February 18, 2004

Mr. Christopher M. Crane, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: ISSUANCE OF AMENDMENTS - DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3, AND QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2, MAIN STEAM LINE LOW PRESSURE ALLOWABLE VALUE (TAC NOS. MB8167, MB8168, MB8169, AND MB8170)

Dear Mr. Crane:

The Commission has issued the enclosed Amendment No. 206 to Facility Operating License No. DPR-19 and Amendment No. 198 to Facility Operating License No. DPR-25 for the Dresden Nuclear Power Station, Units 2 and 3, and Amendment No. 219 to Facility Operating License No. DPR-29 and Amendment No. 213 to Facility Operating License No. DPR-30 for the Quad Cities Nuclear Power Station, Units 1 and 2, respectively. The amendments are in response to your application dated March 28, 2003, as supplemented by letters dated October 23, 2003, and December 5, 2003.

The amendments revise the Technical Specifications by lowering the allowable value for the main steam line low pressure isolation function.

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 Nos.: 50-237, 50-249, 50-254, 50-265

Enclosures:
1. Amendment No. 206 to DPR-19
2. Amendment No. 198 to DPR-25
3. Amendment No. 219 to DPR-29
4. Amendment No. 213 to DPR-30
5. Safety Evaluation

cc w/encls: See next page

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4300 Winfield Road
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Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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cc w/encls: See next page

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ADAMS Accession No.: ML040050446 (Amendment) *see previous concurrence
ADAMS Accession No.: ML040540016 (Tech Specs) **SE input dated 11/26/03
ADAMS Accession No.: ML040050543 (Package) ***SE input dated 12/19/03

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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. 206
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 March 28, 2003, as supplemented by letters dated October 23, 2003, and December 5, 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) <u>Technical Specifications</u>

The Technical Specifications contained in Appendix A, as revised through Amendment No. 206, 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 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by DPickett for/

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: February 18, 2004

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-249

DRESDEN NUCLEAR POWER STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 198
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 March 28, 2003, as supplemented by letters dated October 23, 2003, and December 5, 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 3.B. of 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. 198, 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 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by DPickett for/

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: February 18, 2004

ATTACHMENT TO LICENSE AMENDMENT NOS. 206 AND 198

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

DOCKET NOS. 50-237 AND 50-249

Revise the Appendix A Technical Specifications by removing the page identified below and inserting the attached page. The revised page is identified by amendment number and contains a line in the margin indicating the area of change.

REMOVE	INSERT
3.3.6.1-5	3.3.6.1-5

EXELON GENERATION COMPANY, LLC

AND

MIDAMERICAN ENERGY COMPANY

DOCKET NO. 50-254

QUAD CITIES NUCLEAR POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.219
License No. DPR-29

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Exelon Generation Company, LLC (the licensee) dated March 28, 2003, as supplemented by letters dated October 23, 2003, and December 5, 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 3.B. of Facility Operating License No. DPR-29 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 219, 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 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by DPickett for/

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: February 18, 2004

EXELON GENERATION COMPANY, LLC

AND

MIDAMERICAN ENERGY COMPANY

DOCKET NO. 50-265

QUAD CITIES NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 213
License No. DPR-30

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Exelon Generation Company, LLC (the licensee) dated March 28, 2003, as supplemented by letters dated October 23, 2003, and December 5, 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 3.B. of Facility Operating License No. DPR-30 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 213, 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 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by DPickett for/

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: February 18, 2004

ATTACHMENT TO LICENSE AMENDMENT NOS. 219 AND 213

FACILITY OPERATING LICENSE NOS. DPR-29 AND DPR-30

DOCKET NOS. 50-254 AND 50-265

Revise the Appendix A Technical Specifications by removing the page identified below and inserting the attached page. The revised page is identified by amendment number and contains a line in the margin indicating the area of change.

REMOVE	INSERT
3.3.6.1-5	3.3.6.1-5

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 206 TO FACILITY OPERATING LICENSE NO. DPR-19,

AMENDMENT NO. 198 TO FACILITY OPERATING LICENSE NO. DPR-25,

AMENDMENT NO. 219 TO FACILITY OPERATING LICENSE NO. DPR-29

AND AMENDMENT NO. 213 TO 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 application dated March 28, 2003, (Ref. 1) as supplemented by letters dated October 23, 2003 (Ref. 2) and December 5, 2003, (Ref. 3) Exelon Generation Company, LLC (the licensee) requested an amendment to Facility Operating License Nos. DPR-19 and DPR-25 for Dresden Nuclear Power Station (DNPS), Units 2 and 3, and Facility Operating License Nos. DPR-29 and DPR-30 for Quad Cities Nuclear Power Station (QCNPS) Units 1 and 2. The supplements dated October 23, 2003 and December 5, 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 December 23, 2003 (68 FR 74265).

The proposed change would lower the allowable value for the main steam line (MSL) low pressure isolation function of the Primary Containment Isolation System in Technical Specifications (TS) Table 3.3.6.1-1, Function 1.b, from 831 psig to 791 psig. The purpose of this change is to prevent spurious isolation of the primary containment during turbine stop valve testing. The DNPS and QCNPS Extended Power Uprate reduced the turbine throttle pressure from approximately 950 psig to approximately 912 psig. This reduction in pressure results in a reduction of margin between the low pressure isolation setpoint (LPIS) and the normal operating pressure at the turbine inlet. Turbine stop valve surveillance testing further reduces the margin to the LPIS. The licensee desires to lower the setpoint for the pressure switches that provide the MSL low pressure isolation function at DNPS and QCNPS. The proposed change to the TS allowable value is required to implement the setpoint change. With the proposed change, the possibility of reaching the MSL LPIS during normal plant surveillance will be reduced.

2.0 REGULATORY EVALUATION

Dresden

Section 3.1.2 of the DNPS Updated Final Safety Analysis Report (UFSAR), evaluates the plants' design criteria against the General Design Criteria (GDC) published in 10 CFR Part 50, Appendix A, issued in 1971. The following statement appears in DNPS UFSAR Section 3.1.2:

"Based on the materials contained in this application, CECo concluded that Dresden Station Unit 2 satisfies and is in compliance with the intent of the General Design Criteria. This evaluation was performed specifically for Unit 2 and may not fully apply to Unit 3; however, the high degree of similarity between the design of Unit 2 and 3 indicates that Unit 3 also conforms to the intent of the General Design Criteria."

Therefore, the staff used the following criteria as guidance in its regulatory evaluation:

Appendix A of 10 CFR Part 50, GDC 4, "Environmental and dynamic effects design basis" states in part that structures, systems, and components important to safety shall be designed to accommodate the effects of, and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents.

Appendix A of 10 CFR Part 50, GDC 16, "Containment design" states that reactor containment and associated systems shall be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as postulated accident conditions require.

Appendix A of 10 CFR Part 50, GDC 50, "Containment design basis," requires that the reactor containment structure, including access opening, penetrations and containment heat removal system shall be designed so that the containment structure and its internal compartments can accommodate, without exceeding the design leakage rate and with sufficient margin, the calculated pressure and temperature conditions resulting from any loss of coolant accident.

Appendix A of 10 CFR Part 50, GDC 54, "Piping systems penetrating containment" states in part that piping systems penetrating containment shall be provided with leak detection, isolation, and containment capabilities having redundancy, reliability, and performance capabilities which reflect the importance to safety of isolating these piping systems.

Quad Cities

Section 3.1 of the QCNPS UFSAR, evaluates the plants' design criteria against the proposed GDC (issued July 1967) which were used by the Atomic Energy Commission as guidance in evaluating the original design of QCNPS. It is stated in UFSAR Section 3.1 that "based on the applicants understanding of the intent of the proposed criteria, it was felt that the Quad Cities station fully satisfies the intend of the criteria." Therefore, the staff based its evaluation on the following criteria cited in Section 3.1 of the QCNPS UFSAR.

Criterion 10, Containment, states that containment shall be provided. The containment structure shall be designed to sustain the initial effects of gross equipment failures, such as a large coolant boundary break, without loss of required integrity and, together with other engineered safety features as may be necessary, to retain for as long as the situation requires the functional capability to protect the public.

Criterion 49, Containment Design Basis, the containment structure, including access opening and penetrations, and any necessary containment heat removal system shall be designed so that the containment structure can accommodate, without exceeding the design leakage rate the pressures and temperatures resulting from the largest credible energy release following a loss-of-coolant accident, including a considerable margin for effects from metal-water or other chemical reactions that could occur as a consequence of failure of emergency core cooling conditions resulting from any loss of coolant accident.

3.0 TECHNICAL EVALUATION

3.1 Containment System Temperature and Pressure Response

The containment short-term and long-term pressure and temperature response following Design Basis Accidents (DBA) are documented in Chapter 6 of the DNPS and QCNPS UFSARs. For large breaks in the main steam line the main steam isolation valve (MSIV) closure is assumed to be initiated by a high steam flow at the beginning of the event, well before the LPIS is reached. Since earlier MSIV closure results in the reactor vessel being maintained at a higher pressure during blowdown, thus higher blowdown flow rates, assuming MSIV closure is initiated by a high steam flow signal is conservative for containment analysis purposes. Therefore, the LPIS is not used in the containment analyses and the reduction in the low pressure isolation setpoint has no effect on the plants' design basis containment pressure and temperature response.

For small breaks, too small to result in a high flow isolation signal, MSIV closure might occur due to LPIS trip. However, the containment temperature and pressure response to these small breaks are bounded by those of the large breaks which result in greater mass and energy releases to the containment. The peak suppression pool temperature; however, is based on long-term energy addition to the pool from steam flow through the relief valves and safety valves. Since the change in the setpoint does not significantly change the total integrated steam flow to the pool, the peak pool temperature is not affected by the revised setpoint.

General Electric Company (GE) performed an engineering evaluation of the impact on transient and safety analyses of reducing the LPIS Analytical Limit from 825 psig to 785 psig for DNPS and QCNPS, GENE-0000-0010-4202-01P (Attachment 4 of Ref. 1). In the case of the Anticipated Transients Without Scram (ATWS) it was determined that long-term integrated steam flows associated with 785 psig analytical limit was almost identical to that for the 825 psig analytical limit. Since the integrated steam flow, which has a direct effect on the containment pressure and temperature response, is not changed, the pressure and temperature result for the transients remains valid and below the containment design values.

The staff concurs with the licensee's conclusion that the change in LPIS setpoint has no impact on containment system response. This concurrence is based on the fact that the LPIS trip was not credited in the licensee containment pressure and temperature analyses, and that the assumption of closure of MSIVs based on high main steam flow continues to be valid and conservative.

3.2 High Energy Line Breaks and Subcompartment Pressurization

The evaluation of High Energy Line Breaks (HELB) outside containment is addressed in Section 3.6.1 and Appendix 3A of the DNPS and QCNPS UFSARs. The steam line break is the only break with the potential to be affected by the change in the low pressure isolation setpoint. The mass and energy release used in the MSL break evaluation is based on steady-state reactor operating conditions. Therefore the low pressure isolation trip is not used in the subcompartment pressurization analysis, and the subcompartment pressurization results are not affected by the reduction in MSL LPIS.

The staff concurs with the licensee's conclusion that the change in the LPIS has no impact on HELB and subcompartment analyses result. The staff's concurrence is based on the fact that the LPIS trip is not credited in the licensee HELB and subcompartment pressure and temperature transient analyses, and that steady-state reactor operating conditions used in the analyses are not impacted by this change and remains valid.

3.3 Reactor Transients

At present the Dresden Unit 2 core contains 73 percent GE-14 fuel and 27 percent Atrium 9B fuel. Dresden Unit 3 contains 61 percent Atrium 9B and ANF 9X9 fuel and 39 percent GE-14 fuel. Quad Cities Unit 1 contains 73 percent GE-14 fuel and 27 percent Atrium 9B fuel and ANF 9X9 fuel. Quad Cities Unit 2 contains 37 percent GE-14 fuel and 63 percent Atrium 9 fuel and ANF 9X9 fuel. The bases for the evaluation are the current analyses of record which are applicable to all the four plants. The evaluations are based on equilibrium core analyses of GE-14 fuel and Atrium fuel. These equilibrium core analysis were performed for LPIS setpoints of 825 psig and 785 psig. Since the GE-14 fuel peak vessel pressure response is lower than the Atrium fuel (transitioning to GE-14) response, the equilibrium Atrium fuel core is expected to bound the as-loaded core configuration for all plants. GE followed the NRC-approved GESTAR methodology (Ref. 5) for the analyses.

The DNPS and QCNPS UFSARs evaluate a wide range of potential transients. Chapter 15 of the UFSAR contains the design basis analyses that evaluate the effects of an anticipated operational occurrence (AOO) resulting from changes in system parameters such as: (1) a decrease in core coolant temperature, (2) an increase in reactor pressure, (3) a decrease in reactor core coolant flow rate, (4) reactivity and power distribution anomalies, (5) an increase in reactor coolant inventory, and (6) a decrease in reactor coolant inventory. The plants' responses to the most limiting transients are analyzed each reload cycle and are used to establish the thermal limits. A potentially limiting event is an event or an accident that has the potential to affect the core operating and safety limits.

The most limiting transient which takes credit for the MSL LPIS is the pressure regulator failure open (PRFO) event. For this event the regulator is assumed to fail in the fully open position. Vessel pressure drops until steam line pressure falls to the low-pressure isolation setpoint, which initiates closure of the main steam line isolation valves. The resulting pressure and power increase is terminated when the main steam isolation valves reach 10 percent closed position causing a reactor scram. The PRFO transient is a mild event. There are no significant changes in the neutron and heat fluxes from the initial values.

3.4 ECCS-LOCA Performance

The emergency core cooling system (ECCS) is designed to provide protection against postulated LOCAs caused by ruptures in the primary system piping. The analysis models and ECCS performance under all LOCA conditions must satisfy the requirements of 10 CFR Part 50.46 and 10 CFR Part 50, Appendix K.

The MSIVs are assumed to close at the start of the LOCA for all break locations in the analyses. Therefore, the low-pressure isolation trip is not used in the LOCA analyses and the LOCA analyses are not affected by the reduction in the low-pressure setpoint.

3.5 Anticipated Transient Without Scram

The ATWS is defined as an AOO with failure of the reactor protection system to initiate a reactor scram to terminate the event. The requirements for ATWS are specified in 10 CFR Part 50.62. The acceptance criteria are (a) that the limiting peak vessel bottom pressure remain less than the ASME Service Level C limit of 1500 psig, (b) that the peak cladding temperature remain below the 10 CFR Part 50.46 limit of 2200 °F, (c) that the cladding oxidation remain below the limit in 10 CFR Part 50.46, (d) that the limiting peak suppression pool temperature remain less than 202 °F (containment design temperature), and (e) that the peak containment pressure not exceed 62 psig (110 percent of containment design pressure).

GE typically considers the following four events for the ATWS analyses: PRFO, MSIV closure (MSIVC), loss-offsite power (LOOP),and inadvertent opening of a relief valve (IORV). Of these events, the PRFO depressurized the reactor sufficiently to reach the LPIS analytical limit. Table 3 of Attachment 4 of Ref.1 summarizes the PRFO evaluations. This table compares the results of the ATWS analyses with low-pressure setpoint values of 825 (current value) and the proposed value of 785 psig, fuel exposure conditions at beginning of the cycle (BOC) and end of cycle (EOC), GE-14 fuel and the legacy fuel (Atrium-9B and ANF 9X9), and different combinations of turbine control valve and bypass valve capacities. When the LPIS is lowered to 785 psig from 825 psig, the time of isolation initiation is only 0.8 second later for the proposed new setpoint.

The results in Table 3 (Ref. 1) indicate that the effect of a 40 psi reduction in the ATWS analysis results with a PRFO is minimal for both the peak vessel pressure and peak suppression pool temperature. For example, with a legacy core BOC case, nine turbine bypass valves (TBVs) available, the peak vessel pressure result changed only 2 psi (from 1499 psi to 1497 psi) as a result of the setpoint reduction. This case was the most limiting result presented in Table 3. A similar result, although less limiting, was demonstrated for an equilibrium core of GE-14 fuel. These results show that the low-pressure isolation setpoint reduction of 40 psi has negligible impact on the peak vessel pressure and the peak suppression pool temperature.

In Table 1 of Reference 4, the licensee provided the results of analyses performed to show the effects of core loadings on the ATWS analysis results (with LPIS setpoint of 825 psig).

According to this table, the current DNPS Unit 3 Cycle 18 core results show a decrease in the peak vessel pressure from 1499 psi for the legacy core to 1488 psi for the Cycle 18 core at BOC. The peak suppression pool temperature results showed a negligible change of 1 °F between the same cases. A case was also analyzed for the current DNPS Unit 3 Cycle 18 core configuration with a 10 percent increase in void coefficient, which as noted in Reference 4, was selected as bounding the difference in void coefficient observed between the GE-14 equilibrium core and the legacy core. The GE-14 fuel pressure response is lower than the Atrium fuel.

The results of Table 1 of Reference 4 and Table 3 of Reference 1 are directly comparable (Ref. 6). All analyses were performed with the same inputs, except where specifically noted in the tables. In both of these tables the most limiting cases for peak vessel pressure are identical (i.e., PRFO with the legacy core, BOC, nine TBVs available).

The results of the ATWS analyses indicate that there is no significant safety impact due to the proposed lower LPIS setpoint with different fuel in the four reactor cores.

The following equipment out of service (EOOS) was considered for ATWS PRFO cases: turbine bypass valves (TBV), reduced feedwater heating (FWH), turbine control valve (TCV) slow closure, single loop operation (SLO), power load unbalance (PLU), one TCV stuck closed, one MSL and one Pressure Regulator. There is no impact except for TBV and one TCV closed. These cases may impact the timing of the depressurization and the peak pressure; however, the peak pressure is expected to be within the limits and hence is acceptable.

Sections 3.1 of Attachment 4 of Reference 1 lists the results of the ATWS analyses (peak vessel bottom pressure, peak cladding temperature, peak suppression pool temperature and peak containment pressure). The results of the ATWS analyses indicate that the results for the 825 psig case and the 785 psig cases are comparable and there are no significant differences between the two cases. The licensee performed the ATWS analyses based on NRC-approved methods (Ref. 5).

3.6 Application of the GEXL Correlation

The staff reviewed the change in LPIS analytical value from 825 psig to 785 psig and conclude that this reduction in pressure is permitted since the reduction still maintains the operation of the GE Critical Quality (X_C) Boiling Length (GEXL) correlation within its approved range of operation.

3.7 Setpoint and Allowable Value Calculation

GE performed an evaluation (Attachment 4 of Ref. 1) of the impact of lowering the MSL pressure switch isolation function analytical limit by 40 psig, from 825 psig to 785 psig for DNPS and QCNPS. The evaluation considered the impact on ATWS, transient, and accident analyses and on application the GE Critical Quality Correlation at lower pressures. Based upon the results of the GE evaluation, it is concluded that current licensing bases events remain bounding for ATWS, transient, and accident analyses. Also, the revised analytical limit falls within the Safety Limit Minimum Critical Power Ratio design basis parameters. The licensee performed the calculation by using the setpoint methodology approved by NRC. Method 3, however, used by some licensees does not provide an acceptable conservatism and allowable values calculated by Method 3 do not provide an adequate margin to assure that the analytical limit is not violated. The staff reviewed the licensee's setpoint methodology and calculation of the allowable values in the licensees December 5, 2003, submittal (Ref. 3) and concludes that none of the uncertainties were omitted during the Channel Operational Test (COT) or Channel Functional Test (CFT). Therefore, a channel is operable if the trip setpoint is found not to exceed the allowable value during the COT or CFT. Based on an acceptable analytical limit of 785 psig, lowering the allowable value from 831 psig to 791 psig is acceptable. Therefore, the proposed change to lower the allowable value for the MSL pressure switches of TS Table 3.3.6.1-1, "Primary Containment Isolation Instrumentation," Function 1.b, from 831 psig to 791 psig is acceptable.

3.8 Radiological Consequences

The design basis radiological consequences of the main steam line break (MSLB) accident outside the containment for DNPS and QCNPS are provided in Section 15.6.4.5 of the DNPS and QCNPS UFSARs. The licensee stated in its response dated October 23, 2003 (Ref. 2) to the staff's request for additional information that for DNPS, steam line breaks larger than 0.16 ft^2 will isolate the main steam line break on high steam flow (120 percent) at 5.5 seconds releasing 30,000 lbs of steam to the main steam line tunnel (MST). Similarly, the licensee stated that for QCNPS, the steam line break larger than 0.32 ft^2 will isolate the main steam line break on high flow (140 percent) at 5.5 seconds. The Quad Cities UFSAR states that this break will result 45,000 lbs of steam release to the MST for Quad Cities.

Steam line break sizes smaller than 0.16 ft^2 for DNPS, and 0.32 ft^2 for QCNPS, will isolate the steam line breaks on signals other than high steam flow (e.g., high main steam tunnel temperature, low reactor vessel water level, or low reactor vessel pressure). The licensee further stated that steam line breaks smaller than approximately 0.05 ft^2 may cause sufficient depressurization to result in a low pressure isolation.

Therefore, the licensee used a steam line break of 0.05 ft^2 to estimate the potential radiological consequence effect of the proposed decrease (40 psig) for the main steam line low pressure isolation setpoint. The licensee estimated that a steam line break of 0.05 ft^2 will result in 21,500 lbs of mass release. The licensee further estimated that an additional amount of 2,400 lbs of mass release will result due to a 27 second delayed isolation resulting from the proposed 40 psig decrease in the main steam line low pressure isolation setpoint. The total estimated steam release from a steam line break of 0.05 ft^2 would be 23,900 lbs with the proposed 40 psig decrease in the main steam line low pressure isolation setpoint. This amount is less than 30,000 lbs steam release assumed in the design basis MSLB accident for the DNPS and 45,000 lbs of steam released assumed in the design basis MSLB accident for the QCNPS.

Since the radiological consequences due to the steam line break accident are directly proportional to the amounts of radioactive steam mass released to the environment, the staff finds that the current design basis radiological consequences bound those results from the proposed 40 psig reduction in the main steam line low pressure isolation setpoint. Therefore, the staff concludes the proposed reduction of main steam low pressure isolation setpoint is acceptable for the main steam line break radiological consequence.

4.0 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.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the 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 (68 FR 74265). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR Part 51.22(c)(9). Pursuant to 10 CFR Part 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 staff concludes, based on the considerations discussed above, that the change in the LPIS Analytical Limit from 825 psig to 785 psig for DNPS, Units 2 and 3, and QCNPS, Units 1 and 2 is acceptable. The proposed revised allowable value (791 psig) will continue to provide a 6 psig margin between the new analytical limit (785 psig) and the associated allowable value (791 psig). There is negligible impact on the vessel cooldown rate of 100 °F per hour. The MSIV closure ensures that the RPV cool down rate is not exceeded. The current licensing bases remain bounding for transient, LOCA, GEXL correlation and ATWS analyses. The revised LPIS analytical limit of 785 psig falls within the SLMCPR design basis parameters and is acceptable. Also, the main steam line break radiological consequences are acceptable for the proposed reduction of main steam low pressure isolation allowable value.

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.

7.0 REFERENCES

1. Letter from P.R. Simpson, Exelon Generation Company, LLC, to U.S. Nuclear Regulatory Commission, Request for Amendment to Technical Specifications for Main Steam Line Low Pressure Isolation Function, dated March 28, 2003.

2. Letter from P.R. Simpson, Exelon Generation Company, LLC, to U.S. Nuclear Regulatory Commission, Additional Information Regarding Request for License Amendment for Main Steam Line Low Pressure Isolation Setpoint, dated October 23, 2003.

3. Letter from P.R. Simpson, Exelon Generation Company, LLC, to U.S. Nuclear Regulatory Commission, Additional Information Regarding Request for License Amendment for Main Steam Line Low Pressure Isolation Setpoint, dated December 5, 2003.

4. Letter from P.R. Simpson, Exelon Generation Company, LLC, to U.S. Nuclear Regulatory Commission, Additional Information Regarding Request for Technical Specifications Changes Related to Main Steam Safety Valve Operability Requirements, dated October 10, 2003.

5. General Electric, "General Electric Standard Application for Reactor Fuel," GESTAR II, NEDE-24011-P-A-22, September 2000.

6. Letter from P.R. Simpson, Exelon Generation Company, LLC, to U.S. Nuclear Regulatory Commission, Additional Information Regarding Request for Technical Specifications Changes Related to Main Steam Safety Valve Operability Requirements, dated November 21, 2003.

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