



Carolina Power & Light Company

January 20, 1978

Central File
50-400
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Mr. James P. O'Reilly, Director
U. S. Nuclear Regulatory Commission
Region II, Suite 1217
230 Peachtree Street, NW
Atlanta, Georgia 30303

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT NOS. 1, 2, 3 AND 4
DOCKET NOS. 50-400, 50-401, 50-402, 50-403
RESPONSE TO IE BULLETIN 77-07

Dear Mr. O'Reilly:

In response to IE Bulletin 77-07, the following information is provided concerning containment electrical penetrations for safety related systems at the Shearon Harris Nuclear Power Plant. The response numbers below refer to IE Bulletin 77-07 question numbers.

- 1.0 All containment electrical penetrations to be used in the Shearon Harris Plant will be supplied by Westinghouse Electric Corporation. They are identified by Westinghouse as WX 33452 through WX33487. All electrical penetrations are Class IE.

The penetrations for the Shearon Harris Nuclear Power Plant will rely on an epoxy sealant to ensure that the electrical and pressure characteristics are maintained so as to ensure the functional capability as required by the plant's safety analysis report; namely, (1) to ensure adequate functioning of electrical safety-related equipment and (2) to ensure containment leak tightness.

The epoxy sealing compound to be used on the SHNPP penetrations is not the same as the one used on the subject penetrations of Bulletin No. 77-07. The epoxy to be used by Westinghouse forms the seal by shrinking onto the copper transition pin. As the copper expands due to current flow, the seal becomes tighter. There will be no dependence on adhesion between the epoxy and copper to form an effective seal.

Assuming no loss of leak tight integrity, the epoxy seal is sufficient to prevent degradation of cable insulation. As an extra precaution each penetration will also be continuously pressurized to the maximum LOCA pressure. A central nitrogen source and a manifold system is provided to ensure continuous pressurization. Although continuous pressurization is not required to meet containment leak test requirements (10 CFR 50, Appendix J) this will provide the following advantages:

1. If a leak were to develop during LOCA, there is no possibility of flooding the monitoring volume with water.

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Case Study

2. The system can be used to keep the penetrations pressurized without requiring personnel to climb to difficult locations to repressurize penetrations.
3. Leak checking can be performed on a bank of six penetrations at once by proper valving. If leakage is excessive, individual leak checking can be performed by simply reducing the manifold pressure to zero. The check valves close and each penetration is isolated for leak checking.

The penetrations have been designed and tested to withstand LOCA conditions with the penetration internal pressure at 0 PSIG.

1.1 Not Applicable

- 1.2 The transition connector pins will be coated with an insulation varnish to provide an insulating jacket in the space used for monitoring leakage. In the seal area the bare pins will be embedded in the epoxy.

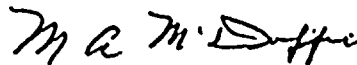
- 2.0 No electrical penetrations have been shipped. The manufacturer will ship the penetrations pressurized with nitrogen, however, this is to allow detection of damage during transit. The manufacturer states that nitrogen pressurization need not be maintained during shipment and storage provided insulation resistance measurements are performed at installation. After installation a pressure of at least 15 PSIG is recommended by the manufacturer. This pressure will be exceeded as described in 1.0 above.

- 3.0 As discussed in 1.0 above the penetrations are designed and tested to withstand LOCA conditions with a penetration internal pressure of 0 PSIG.

- 3.1 Manufacturer's tests have demonstrated performance during LOCA.

- 3.2 The results of tests provided by the manufacturer assure compliance with the Commissions regulations (GDC4 Appendix A to Part 50; QA Criteria, Appendix B to Part 50).

Yours very truly,



M. A. McDuffie
Senior Vice President
Engineering & Construction

MAM/gsm

cc: Mr. E. Volgenau