UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 29, 2014

Mr. Michael J. Pacilio
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO)
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2, ISSUANCE OF AMENDMENTS REVISING LOSS OF VOLTAGE RELAY SETTINGS (TAC NOS. MF2791 AND MF2792)

Dear Mr. Pacilio:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 209 to Facility Operating License No. NPF-11 and Amendment No. 196 to Facility Operating License No. NPF-18 for the LaSalle County Station (LSCS), Units 1 and 2, respectively. The amendments are in response to your application dated September 20, 2013, as supplemented by letter dated June 30, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML13266A107 and ML14181B254, respectively).

The amendments revise the LSCS technical specification (TS) Table 3.3.8.1-1, "Loss of Power Instrumentation," by increasing the allowable values for the voltage setpoints of the loss of voltage relays for the 4.16 kilovolt engineered safety feature buses. The amendment was requested to resolve a nonconservative TS.

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

If you have any questions, please call me at 301-415-1380.

Sincerely,

Blake Purnell, Project Manager
Plant Licensing III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-373 and 50-374

Enclosures:
1. Amendment No. 209 to NPF-11
2. Amendment No. 196 to NPF-18
3. Safety Evaluation

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-373

LASALLE COUNTY STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 209
License No. NPF-11

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

   A. The application for amendment to the LaSalle County, Unit 1 (the facility) Operating License No. NPF-11 filed by the Exelon Generation Company, LLC acting for itself (the licensee) dated September 20, 2013, as supplemented by letter dated June 30, 2014, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's 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 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 set forth in 10 CFR Chapter I;

   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 the Facility Operating License No. NPF-11 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 209, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented prior to entering MODE 4 following the spring 2016 refueling outage (L1R16).

FOR THE NUCLEAR REGULATORY COMMISSION

Travis L. Tate, Chief
Plant Licensing III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications and Facility Operating License

Date of Issuance: September 29, 2014

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-374

LASALLE COUNTY STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 196
License No. NPF-18

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

   A. The application for amendment to the LaSalle County, Unit 2 (the facility) Operating License No. NPF-18 filed by the Exelon Generation Company, LLC acting for itself (the licensee) dated September 20, 2013, as supplemented by letter dated June 30, 2014, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's 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 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 set forth in 10 CFR Chapter I;

   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 the Facility Operating License No. NPF-18 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 196, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented prior to entering MODE 4 following the spring 2015 refueling outage (L2R15).

FOR THE NUCLEAR REGULATORY COMMISSION

Travis L. Tate, Chief
Plant Licensing III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications and Facility Operating License

Date of Issuance: September 29, 2014

ATTACHMENT TO

LICENSE AMENDMENT NO. 209

FACILITY OPERATING LICENSE NO. NPF-11

DOCKET NO. 50-373

AND LICENSE AMENDMENT NO. 196

FACILITY OPERATING LICENSE NO. NPF-18

DOCKET NO. 50-374

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

Remove	Insert
License	License
NPF-11, Page 3	NPF-11, Page 3
NPF-18, Page 3	NPF-18, Page 3
TSs	TSs
3.3.8.1-3	3.3.8.1-3

Am. 146 01/12/01 (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

Am. 202 07/21/11 (5) Exelon Generation Company, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of LaSalle County Station, Units 1 and 2 and such Class B and Class C low-level radioactive waste as may be produced by the operation of Braidwood Station, Units 1 and 2, Byron Station, Units 1 and 2, and Clinton Power Station, Unit 1.

C. This 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 and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or thereafter in effect; and is subject to the additional conditions specified or incorporated below:

Am. 198 09/16/10 (1) Maximum Power Level

The licensee is authorized to operate the facility at reactor core power levels not in excess of full power (3546 megawatts thermal).

Am. 209 09/29/14 (2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 209 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

Am. 194 08/28/09 (3) DELETED

Am. 194 08/28/09 (4) DELETED

Am. 194 08/28/09 (5) DELETED

Am. 194 08/28/09 (6) DELETED

Am. 194 08/28/09 (7) DELETED

Am. 189 07/21/11 (5) Pursuant to the Act and 10 CFR Parts 30, 40, and 70 possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of LaSalle County Station, Units 1 and 2, and such Class B and Class C low-level radioactive waste as may be produced by the operation of Braidwood Station, Units 1 and 2, Byron Station, Units 1 and 2, and Clinton Power Station, Unit 1.

C. This 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 and 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:

Am. 185 09/16/10 (1) Maximum Power Level

The licensee is authorized to operate the facility at reactor core power levels not in excess of full power (3546 megawatts thermal). Items in Attachment 1 shall be completed as specified. Attachment 1 is hereby incorporated into this license.

Am. 196 09/29/14 (2) Technical Specification and Environment Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 196, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

Am. 181 08/28/09 (3) DELETED

Am. 181 08/28/09 (4) DELETED

Am. 181 08/28/09 (5) DELETED

Am. 181 08/28/09 (6) DELETED

Am. 181 08/28/09 (7) DELETED

Am. 181 08/28/09 (8) DELETED

Am. 181 08/28/09 (9) DELETED

Table 3.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation

FUNCTION	REQUIRED CHANNELS PER DIVISION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Divisions 1, 2 and Opposite Unit Division 2 – 4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage – 4.16 kV Basis	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 2870 V and ≤ 3127 V
b. Loss of Voltage – Time Delay	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 3.1 seconds and ≤ 10.9 seconds
c. Degraded Voltage – 4.16 kV Basis	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 3814 V and ≤ 3900 V
d. Degraded Voltage – Time Delay, No LOCA	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 270.1 seconds and ≤ 329.9 seconds
e. Degraded Voltage – Time Delay, LOCA	2[(a)(b)]	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 9.4 seconds and ≤ 10.9 seconds
2. Division 3-4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage – 4.16 kV Basis	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 2725 V and ≤ 3172 V
b. Loss of Voltage – Time Delay	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≤ 10.9 seconds
c. Degraded Voltage – 4.16 kV Basis	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 3814 V and ≤ 3900 V
d. Degraded Voltage – Time Delay, No LOCA	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 270.1 seconds and ≤ 329.9 seconds
e. Degraded Voltage – Time Delay, LOCA	2[(a)(b)]	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 9.4 seconds and ≤ 10.9 seconds

(a) In MODES 4 and 5, when associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, "ECCS–Shutdown."

(b) With no fuel in the reactor vessel, not required to be OPERABLE.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 209 TO FACILITY OPERATING LICENSE NO. NPF-11

AND

AMENDMENT NO. 196 TO FACILITY OPERATING LICENSE NO. NPF-18

EXELON GENERATION COMPANY, LLC

LASALLE COUNTY STATION, UNITS 1 AND 2

DOCKET NOS. 50-373 AND 50-374

1.0 INTRODUCTION

By application dated September 20, 2013, as supplemented by letter dated June 30, 2014, Exelon Generation Company, LLC (EGC, the licensee) requested changes to the Technical Specifications (TSs) for the LaSalle County Station (LSCS), Units 1 and 2 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML13266A107 and ML14181B254, respectively). The supplement dated June 30, 2014, was provided in response to a U.S. Nuclear Regulatory Commission (NRC) request for additional information (RAI) issued on June 20, 2014 (ADAMS Accession No. ML14141A216). The supplement (RAI response) dated June 30, 2014, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on December 10, 2013 (78 FR 74182).

The proposed changes would revise TS Table 3.3.8.1-1, "Loss of Power Instrumentation," by increasing the allowable values for the voltage setpoints of the loss of voltage (LOV) relays for the 4.16 kilovolt (kV) engineered safety feature (ESF) buses. The proposed change was requested to resolve a nonconservative TS. The application states that plant operations in TS 3.3.8.1 are being administratively controlled per NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications that are Insufficient to Assure Plant Safety."

2.0 REGULATORY EVALUATION

The following NRC requirements and guidance documents were applied during the NRC staff's review of the application.

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," General Design Criterion (GDC) 5, "Sharing of structures, systems, and components [SSCs]," states that SSCs important to safety shall not be shared among nuclear power units unless it can be shown that such sharing will not significantly impair their ability to perform their safety functions, including, in the event of an accident in one unit, an orderly shutdown and cooldown of the remaining units.

GDC 17, "Electric power systems," states, in part, that nuclear power plants have onsite and offsite electric power systems to permit functioning of SSCs important to safety. The onsite electric power supplies and distribution system are required to have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure. Electric power from the transmission network to the onsite electric distribution system shall be supplied by two physically independent circuits that are designed and located so as to minimize, to the extent practical, the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. In addition, this criterion requires provisions to minimize the probability of losing electric power from the remaining electric power supplies as a result of loss of power from the unit, the offsite transmission network, or the onsite power supplies.

NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants", Branch Technical Position (BTP) 8-6, "Adequacy of Station Electric Distribution System Voltages," states that the TSs should include limiting conditions for operations, surveillance requirements, trip setpoints, and maximum and minimum allowable values for the first level of undervoltage protection (loss of offsite power) relays and the second level (degraded voltage (DV)) protection sensors and associated time delay devices.

3.0 TECHNICAL EVALUATION

3.1 Description of the Electrical Power System

Section 8.2.1.2, "Power Sources," of the LSCS updated final safety analysis report (UFSAR) states:

> The station's 345-kV transmission terminal buses are continuously energized and serve as the preferred power source for the station's safety loads. Two physically independent lines are provided for the station from the transmission terminal buses. Each line emanates from a separate and distinct bus section, and is brought to the plant via separate intermediate transmission towers. The system auxiliary transformers step the 345-kV system voltage down to the station 4160-volt and 6900-volt power systems. Each system auxiliary transformer is sized to provide the total auxiliary power for one unit plus the ESF auxiliary power for the other unit.

Each unit's auxiliary electric system is served from two 6.9 kV and five 4.16 kV buses. Three of the 4.16 kV buses supply electric power to the ESFs and their voltage is monitored at two levels, LOV and DV. LOV indicates that offsite power may be completely lost to the respective 4.16 kV ESF bus, and the bus is unable to supply sufficient voltage for proper operation of the applicable ESFs. A DV condition indicates that while offsite power may not be completely lost to the respective 4.16 kV ESF bus, voltage may be insufficient for starting or running large

motors without risking damage to the motors which could disable the emergency core cooling system. An LOV or DV signal results in the start of the associated emergency diesel generator (EDG), the trip of the normal and alternate offsite power supply breakers to the associated 4.16 kV ESF bus, and (for Divisions 1 and 2 only) the shedding of the appropriate 4.16 kV bus loads.

Section 8.2.3.3, "Undervoltage Relays," of the UFSAR provides the following information about the LOV and DV relays. For the LSCS division 1, 2 and 3 buses, the LOV and DV function is monitored by two instruments per bus. The output trip contacts of these relays are arranged in a two-out-of-two logic configuration per bus. The LOV signal is generated when the bus voltage is lost for a specific time interval. The LOV relays have inverse time delay characteristics in that lower voltage conditions will result in decreased trip times. The DV signal is generated when the bus voltage degrades for a specified time interval. The relay actuation time is dependent upon whether a loss-of-coolant-accident (LOCA) signal is present. If no LOCA condition exists, operation of DV relays initiates an alarm in the control room and starts a 5-minute timer. If a LOCA condition does exist concurrent with degraded grid voltage, then a control room alarm and an automatic bus transfer will be initiated and the 5-minute time delay is bypassed. The DV relay actuates after a 10-second time delay. The DV relays are instantaneous voltage relays with a time delay. There is a minor variation in the bus transfer and DG start logic of division 3 bus when compared to the DV and LOV relay logic for division 1 and 2 buses.

The application states:

> The bus undervoltage allowable values are low enough to prevent inadvertent power supply transfer, but high enough to ensure that sufficient power is available to the required equipment. The time delay allowable values are long enough to provide time for the offsite power supply to recover to normal voltages following short system or grid perturbations, but short enough to ensure that sufficient power is available to the required equipment when a significant grid disturbance occurs.

3.2 Proposed Technical Specifications Change

In the application, the licensee stated that the current TS Table 3.3.8.1-1 allowable values for the LOV setpoints on the 4.16 kV buses are not acceptable. At the low voltages currently allowed, motors running on these buses may experience stall conditions and the overload protection may trip these loads. In order to provide assurance that, under non-accident conditions, normally operating safety-related motors will not be damaged under sustained degraded voltage conditions, the licensee proposed revisions to the allowable values in TS Table 3.3.8.1-1 for the following functions:

1. Function 1.a, Divisions 1, 2 and Opposite Unit Division 2 - 4.16 kV ESF Bus Undervoltage, Loss of Voltage - 4.16 kV Basis

2. Function 2.a, Division 3 - 4.16 kV ESF Bus Undervoltage, Loss of Voltage - 4.16 kV Basis

The licensee proposed revisions to the TS are as follows:

Table 3.3.8.1-1	Current Allowable Value	Proposed Allowable Value
Function 1.a	≥ 2422 V and ≤ 3091 V	≥ 2870 V and ≤ 3127 V
Function 2.a	≥ 2596 V and ≤ 3137 V	≥ 2725 V and ≤ 3172 V

3.3 NRC Staff's Review

The application indicates this license amendment request (LAR) is in response to deficiencies identified in a component design bases inspection (CDBI) report dated February 15, 2011 (ADAMS Accession No. ML110460708). Specifically, the licensee has identified a nonconservative TS as a result of the CDBI. The CDBI report found that the licensee had not established the adequacy of the TS 3.3.8.1 setpoints for the DV relay time delay and the LOV relay trip function. The licensee's analysis did not account for the potential worst case, nonaccident DV condition; therefore, the licensee had not demonstrated the operability of permanently connected ESF electrical loads. The CDBI report also identified a separate finding involving the licensee's failure to calculate the effects of increased EDG frequency on fuel oil consumption.

The application stated that the licensee has reevaluated the relay setpoints to address the first CDBI finding above and concluded that only the TS LOV relay settings need to be changed. In its June 30, 2014, letter, the licensee stated that the voltage setpoints and time delays for the DV relays are acceptable and the voltage setpoints comply with BTP 8-6. In its June 30, 2014, letter, the licensee confirmed that EDG frequency issue is outside the scope of this LAR and a separate LAR is planned to resolve this issue.

The LSCS maximum time delay associated with the DV relays for the nonaccident condition is 340.8 seconds (10.9 seconds for the LOV relay time delay and 329.9 seconds for DV relay time delay). The application stated that the 340.8 seconds time delay is the maximum time that a DV condition can exist under a nonaccident condition before the DV logic trips the offsite power source and transfers the ESF electrical loads to the EDGs. The licensee stated in the application that it performed an analysis to ensure that the safety-related ESF motors normally running off the system auxiliary transformer would not trip during the time delay under DV conditions. However, the application did not provide sufficient detail of this analysis for the NRC staff to understand the methodology used to establish the voltage setpoints for the LOV and DV relays. Therefore, the staff issued an RAI.

In its RAI response, the licensee provided an overview of the analyses and stated that "the design analyses demonstrate that the permanently connected safety-related loads will continue to operate during the 5.7 minute [340.8 seconds] time delay associated with the [DV relay] for the no LOCA condition without sustaining damage or tripping at the potential worst case (i.e., non-accident degraded voltage condition)." The licensee also stated that if a process signal resulting in an automatic start of a large motor during the time delay caused the voltage to drop below the LOV setpoint, the LOV relay would actuate and transfer the associated ESF electrical loads to the EDG. The RAI response confirmed that if a LOCA signal occurs during a DV condition, the DV nonaccident timer is bypassed and the buses will transfer to the EDGs.

The analysis established the stall voltages for the safety-related ESF motors and evaluated the minimum voltages at motor terminals to ensure that the motors did not stall at the analytical voltage limits calculated using commercially available power system analysis software. Based on the calculations, the licensee concluded that the motor terminal voltages remained above the stall voltages at safety buses when the 4.16 kV buses were assumed to be at the lower analytical limit.

The licensee also calculated the running currents for the permanently connected ESF electrical loads at the minimum allowable value of 2870 V for the ESF Divisions 1 and 2 LOV function and at 2725 V for the ESF Division 3 LOV function. The running currents were then compared to the ESF motor protective device settings to determine if the electrical loads will trip within 5.7 minutes. The trip settings for protective devices were corrected for setpoint tolerances and maximum postulated ambient temperature during service conditions. The licensee concluded that the safety-related ESF loads will not trip during postulated low voltage conditions.

Based on the information in the RAI response, the NRC staff agrees that the above described methodology to evaluate the operability of motors under low voltage conditions is consistent with common engineering methods; therefore, the methodology is acceptable.

As part of its analysis, the licensee established upper and lower analytical limits for the LOV setpoints and added margin for setpoint tolerances and calibration errors. In the application and RAI response, the license stated that the upper analytical limit of 3185 V is derived based on grid voltage sensitivity analyses and the reset value of 3833 V for the DV relay. After considering setpoint errors, the LAR proposes a maximum allowable value of 3127 V for the setpoints of the Division 1 and 2 buses LOV relays and 3172 V for the setpoints of the Division 3 bus LOV relay. The analytical limit was validated by the licensee to ensure that the minimum expected voltage during a block start of all safety-related ESF electrical loads following an accident signal does not result in an inadvertent separation of ESF buses from the offsite power source.

The licensee stated that the lower analytical limit for the LOV relays on the Division 1, 2, and 3 buses was based on the design criterion that none of the normally operating safety-related ESF motors stall when subjected to the minimum postulated voltage for the time delay. The licensee established a lower analytical limit based on the stall voltage of safety-related ESF motors. The analyses also confirmed that contactors for electrical loads operating on 480 V buses do not drop out during sustained low voltage conditions. The RAI response states that the analysis determined that none of the Division 1 and 2 safety-related ESF motors stall at 2725 V and none of the Division 3 safety-related ESF motors stall at 2704 V. Adding conservatism and margin, the LAR proposes a minimum allowable value of 2870 V for the setpoints of the Division 1 and 2 buses LOV relays and 2725 V for the setpoints of the Division 3 bus LOV relay.

In its RAI response, the licensee stated that the grid voltage on the high side of the station transformers corresponding to the proposed bus voltage of 2870 V on the plant ESF buses is approximately 238 kV (i.e., 69 percent of the rated grid voltage). Although the licensee does not believe that the grid will be able to operate at a sustained low grid voltage of 238 kV for 340.8 seconds, this value was selected to demonstrate the capability of the station loads to function adequately during the postulated DV conditions on the plant buses.

Based on the licensee's summary of the analytical method used to evaluate the minimum setpoints for the LOV relays and the licensee's statements that the safety-related ESF equipment will not be adversely impacted if the bus voltages degraded to the proposed setpoints for an extended duration, the NRC staff agrees with the licensee's approach and, therefore, finds the proposed changes to the LOV setpoints to be acceptable.

The NRC staff reviewed the licensee's request to revise the LOV relay settings for 4.16 kV ESF buses. As discussed above, the licensee stated that the proposed voltage setpoint for the LOV relays will not adversely impact the safety-related ESF equipment that may be operating during the postulated conditions. Block starting of ESF electrical loads with a concurrent LOCA signal will bypass the long term DV relay timer and preclude damage to safety-related ESF equipment. In addition, a process related start signal for a large motor will either trip the LOV relay and transfer the ESF electrical loads to the EDGs or permit successful start of the motor without an adverse impact on operating equipment. Based on this information, the staff finds the proposed changes to the LSCS TS provide reasonable assurance of the continued availability of the required electrical power to shut down the reactor and to maintain the reactor in a safe condition after an anticipated operational occurrence or a postulated design-basis accident. Furthermore, the NRC staff concludes that the proposed TS changes ensure safety equipment is available to perform their functions in accordance with the requirements of GDCs 5 and 17. Therefore, the NRC staff finds the proposed changes acceptable.

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 amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (78 FR 74182, dated December 10, 2013). Accordingly, the amendment meets 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 amendment.

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) there is reasonable assurance that 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: Sergiu Basturescu, NRR/EEEB

Date of issuance: September 29, 2014

If you have any questions, please call me at 301-415-1380.

Sincerely,

/RA/

Blake Purnell, Project Manager
Plant Licensing III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-373 and 50-374

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