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U. S. Nuclear Regulatory Commission
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Washington, DC 20555-0001

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Supplemental Information Related to License Amendment Request to Remove Operating Mode Restrictions for Performing Division 3 AC Sources Surveillance Testing (TAC NO. ME4949)

References:

1. Letter from J. L. Hansen (Exelon Generation Company, LLC (EGC)) to U. S. NRC, "License Amendment Request to Remove Operating Mode Restrictions for Performing Division 3 AC Sources Surveillance Testing," dated October 28, 2010

2. Letter from N. J. Di Francesco (U. S. NRC) to Mr. M. J. Pacilio (EGC), " Clinton Power Station, Unit No.1 -Request for Additional Information Re: License Amendment Request for the Removal of Division 3 Alternating Current Mode Restrictions for Performing High Pressure Core Spray Emergency Diesel Generator Surveillance Testing (TAC NO. ME4949)," dated March 22, 2011

3. Letter from J. L. Hansen (Exelon Generation Company, LLC (EGC)) to U. S. NRC, " Additional Information Related to License Amendment Request to Remove Operating Mode Restrictions for Performing Division 3 AC Sources Surveillance Testing (TAC NO. ME4949)," dated April 8, 2011

In Reference 1, Exelon Generation Company, LLC (EGC) requested an amendment to Appendix A, Technical Specifications (TS), of Facility Operating License No. NPF-62 for Clinton Power Station, Unit 1 (CPS). The proposed change would modify CPS Technical Specifications (TS) Section 3.8.1, "AC Sources – Operating," by revising certain Surveillance Requirements (SR) related to the Division 3 AC Sources. In Reference 2, the NRC requested that EGC provide additional information in support of their review of Reference 1. The information requested in Reference 2 was provided in Reference 3.

Upon further review of the information provided in Reference 1 and associated with NRC Reference 2, Question Number 4, it became clear that additional information is required to

further clarify the voltage capabilities and requirements of the Clinton Power Station safety-related buses and the associated continuous duty motors.

The information provided in this letter does not affect the No Significant Hazards Consideration, or the Environmental Consideration provided in Attachment 1 of the original license amendment request as described in the Reference 1 submittal.

In accordance with 10 CFR 50.91(b), "State consultation," EGC is providing the State of Illinois with a copy of this letter and its attachment to the designated State Official.

This letter contains no new regulatory commitments. If you have any questions concerning this letter, please contact Mr. Mitchel A. Mathews at (630) 657-2819.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 1st day of July, 2011.

Respectfully,

Darin M. Benyak
Director – Licensing and Regulatory Affairs
Exelon Generation Company, LLC

Attachment: Supplemental Information Related to License Amendment Request to Remove Operating Mode Restrictions for Performing Division 3 AC Sources Surveillance Testing

ATTACHMENT

Supplemental Information Related to License Amendment Request to Remove Operating Mode Restrictions for Performing Division 3 AC Sources Surveillance Testing

The statement in Section 2.2 of the October 28, 2010, license amendment request (LAR) related to the capability of safety related continuous duty motors to operate 10% above and below rated voltage and frequency was taken from the description in the Clinton Power Station (CPS) Updated Safety Analysis Report (USAR). Specifically, the referenced quote is found in USAR Sections 8.2.2.1, "Compliance with NRC General Design Criterion 17," and 8.3.1.1.2.1, "High Pressure Core Spray System (HPCS) Power System."

This verbiage was added to the CPS USAR as a result of a response to an NRC question during initial plant licensing. This statement is related to, and is supported by, compliance to the National Electric Manufacturer Association (NEMA) standards. Specifically, the statement is a design requirement is found in NEMA Publication MG 1, "Motors and Generators." NEMA MG 1 is incorporated by reference through CPS's commitment to NRC Regulatory Guide 1.9, "Selection, Design, and Qualification of Diesel-Generator Units Used As Standby (Onsite) Electric Power Systems At Nuclear Power Plants," and Institute of Electrical and Electronics Engineers (IEEE) Standard 387, "IEEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations." NEMA MG 1 provides the principle design requirements for selection and manufacturing of motors and generators. The use of the term "rated voltage" when used in conjunction with continuous duty motors as discussed in Section 2.2 of the LAR refers to the nameplate rating of induction motors in the design and manufacturing of safety related motors under NEMA MG 1 and is not the nominal voltage and frequency rating of the offsite and onsite power sources. For example, the nameplate rating of the HPCS pump motor is 4000 VAC. The HPCS pump motor has an acceptable operating range of 3600 VAC to 4400 VAC.

Analyses at CPS in Calculations 19-AK-13, 19-AK-06, and 19-AJ-74, specify that the maximum acceptable voltage on the Division 3 4.16 kVAC safety-related bus is 4454 VAC for 30 minutes and 4300 VAC for continuous operation to ensure all safety related motors and electrical equipment are operated within their design capabilities. These calculations evaluated the effects of the overvoltage condition on the connected loads in the 120 VAC distribution panels and determined that continuous operation above 4300 VAC on the 4.16 kVAC 1E buses would result in voltages above allowable for some 120 VAC safety related devices. The analysis allows for elevated voltages up to 4454 VAC for 30 minutes that account for overvoltage conditions that can occur if the RAT Static VAR Compensator trips coincident with high 345 kVAC transmission system voltages. The 30 minute duration was considered to be sufficient time to restore 4.16 kVAC voltages to within specification without damaging downstream Division 3 AC loads.

The operating limits on the offsite and onsite power sources are maintained by both design and administrative controls. The Division 3 diesel generator (DG) and its associated voltage regulator are designed to provide voltage regulation of 0.5% with a response time of less than 17 milliseconds. The voltage regulation and automatic voltage reset design feature (i.e., on startup and the initiation of a Loss of Coolant Accident signal), ensure the DG output voltage is maintained between 4126 VAC and 4271 VAC during normal conditions and during recovery from transient conditions. Additionally, implementation of the allowable voltage limits are administratively controlled by CPS Operating and Surveillance Procedures.

Therefore, based on the discussions above, CPS does not allow the Division 3 DG to deliver maximum continuous voltage output (i.e., 4580 VAC) per CPS's Technical Specifications (TS)

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Section 3.8.1, "AC Sources-Operating," Surveillance Requirement (SR) 3.8.1.2. The confusion pertaining to the capability of safety related continuous duty motors to operate 10% above and below rated voltage with rated frequency as discussed in the CPS USAR was documented in the Exelon Generation Company, LLC (EGC) Corrective Action Program under Issue Report (IR) 1225436 and will be resolved with revisions to the applicable CPS USAR sections. The revisions will clarify the intent of the statement related to capabilities of safety-related continuous duty motors consistent with existing design analyses. These changes will be completed in the next USAR update.

With regard to the steady state maximum voltage limit of 4580 VAC in TS SR 3.8.1.2, EGC responded to NRC Request No. 4 on April 8, 2011, with CPS's previous position that the steady state limits are transient recovery limits derived from load sequencing recommendations given in Regulatory Guide 1.9. This position was based on an Operability Evaluation (OE) performed in 2007 that addressed a potential non conservative TS for DG steady state maximum voltage. This OE concluded that based upon surveillance procedures that limit continuous voltage on the 4.16 kVAC buses to the analyzed upper voltage limit of 4300 VAC, the TS SR value was not improper or inadequate (i.e., one that would result in a structure, system, or component (SSC) being unable to perform its safety function), nor did a degraded or non-conforming condition exist.

However, open questions regarding the inconsistency between the TS SR upper steady state output limit of 4580 VAC and the calculated limit of 4300 VAC for continuous operation remain. Consequently, EGC recently reviewed this issue at CPS under IR 1226340 and concluded that the maximum steady state voltage limits in TS SRs 3.8.1.2, 3.8.1.7, 3.8.1.11, 3.8.1.12, 3.8.1.15, 3.8.1.19, and 3.8.1.20 are non-conservative with respect to existing design basis analyses. An OE was performed in accordance with NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety," and station procedures. The OE concluded that the TS SRs on maximum DG steady state voltage involve improper or inadequate TS values and that this issue is considered a degraded or nonconforming condition. Consistent with NRC Administrative Letter 98-10, the imposition of administrative controls in response to improper or inadequate TS is considered an acceptable short-term corrective action. As previously stated, these administrative controls are currently contained in existing operating and surveillance procedures and ensure DG steady state voltage is limited to a maximum of 4300 VAC as required by existing design analysis. Corrective actions include submitting a LAR to align TS 3.8.1 steady state output voltage limits to the design analysis value of 4300 VAC.