

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

January 19, 1978

Mr. James P. O'Reilly, Director  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
Region II - Suite 818  
230 Peachtree Street, Northwest  
Atlanta, Georgia 30303

Serial No. 507A/110477  
PO&M/DLB:das  
Docket Nos. 50-280  
50-281  
License Nos. DPR-32  
DPR-37

Dear Mr. O'Reilly:

This is in response to IE Bulletin 77-04, "Calculational Error Affecting the Design Performance of a System for Controlling pH of Containment Sump Following a LOCA". The bulletin discussed a design error at a station which utilizes baskets of trisodium phosphate dodecahydrate (TSP) for sump pH control.

Our Surry Power Station Unit Nos. 1 and 2 utilize the addition of NaOH to containment spray for iodine removal and sump pH control. The ultimate sump pH following a LOCA is dependent on the volume and boron concentration in the Boron Injection Tank, the Accumulators, the Reactor Coolant System and the Refueling Water Storage Tank and on the volume and NaOH concentration in the Chemical Addition Tank. Among the bases for the selection of these volumes and concentrations is a desired ultimate sump pH of 7.0 to 9.0. This range is considered acceptable based on the following criteria:


1. The lower bound of 7.0 is established to inhibit stress corrosion cracking of austenitic stainless steel components, as required by Standard Review Plan (SRP) 6.1.1 and Branch Technical Position MTEB-6-1.
2. The upper bound of 9.0 is established based on the following:
  - a. SRP 6.5.2 requires a minimum pH of 8.5 for the equilibrium sump pH to prevent a significant evolution of iodine.
  - b. Branch Technical Position MTEB-6-1 states that the higher the pH (7.0 to 9.5), the greater the assurance that no stress corrosion cracking will occur. The upper bound of 9.0 meets these criteria.

A conservative evaluation of the pH extremes of the sump water subsequent to a LOCA yields upper and lower pH values of 8.8 and 7.9 respectively for Surry Unit Nos. 1 and 2. The minimum sump pH is based on the maximum boron concentration and volume in the accumulators, boron injection tank, refueling water storage tank and the reactor coolant system combined with the minimum NaOH concentration and volume in the chemical addition tank. The maximum sump pH is based on the reverse extremes of volume and concentration.

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OR

It is concluded that the design limits for post LOCA sump pH of 7.0 to 9.0 are appropriate. Surry Unit Nos. 1 and 2 containment post LOCA sump pH is within these limits for all operating conditions.

Very truly yours,



C. M. Stallings  
Vice President - Power Supply  
and Production Operations