



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

June 20, 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 – REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT REQUEST TO REVISE LOSS OF VOLTAGE RELAY SETTINGS (TAC NOS. MF2791 AND MF2792)

Dear Mr. Pacilio:

By application¹ dated September 20, 2013, Exelon Generation Company, LLC (EGC) submitted a license amendment request (LAR) to the U.S. Nuclear Regulatory Commission (NRC) for LaSalle County Station, Units 1 and 2, to revise the loss of voltage relay settings in technical specification Table 3.3.8.1-1, "Loss of Power Instrumentation," for the 4.16 kilovolt engineered safety feature buses. The NRC staff is reviewing the submittal and has determined that additional information is needed to complete its review.

A response to the enclosed Request for Additional Information should be provided by June 30, 2014. This request was discussed with Ms. Lisa Simpson and Mr. David Gullott, of your staff, on June 5, 2014. Should you have any questions, please contact me at 301-415-1380 or by email at blake.purnell@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Blake Purnell".

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

Enclosure: Request for Additional Information

cc w/encl: Listserv

¹ Agencywide Documents Access and Management System (ADAMS) Accession No. ML13266A107

REQUEST FOR ADDITIONAL INFORMATION
LICENSE AMENDMENT REQUEST TO REVISE
LOSS OF VOLTAGE RELAY SETTINGS
LASALLE COUNTY STATION, UNITS 1 AND 2
DOCKET NOS. 50-373 AND 50-374

By application¹ dated September 20, 2013, Exelon Generation Company, LLC (EGC) submitted a license amendment request (LAR) for LaSalle County Station, Units 1 and 2, to revise the loss of voltage (LOV) relay settings in technical specification (TS) Table 3.3.8.1-1, "Loss of Power Instrumentation," for the 4.16 kilovolt (kV) engineered safety feature buses. The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing the submittal and has determined that the additional information below is needed to complete its review.

RAI-1

The LAR is in response to deficiencies identified in a component design bases inspection (CDBI) report² dated February 15, 2011. The CDBI report identified deficiencies in design basis calculations and TS setpoints for related equipment, including the LOV relay settings, the degraded voltage relay (DVR) setpoints, and the emergency diesel generator (EDG) voltage and frequency tolerances. The CDBI report stated that the licensee entered these items in its corrective action program, including an action to verify the adequacy of the degraded voltage relay setpoint and time delay design. The LAR proposes to revise the TS LOV relay settings but does not describe how these related deficiencies are addressed. Thus, the NRC staff needs additional information to clarify the scope of this LAR review.

Request:

Provide the following information:

- a. Confirm that the voltage and timer setpoints for the DVR have been verified to be acceptable (e.g., using NRC Regulatory Issue Summary 2011-12, Revision 1, "Adequacy of Station Electric Distribution System Voltages") or identify if an LAR is needed to change the DVR setpoints.
- b. Explain how the allowable EDG voltage and frequency tolerances are adequate for safety-related equipment to perform the intended functions. Describe the impact of EDG loading on EDG fuel consumption. Confirm that the minimum allowable EDG voltage is adequate to reset LOV relay or DVR if they had actuated.

RAI-2

The proposed TS 3.3.8.1 would permit the 4.16 kV buses for Divisions 1 and 2 to remain above 2870 volts (V) for up to 340.8 seconds. However, the LAR does not provide a sufficient basis to justify this condition.

¹ Agencywide Documents Access and Management System (ADAMS) Accession No. ML13266A107

² ADAMS Accession No. ML110460708

Request:

Provide the following information:

- a. The basis for the time delay associated with the DVR for the no loss-of-coolant accident (LOCA) conditions.
- b. The grid voltage on the high side of the station transformers corresponding to the 2870 V on the plant safety buses.
- c. Details on the ability of the grid to operate at the sustained low grid voltage, identified in question 2.b, above, for 340.8 seconds.
- d. The consequences on operating safety-related equipment if a process signal results in automatic start of a large motor during the 340.8 second delay with the safety bus voltage under sustained degraded conditions.

RAI-3

The LAR states:

The upper analytical limit for Division 1, 2 and 3 bus [LOV] loss of voltage relays was chosen to ensure that the minimum expected voltage during LOCA block start of all safety related loads remains above this value. This ensures that the [LOV] loss of voltage relays do not trip the SAT [system auxiliary transformer] feeder breaker when the SAT voltage is adequate to supply the power to the safety related loads. The minimum voltage at 4.16 kV buses for Divisions 1, 2 and 3 is more than 3190 V, when all the safety related loads were started at the same time. This voltage improves to a higher value in 2.5 seconds as the motors accelerate.

However, the LAR does not adequately describe the consequences of block starting LOCA loads under degraded voltage conditions and how the voltage improves when the degraded voltage conditions are postulated for more than 2.5 seconds.

Request:

Provide the following information:

- a. Explain the consequences of block starting LOCA loads during a degraded voltage condition given the potential operation of the units under such conditions for an extended duration (up to 340.8 seconds). The NRC staff recognizes that actuation of an accident signal will reduce the time delay for DVR to separate the safety buses from the offsite source if the grid voltage does not recover.
- b. Explain how the bus voltage improves to a higher value in 2.5 seconds as the motors accelerate if, as allowed by the DVR time delay setpoint, the degraded bus voltage conditions are postulated for more than 2.5 seconds.

RAI-4

On page 5 of the LAR the licensee states:

The lower analytical limit for Division 1, 2 and 3 bus [LOV] loss of voltage relays are such that none of the safety related, normally running motors stall when subjected to this voltage for the entire time delay. The minimum bus voltage that ensures none of the safety related motors running in Division 1 and 2 will stall is 65.5% of 4.16 kV or 2725 V and for Division 3 is 65% of 4.16 kV or 2704 V. The analysis determined that for these analytical values, none of the safety related motors stalled. Therefore, the lower limit of the analytical limit for Division 1 and 2 is chosen as 2812 V to provide margin. Similarly, the lower analytical limit for Division 3 is chosen as 2712 V to provide margin.

However, the LAR does not sufficiently describe the analysis used to determine that none of the Division 1 and 2 safety-related motors would stall for the predicted bus voltages.

Request:

Summarize the analysis used to demonstrate that none of the safety-related motors running in Division 1 and 2 will stall for the predicted bus voltages. Include a summary of the assumptions, initial bus voltages, magnitude of operating and starting loads, and operating parameters for protective devices including contactors used in motor circuits.

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 Senior Vice President
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