



Carolina Power & Light Company

SERIAL: NLS-84-363

AUG 30 1984

Director of Nuclear Reactor Regulation
Attention: Mr. D. B. Vassallo, Chief
Operating Reactors Branch No. 2
Division of Licensing
United States Nuclear Regulatory Commission
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 & 50-324/LICENSE NOS. DPR-71 & DPR-62
ELECTRICAL DISTRIBUTION SYSTEM VOLTAGES

Dear Mr. Vassallo:

SUMMARY

By letter dated February 6, 1984, Carolina Power & Light Company (CP&L) committed to submit a revised voltage drop study for the Brunswick Steam Electric Plant Unit Nos. 1 and 2 to the NRC by August 31, 1984. The enclosed reports document the results of the voltage drop analyses. Study results for the 4160/480 volt systems and the 208/120 volt systems are included in Attachments 1 and 2. An addendum to the 208/120 volt study is included in Attachment 3.

DISCUSSION

4160/480 Volt System

The 4160/480 volt system study supersedes the Voltage Drop Study for Brunswick-2, Revision 2, dated December 15, 1980, submitted on February 16, 1981. The major difference between the revised study and the one previously submitted is the accident scenario used to establish the minimum voltage for the off-site power source. The old study applied an accident scenario of a LOCA on one unit and a simultaneous false LOCA on the other unit (2XLOCA). The new study uses an accident scenario of a LOCA on one unit while the other unit is shutdown. The basis for this revised accident scenario is explained in Appendix A of the report. The revised analysis demonstrates that the Brunswick-1 and Brunswick-2 electrical distribution systems will provide adequate voltage regulation for the 4160 volt and 480 volt safety-related electrical loads and that the earlier commitment to a maximum allowable auxiliary load of 31.5 Mw on each unit's electrical distribution system is no longer required.

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With respect to nonsafety loads, the new study recommends a transformer tap change for the Unit Substation Common C 4160/480 volt transformer to ensure the Balance of Plant (BOP) loads fed from this load center maintain adequate voltage. This undervoltage will not occur except under the following conditions:

1. When the normal full auxiliary load is fed from the start-up transformer (i.e., Unit 1 auxiliary transformer is out of service), or
2. When there is a LOCA on Unit 1 and the auxiliary loads are transferred to the start-up transformers.

Carolina Power & Light Company, therefore, believes that the recommended transformer tap change can be performed during the next major Brunswick-2 outage, currently scheduled to begin December 1, 1985, without adversely impacting the safe operation of the plant during the interim period since the Common C transformers service only BOP loads.

208/120 Volt System

The 208/120 volt system study supersedes the Voltage Drop Study for 208/120 Volt Safety-Related Loads, Revision 2, dated March 23, 1982, submitted on November 23, 1982. The new study recommends tap changes on two 480/208 volt transformers for the Brunswick-2 distribution system in order to eliminate a potential overvoltage on safety-related loads during unit shutdown condition. In order to prevent unnecessary complexity in the circuit analysis, a simplified, conservative method of circuit modeling was used in the 208/120 volt system study. This resulted in three circuits being identified as having a potential undervoltage problem during a LOCA. Detailed voltage calculations for these three circuits, however, demonstrated that voltage regulation on the circuits is adequate. These calculations are provided in the Addendum to the 208/120 volt system study in Attachment 3.

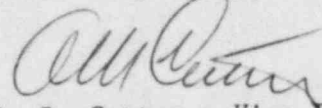
The recommended tap changes on the two 480/208 volt transformers mentioned above are based on study results that indicate a potential overvoltage problem only when Unit 2 is shutdown with the auxiliary loads fed from the start-up transformer. Under normal operating conditions (with the auxiliary loads fed from the unit auxiliary transformers), the studies indicated that the voltage regulation performance is adequate. Furthermore, if an overvoltage condition does occur during a Unit 2 shutdown, the maximum magnitude of the overvoltage would not affect component performance. Adverse effects would be limited to a reduction of the expected component lifetime. Carolina Power & Light Company, therefore, believes that the recommended 480/208 volt transformer tap changes can be performed during the next major Unit 2 outage, currently scheduled for December 1, 1985, without adversely impacting the safe operation of the plant in the interim period.

CONCLUSION

Carolina Power & Light Company believes, based on the above information, that the recommended 4160/480 volt and 480/208 volt transformer tap changes can be made during the next major Brunswick-2 outage without adversely impacting the safe operation of the plant during the interim period.

Should you have any questions concerning this submittal, please contact Mr. Sherwood R. Zimmerman at (919) 836-6242.

Yours very truly,



A. B. Cutter - Vice President
Nuclear Engineering & Licensing

MAT/cfr (449MAT)

Attachments

cc: Mr. D. O. Myers (NRC-BNP)
Mr. J. P. O'Reilly (NRC-RII)
Mr. M. Grotenhuis (NRC)