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Public Service Electric and Gas Company 80 Park Place Newark, N.J. 07101 Phone 201/430-7000

August 25, 1980

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. A. Schwencer, Acting Chief
Licensing Projects Branch 3
Division of Licensing

Gentlemen:

ADDITIONAL INFORMATION
CONTAINMENT SUMP PERFORMANCE
NO. 2 UNIT
SALEM NUCLEAR GENERATING STATION
DOCKET NO. 50-311

Public Service Electric and Gas hereby submits, in the enclosure to this letter, information concerning containment sump post-LOCA performance as requested in your letter of July 21, 1980.

Should you have any questions in this regard, do not hesitate to contact us.

Very truly yours,

R. L. Mittl
General Manager -
Licensing and Environment
Engineering and Construction

CC Mr. L. Norrholm
Salem Resident Inspection (w/o Attachment)

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ADDITIONAL INFORMATION
CONTAINMENT SUMP POST-LOCA PERFORMANCE
NO. 2 UNIT

SALEM NUCLEAR GENERATING STATION

Responses to NRC letter of July 21, 1980, concerning the containment sump are provided below:

1. There are existing operating and maintenance procedures for the Salem Generating Station which are designed to assure cleanliness within the containment. Administrative Procedure AP-21 provides for tool inventories and other maintenance aspects, while AP-25 covers general "housekeeping" and entry to the containment.

2. At the present time, the Salem Plant does not provide for inservice inspection of the sump components precisely as described in Regulatory Guide 1.82. However, Operating Department Surveillance Program SP(0)4.5.2(c) provides for visual inspections, both in general and in areas where work has been performed, to assure cleanliness. Program SP(0)4.5.(d2) covers visual inspection of the containment sump to assure no structural stress, corrosion, or debris, and this program is implemented at least once every 18 months, usually during the annual refueling outage.

3. The operator has the following instrumentation available to detect oscillations in the system flow rate and pressure, which could be indicative of pump distress (e.g., cavitation, air entrainment, etc.).

   Pump motor current draw, amperes (control board indication).

   Pump discharge pressure, psig (control board indication).

   Pump discharge pressure, psig (control board alarm on high pressure).

   Cool down recirculation flow from discharge of 11 and 12 RHR Heat Exchangers to 13 and 14 hot legs (control board indication).

   There is no instrumentation available to detect RHR pump vibration.

4. The scale model testing of the containment sump will provide for testing with the inlet screens blocked with a worst case blockage configuration covering 50% of the effective screen areas, in accordance with NRC requirements. In support of this blockage assumption:

   a. Thermal insulation within the containment is provided by a number of manufacturers. All insulation within the containment is designed to remain on the piping or equipment under postulated emergency conditions, so that insulation is not anticipated to come loose except possibly for a few portions that might be in the immediate vicinity of a pipe break or other incident. The primary loop insulation consists of metal mirrored insulation, which will not float well and is not likely to reach the containment sump. Insulation on lesser, non-primary system components may consist of other materials, but these are typically associated with small lines and/or lines with less energy, such that less material would be released should an incident occur.

   b. The containment sump is designed to minimize debris which might block the sump in a post-LOCA period. Shielding and other structures are designed to be permanent and withstand emergency conditions. etc. We have calculated that the Colemanite material used for inspection plugs around the reactor nozzles could be released during a LOCA. Assuming one reactor nozzle breaking and deploying the contents of a plug upward, and also making some assumptions as to containment water velocity and flow, it is theoretically possible that up to 16% of the RHR screen area could be plugged by the Colemanite if it was uniformally distributed and all of it reached the containment sump. However, there is extreme conservatism built into this, and it is not anticipated that anything approaching that figure would indeed reach the screens.

   c. In our judgment, there is sufficient flow path distance and horizontal area to allow for low fluid velocity and settling out of most debris before it reaches the containment sump.

      As noted earlier, metal mirrored insulation and other insulation materials could become debris if blown off as a result of a LOCA. However, we believe the density of this material, the energy

levels of the associated piping and equipment, and the distances from these installations to the containment sump precludes any substantial portion of insulation from reaching the sump and blocking it.

e. Loose insulation is not utilized in the containment.

Three copies of schematic drawings of the Post-LOCA water level and other information requested are attached to this response.

5. Three copies of large scale drawings of the containment structures, systems, and components at elevation are attached.

6. As noted earlier, the material Colemanite is utilized in reactor nozzle inspection plugs. Normally, lead bricks are used for portable shielding, and most shielding and other structures are designed to be permanent.