



Carolina Power & Light Company

APR 05 1982



Office of Nuclear Reactor Regulation  
ATTN: Mr. D. B. Vassallo, Chief  
Operating Reactors Branch No. 2  
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  
SPENT FUEL POOL STORAGE MODIFICATION  
SUPPLEMENTAL INFORMATION

Dear Mr. Vassallo:

Mr. T. A. Ippolito's letter dated September 8, 1981 requested additional information on the Spent Fuel Pool Cleanup System in support of the NRC review regarding Carolina Power & Light Company's (CP&L) April 16, 1981 license amendment request. CP&L responded to the NRC request by our letter dated November 23, 1981.

This letter is to provide supplemental information to our November 23, 1981 response. Please use the attached information for your review in lieu of the previous response.

If you have any questions, please contact my staff.

Yours very truly,

S. R. Zimmerman  
Manager  
Licensing & Permits

MSG/lr (n-4)  
Enclosure

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

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BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2

SPENT FUEL POOL STORAGE MODIFICATION

SUPPLEMENTAL RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

INFORMATION REQUEST:

Describe the samples and instrument readings and the frequency of measurement that will be performed to monitor the water purity and need for spent fuel pit cleanup system demineralizer resin and filter replacement. State the chemical and radiochemical limits to be used in monitoring the spent fuel pool water and initiating corrective action. Provide the basis for establishing these limits. Your response should consider variables such as: conductivity, gross gamma and iodine activity, demineralizer and/or filter differential pressure, demineralizer decontamination factor, pH, and crud level.

RESPONSE:

CP&L maintains the spent fuel pool water quality such that it meets the following water quality guidelines:

|                |                                 |
|----------------|---------------------------------|
| Conductivity*: | $\leq 2$ umho/cm @ 25 degrees C |
| pH:            | 5.3 - 7.5                       |
| Chloride:      | $\leq 200$ ppb                  |
| Activity:      | No limit                        |

\*During refueling, conductivity may exceed the spent fuel pool water quality guideline of  $\leq 2$  umho/cm. Technical Specifications allow up to 10 umho/cm during the refueling mode.

The spent fuel pool water is sampled once per week. Samples can be taken (1) in the radwaste sample station at the inlet and outlet to the filter demineralizer and (2) by dip sample from the spent fuel pool. The spent fuel pool water is analyzed and expected normal values are:

|                  |                                     |
|------------------|-------------------------------------|
| Conductivity:    | $\leq 1$ umho/cm @ 25 degrees C     |
| pH:              | 6.0 - 7.5                           |
| Chloride:        | $\leq 200$ ppb                      |
| Activity (1981): | $10^{-4}$ uCi/ml - $10^{-2}$ uCi/ml |

The fuel pool samples are not normally analyzed for suspended solids; however, water clarity is maintained such that the bottom of the spent fuel pool is visible. When one of the above water quality guidelines is exceeded, the Environmental & Radiation Control (E&RC) group notifies Operations. The normal corrective action is to place a fuel pool filter demineralizer in service or replace the filter demineralizer that is exhausted.

Revision Date - April, 1982  
This information supersedes  
data submitted on November 23,  
1981.

The spent fuel pool water chemistry is maintained with filter demineralizers. There are two filter demineralizers for each fuel pool. The filter demineralizer is considered exhausted if any one of the following conditions are met:

- (1) Effluent conductivity equals influent conductivity at values above 1 umho/cm,
- (2) Effluent conductivity exceeds 1 umho/cm by a significant margin, or
- (3) Differential pressure reaches 25 psi.

When any of these conditions is met, the filter media is normally replaced or another filter is placed into service.

CP&L attempts to maintain the spent fuel pool (SFP) water quality such that it meets the demineralized water quality guidelines for the Condensate Storage Tank (CST) which are:

|                            |             |
|----------------------------|-------------|
| Conductivity:              | < 1 umho/cm |
| pH:                        | 5.5 - 8.5   |
| Chloride:                  | < 100 ppb   |
| Silica (SiO <sub>2</sub> ) | 50 ppb      |

The primary reason for a difference in water quality guidelines for the spent fuel pool and CST is that the spent fuel pool has a heat exchanger with a saltwater interface which could result in some intrusion. The demineralized water in the CST is not subject to direct intrusion because it is a closed system; therefore, its quality is more easily maintained.

The above practices and guidelines are expected to continue after completion of the spent fuel pool modifications in order to assure that spent fuel pool water quality is maintained within acceptable limits.

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