

NRR-PMDAPEm Resource

From: Mozafari, Brenda
Sent: Thursday, August 04, 2011 9:25 AM
To: Caves, John; 'Bass, Kimberly'
Cc: Saba, Farideh
Subject: MUR RAI (EEB)(ME6169).docx

Importance: High

John and Kim,

By letter dated April 28, 2011 (Agencywide Documents Access and Management System Accession No. ML11124A180), Carolina Power & Light Company requested approval from the U.S. Nuclear Regulatory Commission (NRC) to increase the core thermal power level of Shearon Harris Nuclear Power Plant, Unit 1 from 2,900 megawatts thermal (MWt) to 2,948 MWt, an increase of approximately 1.66% over the present licensed power level and to change the power plant technical specifications accordingly.

The NRC staff is reviewing your submittal and has determined that additional information is needed to complete its review. The specific questions are found in the enclosed request for additional information (RAI). It is requested that your RAI response be provided by August 30, 2011, as discussed with your staff on July 29, 2011. If more time is needed to respond to the RAI, your request for additional time should include a basis for the need for an extension.

The NRC staff has reviewed the supplemental information provided by Carolina Power & Light Company (the licensee) in Enclosure 2 to its letter dated June 23, 2011. The revised Enclosure 2 provides updates to the "V. Electrical Equipment Design" portion of the measurement uncertainty recapture (MUR) license amendment request. The information in Enclosure 2 superseded the original information provided by the licensee in the Enclosure to the letter dated April 28, 2011. Based on its review, the NRC staff requests the following additional information:

1. In Enclosure 2, Section V.1.B, "Station Blackout - Class 1E Battery Capacity," the licensee stated that Shearon Harris Nuclear Power Plant, Unit 1 (HNP) has two Class 1E battery systems with sufficient capacity, including 10% margin, to power station blackout (SBO) loads for 4 hours.

Provide a summary of the Class 1E battery sizing calculations that demonstrates sufficient capacity exists for the 4-hour SBO coping duration under MUR power uprate conditions. Discuss and provide details of any load-shedding, if considered, in the 4-hour coping duration.

2. In Enclosure 2, Section V.1.C, "EQ (environmental qualification) of Electrical Equipment," the licensee stated that they conducted an evaluation and concluded that the power uprate will not impact the equipment qualification.

Provide temperature, pressure, and radiation levels (curves or tables) to demonstrate that the EQ of all equipment remains bounding for both normal operating and under accident conditions for the proposed MUR power uprate.

3. In Enclosure 2, Section V.1.D, "Grid Stability - Power Flow Analysis," the licensee stated that based on summer 2010 study results extrapolated for future years, no thermal or voltage impacts were identified.

Provide a summary of the power flow analysis. Confirm whether the power flow analysis also included winter loading in addition to the summer loading. If not, explain why winter loading was not considered.

4. In Enclosure 2, Section V.1.D, "Grid Stability – Large Generator Interconnect Power Factor Requirement," the licensee stated that for a 66 Mega Watt electric (MWe) increase on HNP Unit 1, a generator nameplate rating of 1155 Mega Volt Ampere at 0.94 Power factor lagging was required.

Provide a summary of the calculation that confirms that the capability of the replacement main generator will bound the MVAs Reactive requirement corresponding to the 66 MWe increase.

5. In Enclosure 2, Section V.1.D, "Grid Stability – Stability Analysis," the licensee stated that Nuclear Plant Interface Requirements (that include a minimum required switchyard voltage and plant post-trip auxiliary loading), remain unchanged as a result of the MWe increase, and that no changes are necessary to existing transmission system operating procedures in order to provide adequate voltage support to HNP.

Provide a summary of the analysis that was performed to validate the above statement.

6. In Enclosure 2, Section V.1.D, "Grid Stability – Short Circuit Analysis," the licensee stated that the evaluation results indicate that the interrupting capability of the transmission equipment in the surrounding area would not be adversely impacted by the proposed generation uprate.

Provide a summary of the analysis that was performed to validate the above statement.

7. In Enclosure 2, Section V.1.E, "Onsite Power Systems – Alternating Current (AC) Distribution System," the licensee stated that the electrical changes resulting from the power uprate occur in the balance of plant equipment, primarily at the 6.9 kiloVolt (kV) level. The licensee noted that the following loads were affected: main feedwater pumps, condensate pumps, condensate booster pumps, heater drain pumps, and reactor coolant pumps. The licensee stated that the net increase in break horse power (hp) for the motors associated with these pumps is small, in the range of 100-200 hp.

Provide the rated horsepower (hp) for the motors associated with the above pumps, and the break hp requirements for pre- and post-MUR power uprate conditions. Also provide a summary of the worst case steady-state voltages at the 6.9 kV buses for pre- and post-MUR power uprate conditions, in a table form, to validate that the voltages remain above the degraded voltage relay settings at the 6.9 kV emergency buses under MUR power uprate conditions.

8. In Enclosure 2, Section V.1.F.i, "Main Generator," the licensee stated that the 29.8 MWe includes approximately 19 MWe associated with the MUR assumed by the uprate and the balance from the other upgrades. Also, the main generator capability indicates that at 1021.8 MWe, the main generator is capable of exporting approximately 430 MVAR.

Clarify "other upgrades" in the above statement. Provide a copy of the main generator capability curve to validate that the generator will be operating within the limits of its capability curve.

9. In Enclosure 2, Section V.1.F.ii, "Isolated Phase Bus," the licensee stated that the normal conditions are defined as full real power (1021.8 MWe) with reactive power at the maximum HNP administrative limit (currently 175 MVAR lagging) and 100% nominal voltage (22 kV).

Explain the basis of the 175 MVAR lagging limit corresponding to 1021.8 MWe. Also, discuss the MVAR lagging requirement corresponding to the 66 MWe increase for which grid stability has been carried out and its impact on the isolated phase bus rating.

10. Provide a discussion on any protective relaying changes due to installation of the replacement main generator and main transformers.

11. Provide a discussion on the auxiliary power requirement for the Cameron Leading Edge Flow Meter CheckPlus System, such as direct current or AC power requirements, and its loading impact on the associated safety-related or nonsafety-related bus.

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Mail Envelope Properties (Brenda.Mozafari@nrc.gov20110804092500)

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From: Mozafari, Brenda

Created By: Brenda.Mozafari@nrc.gov

Recipients:

"Saba, Farideh" <Farideh.Saba@nrc.gov>
Tracking Status: None
"Caves, John" <john.caves@pgnmail.com>
Tracking Status: None
"Bass, Kimberly" <Kimberly.Bass@pgnmail.com>
Tracking Status: None

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Files	Size	Date & Time
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Options

Priority: High
Return Notification: No
Reply Requested: No
Sensitivity: Normal
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