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the southern electric system

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J. T. Beckham, Jr.
Vice President and General Manager
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NED-84-500

September 27, 1984

U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region II - Suite 2900
101 Marietta Street, NW
Atlanta, Georgia 30303

REFERENCE:
RII: JPO
50-321/50-366
I&E Bulletin
84-03

ATTENTION: Mr. James P. O'Reilly

GENTLEMEN:

Pursuant to a letter from the Office of Inspection and Enforcement dated August 24, 1984, Georgia Power Company hereby provides the following response to I&E Bulletin 84-03, Refueling Cavity Water Seal. Plant Hatch Unit 2 was in the process of start-up at the time of receipt of the Bulletin. After consultation with the Plant Hatch NRC licensing project manager, it was determined that a response to the bulletin should be made before begining the refueling outage is scheduled to begin on or about September 29, 1984.

Gross seal failure:

Haddam Neck, the subject plant of the bulletin, used pneumatic seals for the refueling cavity seal. Plant Hatch uses two stainless steel bellows for each unit designed by Pathway. One of the seals is installed between the drywell and the reactor well, and the other is between the drywell and the reactor vessel. These bellows assemblies are permanently installed components with welded interfaces and do not require reinstallation each refueling operation. Misalignment of the type at Haddam Neck, therefore, is not possible.

The bellows itself is protected from damage by guard rings, and a leak detection system is installed to alarm on leakage. As a secondary seal, the bellows assembly employs a self-energized spring seal. This spring seal is designed to limit water leakage by yielding to make a tight fit to the backing plate when subjected to the hydrostatic pressure in the unlikely event of a bellows rupture.

The only pneumatic seals used at Plant Hatch in refueling operations are on the fuel pool gates and the expansion joint between Units 1 & 2 in the refueling canal. These seals are a part of the gates and their alignment is assured by the gates' seating tolerance. In the unlikely event of a seal or gate failure, leakage would be prevented by the

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redundant gates at both ends of the pool. Two gates are installed at the reactor vessel transfer canal and two gates at the Unit 1 shipping cask pool transfer canal. The expansion joint has redundant pneumatic seals on both Unit 1 and Unit 2 sides. In addition, there is another pneumatic seal in the expansion joint itself.

Maximum leakage rate due to failure of active components:

Due to the redundant pool gates and expansion joint seals it is not postulated that any significant leakage could occur. The refueling bellows assembly does not have any active components. Therefore, no calculations to determine maximum leakage rate have been performed.

Makeup capacity:

Makeup water can be provided by the condensate storage and transfer system, the demineralized water system, the Residual Heat Removal System, the Residual Heat Removal Service Water System, or the Plant Service Water System. The primary makeup source, the condensate storage and transfer system, can provide water from two 500,000 gallon storage tanks that are normally maintained at approximately 90% capacity or more. For this operation both 500 gpm pumps per unit can be run in parallel. The Plant Service Water System provides a seismic Category I source of makeup water to the spent fuel pools and takes suction directly from the Altamaha River. Maximum filling capacity from the Plant Service Water System to the spent fuel pools is approximately 350 gpm.

Potential effect on stored fuel and fuel in transfer:

For the worst case scenario of a complete bellows assembly failure with the spent fuel pool gates open, the lowest possible level to which the spent fuel pool can drain is 14 ft. 9 in. Below this level there are no outlets or drains from the pool. The active section of spent fuel stored in the pool will remain covered with water. As shown in the Hatch Unit 2 FSAR evaluation in Section 9.1.2.3.1, boiling of the remaining water in the spent fuel pool will not occur rapidly. Corrective actions, per procedures HNP-1/2-1949, HNP-1/2-2085, and HNP-1/2-2087, to be taken on low fuel pool level are:

1. reposition the gates over the canal entrance;

2. initiate makeup from condensate storage from the main control room;

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3. manually align the plant service water system in the reactor building to provide pool makeup; and

4. continue refilling the pool to normal water level.

The above scenario, however, is highly unlikely since it would require failure of both pressure boundaries of the bellows assembly. If the bellows fails, leakage will most likely be detected upon initial filling of the refueling cavity and prior to the fuel transfer operation. Additionally, due to the welded and backup seal designs, it will not be a catastrophic failure but a leak. This would permit the operator to secure fuel movement prior to uncovering fuel in transit. Therefore no analysis has been done to determine the effect on fuel in transfer. Any evaluation of uncovered fuel in transfer is essentially a new DBA and any consideration would require extensive generic evaluation not completed to date. It has been concluded that the effect on stored fuel has been evaluated in the Hatch Unit 2 FSAR and is of no consequence.

Time to cladding damage without operator action:

Cladding damage to fuel in the spent fuel pool will take in excess of 3.5 hours after the pool has drained to its lowest possible level. This is the time calculated for the minimum water level inventory to begin to boil and is reported in Hatch Unit 2 FSAR Section 9.1.2.3.1. This time period plus the time from initial boiling to cladding failure will allow for corrective actions to be taken.

Damage to fuel in the reactor vessel will not occur since it will never be uncovered, and since the shutdown cooling system will not be degraded by a bellows rupture.

Emergency operating procedures:

The emergency operating procedures (HNP-1/2-1949, HNP-1/2-2085, and HNP-1/2-2087) reflect the corrective actions discussed previously and listed in Unit 2 FSAR Section 9.1.2.3.1.

Based on the above, it is not considered credible to have a seal failure at Plant Hatch similar to that which occurred at Haddam Neck. Further, the consequences of such a postulated failure at either Unit will not result in any adverse effects on plant or public safety. Therefore, no corrective actions are required. If you have any further questions, please contact this office.

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J. T. Beckham, Jr. states that he is Vice President of Georgia Power Company and is authorized to execute this oath on behalf of Georgia Power Company, and that to the best of his knowledge and belief the facts set forth in this letter are true.

GEORGIA POWER COMPANY

By: J. T. Beckham, Jr.

Sworn to and subscribed before me this 27th day of September, 1984.

Notary Public, Georgia, State at Large
My Commission Expires Sept. 18, 1987

Notary Public

MJB

xc: H. C. Nix, Jr.
Senior Resident Inspector
Document Control Desk, Wash.