CP&L

Carolina Power & Light Company

SEP 08 1982

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, D.C. 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324
LICENSE NOS. DPR-71 AND DPR-62
SUPPLEMENTAL INFORMATION FOR CABLE SPREAD ROOM EXEMPTION REQUEST

Dear Mr. Denton:

By petition dated March 6, 1981, Carolina Power & Light Company (CP&L) requested an exemption from the requirement of 10 CFR part 50, Appendix R, Section III.G.3 for the installation of a fixed fire suppression system in the cable spread room for our Brunswick Steam Electric Plant, Units 1 and 2. The technical bases set forth in that petition were further supplemented in discussions with the NRC staff. On July 15, 1982 a meeting was held between the NRC staff and CP&L to discuss additional information concerning the cable spread room exemption request. As a result of that meeting the NRC staff requested that CP&L perform a quantitative analysis to determine the quantity of combustible materials required to cause the onset of piloted ignition of the most limiting exposed cable due to a floor level exposure fire. It should be noted that the most limiting cable is a balance-of-plant, non-safety related cable. It had been agreed at the July 15 meeting that if a suppression system were required it would need to be designed to suppress a floor level exposure fire only.

Based on the July 15 meeting, CP&L and its consultant conducted analyses to evaluate the quantity of transient combustibles necessary to cause ignition of the most limiting cable in the cable spread room. On August 13, 1982, CP&L and its consultant met with the NRC staff to discuss in further detail the evaluation methodology being used for the cable spread room exemption request analyses. The enclosed report presents results of these analyses.

The analyses utilize a process which assumes non-mechanistically an overventilated liquid pool fire with an enhanced radiation field. Convection and conduction effects are also considered, as is combustion gas stratification. For purposes of demonstration, the quantity of fuel required is discussed in terms of equivalent gallons of acetone, which is representative of the type of low flash point liquid which could be found in the cable spread room on an infrequent basis. The attached analyses demonstrate that it would require a quantity in excess of ten gallons of acetone to achieve the failure criteria of piloted ignition for coated cables at the worst-case configuration found in either cable spread room. In addition to the fact that the ten gallons of acetone is a conservatively low number as discussed below, it is also well in excess of that which could reasonably be expected to be found in the cable spread room.

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It is important to understand that this equivalent quantity of fuel is a number arrived at using analysis methods with very conservative assumptions. Before the event assumed in the analysis can even be contemplated, however, a total failure of administrative controls to allow introduction of unacceptable quantities of flammable liquid to the area must be postulated coincidental with an ignition source being introduced. The analysis methods employ the following inherent conservatisms in arriving at fuel quantities:

- The liquid spill is arbitrarily confined to a fixed geometry.

- The target cable is assumed to be in an optimum position for maximum heat transfer, and no credit is taken for obstruction between the fuel and the target cable.

- The liquid fire is maintained at optimum efficiency for heat transfer and artificially enhanced to overestimate the effects of radiation.

- Heat flux to the target cable is artificially kept at the maximum value for the duration of the exposure

- Non-mechanistic and contradictory assumptions are made concerning ventilation. In every case these are made to be conservative (Refer to page 6 of the attachment and its appendices)

- No credit is taken for the cable tray geometry which could divert convection gases, or provide radiation shielding.

Based on the administrative controls in place at the Brunswick plant, the existing fire suppression capabilities, the response times as demonstrated for the fire brigades and the existing overall level of fire protection capabilities at the Brunswick Plant, CP&L believes that the exemption from the requirement for a fixed suppression system for the cable spread room at Brunswick should be granted because the installation of such a system would not significantly enhance protection of public health and safety at the facility. If you have any further questions concerning the enclosed analyses, please contact our staff.

Yours very truly,

P. W. Howe

P. W. Howe
Vice President
Technical Services

PWH/ce (4114C4T1)
Enclosures

cc: Mr. J. P. O'Reilly (NRC-RII)
Mr. J. A. Van Vliet (NRC)
Mr. D. O. Meyer

FIRE PROTECTION
of the
CABLE SPREADING ROOM

BRUNSWICK STEAM ELECTRIC PLANT

UNITS 1 AND 2

CAROLINA POWER & LIGHT COMPANY

August, 1982