

CAROLINA POWER & LIGHT COMPANY

A MEASURE OF THE VOLTAGE WITHSTAND LEVEL ON RAYCHEM CABLE

SAMPLES AFTER EXPOSURE TO A SIMULATED LOCA

FOR

CAROLINA POWER & LIGHT COMPANY

BRUNSWICK STEAM ELECTRIC PLANT - UNITS 1 & 2

REV. NO.	RECOMMENDED BY	CONCURRED BY	APPROVED BY	DATE
0	WRP/lyne 8/23/83	Ben Pate 8/23/83	M. W. [Signature]	8/24/83
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1. OBJECTIVE

To determine the extent to which the cables may exhibit residual margin upon completion of the aging and harsh environment exposure described in Reference 7.1.

2. The testing described herein will be performed on cable specimens used in the program described in Reference 7.1. That program is intended to demonstrate qualification of the cable for use in Class 1E service in primary and secondary containment at BSEP. Similarly, the post-LOCA testing described below is intended to determine residual margin in addition to those margins of time, temperature, pressure, voltage and current accounted for in Reference 7.1. Because neither of these programs is concerned with generic qualification of the cable, there is no residual margin requirement once the cable specimens have met the performance requirements specific to BSEP, as described in Reference 7.1.

3. CABLE DESCRIPTION

The cable to be subjected to the high voltage withstand test described below will be the identical specimens used in LOCA tests described in Reference 7.1.

4. PROCEDURE

- 4.1 At the conclusion of the LOCA testing, the cable ends will be cut inside the pressure vessel and the mandrels, with the cables still attached, will be removed from the vessel.
- 4.2 The cables will then be removed from the mandrels without uncoiling.
- 4.3 The ends of each specimen will be prepared by removing a short length of the jacket and stripping the primary insulation from each conductor to facilitate electrical connections.
- 4.4 The center position of each cable will be immersed in tap water at room temperature.
- 4.5 With the water bath grounded, the conductors will be connected as shown in Figure 1, Configuration A.
- 4.6 A withstand voltage of 1200 volts AC will be applied by uniformly increasing the applied voltage from zero to maximum at a rate not exceeding 500 volts AC/second, holding 1200 volts AC for 5 minutes and decreasing the voltage to zero in not less than 3 seconds.

- 4.7 The connections will then be changed to conform with Figure 1, Configuration B, and a second voltage withstand test performed in accordance with 4.6 above, except that at the end of the 5 minutes period, the voltage will be increased at a uniform rate, not exceeding 500 volts AC/second, to a value of 3600 AC volts, held for 5 minutes and then reduced to zero in not less than 5 seconds.
- 4.8 The connection will then be changed to conform to Figure 1, Configuration A. A withstand voltage of 3600 volts AC will then be applied by increasing the applied voltage from zero to maximum at a rate not exceeding 500 volts AC/second, holding for 5 minutes and then decreasing the voltage to zero in not less than 5 seconds.
- 4.9 The 3600 volts AC is based on 80 volts AC/Mil of primary insulation thickness.

5. MEASUREMENTS

The voltage applied to the test specimens will be measured and recorded.

6. DOCUMENTATION

An information report will be furnished by the testing facility.

7. REFERENCES

- 7.1 "Demonstration of Raychem Cable for Qualified Use in Class 1E Service at BSEP - Primary & Secondary Containment," Revision 2.

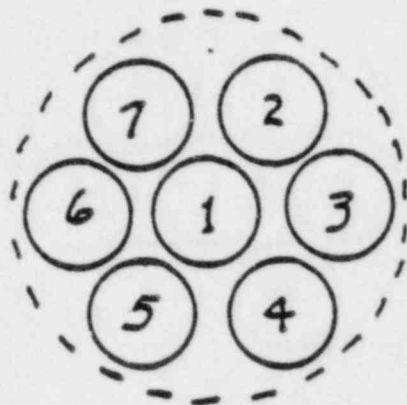


Figure 1. Connections for Voltage Withstand Test

Configuration A: 1, 3, 5 and 7 connected to high voltage terminal.
2, 4 and 6 grounded.

Configuration B: 1, 3, 5 and 7 grounded.
2, 4 and 6 connected to high voltage terminal.