Progress Energy

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January 25, 2007

SERIAL: BSEP 07-0009 10 CFR 50.54(f)

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: Brunswick Steam Electric Plant, Unit Nos. 1 and 2
Docket Nos. 50-325 and 50-324/License Nos. DPR-71 and DPR-62
Response to Request for Additional Regarding Generic Letter 2006-02
Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power

Ladies and Gentlemen:

On February 1, 2006, the NRC issued Generic Letter 2006-02, "Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power." Carolina Power & Light Company, now doing business as Progress Energy Carolinas, Inc., provided the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2, response to Generic Letter 2006-02 on March 31, 2006 (i.e., Serial: BSEP 06-0026, ADAMS Accession No. ML061020057). On December 5, 2006, as supplemented on December 13, 2006, the NRC issued a request for additional information (RAI) regarding licensees' responses to Generic Letter 2006-02. Responses to the RAI are required to be submitted by January 31, 2007.

The requested information for BSEP is enclosed. No regulatory commitments are contained in this letter. Please refer any questions regarding this submittal to Mr. Randy C. Ivey, Manager - Support Services, at (910) 457-2447.

I declare, under penalty of perjury, that the foregoing is true and correct. Executed on January 25, 2007.

Sincerely,

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MAT/mat

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Enclosure:

Response to Request for Additional Information (RAI) Regarding Generic Letter 2006-02

cc:

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Response to Request for Additional Information (RAI) Regarding Generic Letter 2006-02

Background

On February 1, 2006, the NRC issued Generic Letter 2006-02, "Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power." Carolina Power & Light Company (CP&L), now doing business as Progress Energy Carolinas, Inc., provided the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2, response to Generic Letter 2006-02 on March 31, 2006 (i.e., Serial: BSEP 06-0026, ADAMS Accession No. ML061020057). On December 5, 2006, as supplemented on December 13, 2006, the NRC issued an RAI regarding licensees' responses to Generic Letter 2006-02.

The December 5, 2006, RAI included six questions and a table listing the applicable questions for each licensee. BSEP is required to respond to questions 3, 4, and 5. The requested information follows.

Question 3 Verification of RTCA Predicted Post-Trip Voltage

Your response to question 2(g) indicates that you have not verified by procedure the voltages predicted by the online grid analysis tool (software program) with actual real plant trip voltage values. It is important that the programs used for predicting post-trip voltage be verified to be reasonably accurate and conservative. What is the range of accuracy for your GO's contingency analysis program? Why are you confident that the post-trip voltage calculated by the GO's contingency analysis program (that you are using to determine operability of the offsite power system) are reasonably accurate and conservative? What is your standard of acceptance?

Response to Question 3

CP&L agrees that it is important that the programs used for predicting post-trip voltage be verified to be reasonably accurate and conservative. Grid Operator (GO) methods are in place to manage the process of verifying predictive program results against actual nuclear plant trip event data. These methods ensure that the predicted post-trip voltage is reasonably accurate and conservative for each nuclear plant trip event.

CP&L's GO has determined that predicted results have compared favorably with actual plant trip event data when comparisons have been made in the past. The range of accuracy of the contingency analysis program has not been quantitatively derived.

CP&L is confident that the post-trip voltages calculated by the GO's contingency analysis program are reasonably accurate and conservative because the program was developed to add a conservative post-trip voltage drop bias, derived from actual plant trip event experience, to load flow-calculated voltage drops from the postulated loss of nuclear generation to arrive at a total predicted voltage drop result.

CP&L's standard of acceptance is that an N-1 nuclear plant trip contingency switchyard voltage result generated by the contingency analysis program will be conservative with respect to the actual post-trip switchyard voltage plus a conservative reliability margin for each nuclear plant.

The contingency analysis program and its use are governed by North American Electric Reliability Council (NERC) standards.

NERC Standard TOP-006-1, "Monitoring System Conditions," requirement R6, specifies that each Balancing Authority and Transmission Operator shall use sufficient metering of suitable range, accuracy, and sampling rate, if applicable, to ensure accurate and timely monitoring of operating conditions under both normal and emergency situations. Such instruments are used as inputs to the state estimation and pre- / post-contingency analysis tools, thus supporting sufficient accuracy of the results. CP&L operates as both a Balancing Authority and Transmission Operator and complies with NERC Standard TOP-006-1

New NERC Standard NUC-001-1, "Nuclear Plant Interface Coordination," will be used when approved to better address this area. NERC Standard NUC-001-1 is currently in the final stages of development and is expected to be approved in early 2007.

Question 4 Identification of Applicable Single Contingencies

In response to question 3(a) you did not identify the loss of other critical transmission elements that may cause the offsite power system (OSP) to degrade, other than the loss of the nuclear unit. If it is possible for specific critical transmission elements (such as other generators, critical transmission line, transformers, capacitor banks, voltage regulators, etc.) to degrade the OSP such that inadequate post-trip voltage could result, have these elements been included in your N-1 contingency analysis? When these elements are included in your GO's contingency analysis model and failure of one of these transmission elements could result in actuation of your degraded voltage grid relay, is the offsite power declared inoperable? If not, what is your basis for not declaring the offsite power inoperable?

Response to Question 4

Yes, it is possible that the loss of certain transmission elements, including generating units, may cause the OSP to degrade to some degree and these elements are included in the N-1 contingency analysis.

The contingency analysis shows that the loss of any single element will not result in the actuation of the degraded grid voltage relay. The GO operates the system in a manner to prevent a single contingency from resulting in inadequate voltage to the nuclear plant. Greater than 900 contingencies are routinely evaluated under current grid configurations to ensure that adequate voltage can be maintained as system conditions change.

The basis for not declaring offsite power inoperable due to predictions of inadequate voltage support from the postulated loss of transmission elements, including generating units other than nuclear, is that the event is only postulated and has not actually occurred.

Question 5 **Seasonal Variation in Grid Stress (Reliability and Loss-of-offsite Power (LOOP) Probability)**

Certain regions during certain times of the year (seasonal variations) experience higher grid stress as indicated in Electric Power Research Institute (EPRI) Report 1011759, Table 4-7, Grid Loop Adjustment Factor, and NRC NUREG/CR-6890. Do you adjust the base LOOP frequency in your probabilistic risk assessment (PRA) and Maintenance Rule evaluations for various seasons? If you do not consider seasonal variations in base LOOP frequency in your PRA and Maintenance Rule evaluations, explain why it is acceptable not to do so.

Response to Question 5

The LOOP initiators used for PRA and Maintenance Rule are not generically adjusted for seasonal variations in LOOP frequency. They are adjusted (i.e., increased) based on planned, expected, and actual events, some of which are more prevalent seasonally.

This is acceptable because the Maintenance Rule (a)(4) LOOP initiator frequencies are procedurally required to be adjusted (i.e., increased) for actual weather conditions and Transmission System Operator based notifications regarding system load and grid conditions. This requires that the LOOP initiator frequencies be adjusted when grid and weather conditions warrant consideration, explicitly capturing the "seasonal" changes in LOOP frequency when warranted. Note that there is no reduction in the initiator frequency applied for good weather or low grid stress, which results in (a)(4) LOOP frequencies that are overstated in their aggregate impact over the course of a year.

Basing LOOP risk generically on "season" has the potential to aggravate problems. It can result in unnecessary deferrals of switchyard or grid maintenance. The deferral, due to it being the wrong "season," can actually increase the risk by not taking advantage of times when the weather is good and the grid is not stressed to conduct necessary maintenance. Also, since the plant staff is aware of and accounting for weather and grid conditions, the seasonal approach can also undermine confidence in the risk assessment program. The reduction in confidence would occur by consistently applying overly-conservative biases to the LOOP risk by season even when actual risk factors are low. The "seasonal" approach can also de-sensitize the plant staff to possibly elevated LOOP risk situations during other seasons that are not generically considered to carry higher LOOP risk.

The LOOP initiators used for PSA and Maintenance Rule evaluations are based on plant specific Bayesian updates to applicable industry data that include plant centered LOOP events and switchyard LOOP events, as well as weather and grid related events (i.e., seasonal or not).