC) system at QCNPS would handle the remaining decay heat.

Currently for DNPS, Turbine Condenser Vacuum - Low scram instrumentation is required to be operable in Mode 1 and Mode 2 (i.e., with reactor pressure  $\geq 600$  psig), with an AV of  $\geq 21.4$  inches Hg vacuum. The amendment proposes a new value of  $\geq 20.5$  inches Hg vacuum. Currently for QCNPS, Turbine Condenser Vacuum - Low scram instrumentation is required to be operable in Mode 1 with an AV of  $\geq 21.6$  inches Hg vacuum. The amendment proposes a new value of  $\geq 20.6$  inches Hg vacuum.

The proposed changes involve changes to the setpoint for automatic initiation of the RPS to trip the reactor on condenser low-vacuum conditions for both DNPS and QCNPS. For DNPS, the SR intervals are being changed for the channel functional test and channel calibration tests from 31 days to 92 days by using SR 3.3.1.1.11 and SR 3.3.1.1.13 in lieu of SR 3.3.1.1.8 and SR 3.3.1.1.10. SR 3.3.1.1.10 is no longer applicable and is being deleted. No hardware changes are proposed or required to implement these changes. For QCNPS, the channel functional test and the channel calibration test intervals are currently 92 days, and no change is requested.

## 2.2 Evaluation

Pursuant to 10 CFR 50.36(d)(1), a licensee’s TS are required to have limiting safety system settings (LSSS) so chosen that automatic protective action will correct the abnormal condition before a safety limit is exceeded. Pursuant to 10 CFR 50.36(d)(2), a licensee’s TS are required to have limiting conditions for operation that meet the specified criteria.

The Turbine Condenser Vacuum - Low scram function is credited in the Loss of Main Condenser Vacuum anticipated operational occurrence (AOO). This AOO is bounded by the

Turbine Trip Without Bypass event. As described in Section 2.1, above, the staff concludes that since the Turbine Condenser Vacuum - Low function only serves as an anticipatory design feature signal to the turbine trip signal, the Turbine Condenser Vacuum - Low function does not directly protect a Safety Limit. Consequently, the NRC staff finds that the Turbine Condenser Vacuum - Low scram function does not serve as an SL LSSS.

Pursuant to 10 CFR 50.36(d)(3), a licensee's TSs are required to have SRs for testing, calibration, and inspection to assure that the necessary quality of systems and components is maintained, that facility operations remain within safety limits, and that the limiting conditions of operation (LCOs) will be met. Although, 10 CFR 50.36 does not specify specific TS requirements, the rule implies that required actions for failure to meet the TS test bypass times, CTs, and STIs must be based on reasonable protection of the public health and safety. Therefore, the NRC staff must have reasonable assurance that the proposed TS changes will not adversely affect the performance of their required safety functions in accordance with the design basis-accident analysis in Chapter 15 of the licensee's final safety analysis report (FSAR).

Regulatory Guide (RG) 1.105 describes a method acceptable to the NRC staff for complying with the NRC's regulations for ensuring that setpoints for safety-related instrumentation are initially within and remain within the technical specification limits. Regulatory Issue Summary (RIS) 2006-17 discusses issues that could occur during testing of LSSSs and which, therefore, may have an adverse effect on equipment operability. This RIS also presents an approach, found acceptable to the NRC staff, for addressing these issues for use in licensing actions that require prior NRC staff approval. The staff determined that the licensee has followed the guidance of RG 1.105, Rev. 3, and provided the as-left and as-found tolerances for the setpoints, in accordance with the guidance of RIS 2006-17.

The NRC staff reviewed the proposed TS changes and based on the above determinations, concludes that the 10 CFR 50.36 requirements have been met and that there is reasonable assurance that the instruments affected by the proposed changes will perform their required safety functions.

### 3.0 TECHNICAL EVALUATION

#### 3.1 Revision of Allowable Values

In order to increase margin and operating flexibility during restoration of condenser heat transfer capabilities (i.e., during routine periodic cleaning of the condenser by flow reversal), the licensee has proposed to lower the TS AV for the RPS Turbine Condenser Vacuum - Low function at DNPS and QCNPS.

As explained in Section 2.0 above, the DNPS and QCNPS Turbine Condenser Vacuum - Low AV was selected to reduce the severity of a loss of main condenser vacuum event by anticipating the occurrence and shutting down the reactor at a higher vacuum than the turbine trip setpoint. The licensee has performed setpoint calculations to derive new AVs, trip setpoints, and expanded tolerances (ETs) for the Turbine Condenser Vacuum - Low scram function at DNPS Units 2 and 3 and QCNPS Units 1 and 2. In these calculations, the Turbine Condenser Vacuum - Low scram AL was established equal to the nominal value for the turbine trip setpoint.

These new AVs, trip setpoints, and ETs establish increased design margin between the AV and the trip setpoint. The licensee setpoint methodology that was used for determining the revised AV is described in NES-EIC-20.04, "Analysis of Instrument Channel Setpoint Error and Instrument Loop Accuracy," (ADAMS Accession No. ML003776648). The NRC staff finds that the licensee has clearly defined the as-left and as-found values and the associated actions when the setpoints are found to be out of permissible limits.

The NRC staff agrees that the additional margin and operating flexibility resulting from the revised AVs, trip setpoints, and ETs will reduce the potential for inadvertent automatic reactor scrams during short duration (i.e., approximately 5 minutes) condenser flow reversals, as well as in response to a declining condenser vacuum condition that may result from other operational transients.

The Turbine Condenser Vacuum - Low scram function is credited in the loss of main condenser vacuum AOO. The loss of main condenser AOO event assumes that the main condenser is instantaneously lost while the unit is operating at full power. This is classified as a moderate frequency event and is described in the UFSAR as being bound by the turbine trip with bypass failure event. As vacuum decreases, the sequence of events is as follows:

- Condenser low vacuum alarm, which occurs at a vacuum level of 24 inches Hg
- Condenser low vacuum alarm, which occurs at a vacuum level of 23.5 inches Hg
- Condenser low vacuum scram, which is set at an AV of 20.5 inches Hg (and a nominal setpoint of 21.6 inches Hg) for DNPS and an AV of 20.6 inches Hg (with a nominal Setpoint of 21.1 inches Hg) for QCNPS
- Turbine trip, which results in the turbine stop valve-closure scram, and which occurs at a vacuum of 20 inches Hg
- Turbine bypass valve closure, which occurs at a vacuum level of 7 inches Hg

The worst case for this AOO would occur if the loss of vacuum was instantaneous. In this case, the loss of main condenser event would be identical to the turbine trip with bypass failure event. During a turbine trip with bypass failure event, the primary system relief valves would remove the majority of the stored heat, while the IC at DNPS and RCIC at QCNPS would remove the remaining decay heat. Slower losses of condenser vacuum would produce less severe AOOs, since the turbine stop valves and bypass valves will still be available prior to vacuum level reaching the nominal trip setpoint for the turbine trip and turbine bypass valve closure scram.

In that the proposed reduction of the Turbine Condenser Vacuum - Low AV is based upon an analytical limit (AL) that is equal to the nominal trip setpoint for the turbine trip, the resulting nominal trip setpoint for the Turbine Condenser Vacuum - Low scram will still be more conservative than the turbine trip setpoint. Therefore, the sequence of events for the loss of main condenser AOO will still result in a reactor scram prior to the turbine trip. Since the proposed change to the Turbine Condenser Vacuum - Low AV will not impact the limiting AOO analysis (i.e., the turbine trip with bypass failure event), the NRC staff concludes that the proposed change does not reduce the margin of safety.

The licensee has revised the calculations for the setpoints to establish the AV for DNPS and QCNPS for the Turbine Condenser Vacuum - Low scram setpoint. The AL for the revised AV is based on the nominal trip setpoint for the turbine trip thus providing margin between turbine trip which occurs at a lesser vacuum (20 inches Hg) and the condenser low vacuum trip which occurs at a higher vacuum (21.6 inches Hg for DNPS and 21.1 inches Hg for QCNPS). The analysis for the turbine trip with bypass failure is the bounding analysis because it is more severe than with the anticipatory loss of condenser vacuum low trip. The turbine trip analysis has not been changed and therefore the NRC staff concludes that the AV changes in condenser vacuum - low trip are acceptable.

The proposed licensing amendment request also revises the CFT and CC STI for DNPS TS Table 3.3.1.1-1, Function 10. This extension request is based on the generic guidance contained in GE NEDC-30851-P-A which has been previously evaluated by the NRC. The acceptance criteria contained three conditions that must be met by all applicants for proposed extension of the STI. These three conditions deal with (i) applicability of the generic analysis, (ii) demonstration of the use of drift data, and (iii) addressing the differences between the parts of the RPS that perform the trip function and those in the generic analysis. The licensee has addressed all three of the conditions in the licensing change request. Plant specific applicability has been addressed. The licensee has provided actual drift data in support of the change. The monthly drift data is always within the uncertainty limit of  $\pm 1.1$  inches Hg between the AV and the nominal trip setpoint, at a 95 percent/95 percent confidence level. In some instances the monthly drift was found to be greater than the expected tolerance. A review of the drift data for the following month indicates that in most cases the drift in the following months is in the opposite direction.

This review indicates that the drift is random and is not likely to exceed the uncertainty limit of  $\pm 1.1$  inches Hg between the AV and the nominal trip setpoint, at a 95 percent/95 percent confidence level. The Turbine Condenser Vacuum - Low scram function is not considered in the generic model, and the addition of this signal does not significantly change the RPS failure rate. In addition, condenser low vacuum trip is an anticipatory trip to the turbine stop valve closure trip. Turbine stop valve closure trip alone is capable of preventing the fuel cladding integrity safety limit from being exceeded, in the event of the most limiting transient (i.e., a turbine trip without a bypass). Based on the preceding explanation, the NRC staff concludes that the plant specific application of conditions is acceptable.

The as-left and as-found values for DNPS and QCNPS, while similar, are different because the two stations use vacuum switches of different make and model numbers. For DNPS, at the end of a periodic calibration, as-left values can range from 21.4 inches Hg to 21.8 inches Hg (i.e., 21.6 inches  $\pm$  0.2 inches Hg) and as-found values can range from 21.0 inches Hg to 22.2 inches Hg (i.e., 21.6 inches  $\pm$  0.6 inches Hg). Similarly, for QCNPS, at the end of a periodic calibration, as-left values can range from 20.8 inches Hg to 21.4 inches Hg (i.e., 21.1 inches  $\pm$  0.3 inches Hg) and as-found values can range from 20.7 inches Hg to 21.5 inches Hg (i.e., 21.1 inches  $\pm$  0.4 inches Hg).

Based on the above, the NRC staff determined that the proposed STI changes do not significantly impact the probability of failure or availability of the affected instrumentation systems. The licensee administrative controls ensure that as-left instrument values are

consistent with the setpoint methodology (NES-EIC-20.04). Anomalies are noted in the plant Corrective Action Program (CAP). Engineering procedure ER-AA-520 also establishes the required actions when an as-found instrument setpoint exceeds the AV, as well as when an as-found setpoint is within the AV, but exceeds the ET:

If an As-Found instrument setpoint exceeds the AV, the instrument technician will enter the condition into the CAP by initiating a Condition Report (CR), and will notify the operating Shift Manager that the instrument is potentially inoperable. The operating Shift Manager (SM) will utilize LS-AA-120 to initially screen the condition, including the determination of operability. The SM will also initiate a Work Request (WR) to evaluate and repair/replace the instrument, prior to resetting the instrument to within a setting tolerance (ST).

If an As-Found instrument setpoint is within the AV, but exceeds the ET, the instrument technician will reset the instrument to within the ST and enter the condition into the CAP program by initiating a CR and notifying the operating SM that the instrument is out-of-tolerance (OOT).

The definitions in the EGC Operability Determination procedure are consistent with the guidance in NRC Inspection Manual Part 9900. The determination of operability is consistent with the NRC guidance.

Based on the above the NRC staff determined that the proposed changes to the CFT and CC STI for condenser low vacuum scram setpoints are acceptable.

### 3.0 STATE CONSULTATION

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

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendments change the requirements with respect to the installation, use of a facility's components located within the restricted area as defined in 10 CFR Part 20 and changes a surveillance requirement. 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 (72 FR 68214; December 4, 2007). 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.

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