NED-84-500

September 19, 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 in Washington dated August 24, 1984, Georgia Power Company hereby provides the following response to I&E Bulletin 84-03, Refueling Cavity Water Seal. Unit 2 was in the process of start-up at the time of receipt of the Bulletin. After consultation with our licensing project manager at NRR, it was determined that our response should come before begining refueling on Unit 1. The Unit 1 outage is scheduled to begin approximately September 28, 1984.

Gross seal failure:

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

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 uses a self energized spring seal. This spring seal is designed to limit water leakage in the unlikely event of a bellows rupture by yielding to make a tight fit to the backing plate when subjected to the hydrostatic pressure.

The only pneumatic seals used at Hatch are on the fuel pool gates. These seals are a part of the gates and their alignment is assured by the gates' seating tolerance. In the unlikely event that a seal or gate would fail, leakage would be prevented by the redundant gates at both ends of the pool. Two gates are installed at the reactor vessel transfer canal and two gates at the shipping cask pool transfer canal.

Maximum leakage rate due to failure of active components:

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

FOIA-87-76
D/11

Makeup capacity:

Makeup water can be provided by the condensate storage and transfer system, the demineralized 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 can be run in parallel. The plant service water system provides a seismic Category I source of makeup water and takes suction directly from the Altamaha river. Maximum filling capacity from the plant service water system is approximately 350 gpm.

Potential effect on stored fuel and fuel in transfer:

For the worst case scenario of a complete bellows assembly failure and 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. Per the Hatch Unit 2 FSAR evaluation in Section 9.1.2.3.1 rapid boiling of the remaining water in the spent fuel pool will not occur. Corrective actions to be taken on low fuel pool level are:

1. reposition of the gates over the canal entrance
2. initiate makeup from condensate storage from the main control room
3. manually align the plant service water system in the reactor building to provide pool makeup
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 will permit the operator to secure fuel movement prior to uncovering fuel. Therefore no analysis has been done to determine the effect on fuel in transfer. Any evaluation of uncovered fuel in transfer is practically a new DBA and any effort would require extensive generic evaluation not completed todate. It has been concluded that any effect on stored fuel have been evaluated in the Hatch Unit 2 FSAR and are 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 is never uncovered and since the shutdown cooling system will not be degraded by a bellows rupture.

Emergency operating procedures:

The emergency operating procedures (HNP-1-2087, HNP-1-2085, HNP-2-2087, and HNP-2-2085) reflect the corrective actions discussed previously and listed in 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 the one that occurred at Haddam Neck. Also the consequences of such a postulated failure will not result in any adverse effects on plant or public safety for either Unit. Therefore, no corrective actions are required.

If you have any further questions, please contact this office.

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 19th day of September, 1984.

_____
Notary Public

MJB

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

Office:	Lic. Engr.	Sect. Mgr.	Mgr. & CNE	Legal	Plant G.M.
Surname:	Blackwood	Baker	Gucwa	Rosenberg	Nix
Signature					
Date	09/ /84	09/ /84	09/ /84	09/ /84	09/ /84

LETTER # 84-7119
MGMT FILE # A1/A
DIST. # A04.03
AIT #: NJ/A
RESP. MGR. CTJ/SPC3/SBT
MGMT: GM:DGM

IIN
H.C. NMX

Bechtel Power Corporation
Engineers — Constructors
15740 Shady Grove Road
Gaithersburg, Maryland 20877-1454
301 — 258-3000

September 18, 1984

Mr. L. T. Gucwa
Georgia Power Company
P.O. Box 4545
Atlanta, Georgia 30302

E. I. Hatch Nuclear Plant Units 1&2
Bechtel Job 6511-057 - R612BR
IE BULLETIN 84-03 RESPONSE
File: A29.3/A3.4 (84-03)/B-GP-12762

Dear Mr. Gucwa:

In response to letter NED-84-469 dated August 29, 1984 we offer the following information relative to I.E. Bulletin No. 84-3. This I.E. Bulletin is concerned with gross leakage of the water inventory in the refueling cavity and the spent fuel pool during refueling operations as a result of cavity seal failure.

GROSS SEAL FAILURE

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

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 uses a self energizing spring seal. This spring seal is designed to limit water leakage in the unlikely event of a bellows rupture by yielding to make a tight fit to the backing plate when subjected to the hydrostatic pressure.

The only pneumatic seals used at Hatch in refueling operations are on the fuel pool gates and at the expansion joint between Units 1 and 2. The gate seals are a part of the gates and their alignment is assured by the gates seating tolerance. In the unlikely event that a seal or gate would fail, leakage would be prevented by the redundant gates at both ends of the pool. Two gates are installed at the reactor vessel transfer canal and two gates at the shipping cask pool transfer canal. The expansion joint has permanently installed redundant pneumatic seals on both the Unit 1 and Unit 2 sides. In addition there is a pneumatic seal in the expansion joint.

FOIA-87-76
D/10

MAXIMUM LEAKAGE RATE DUE TO FAILURE OF ACTIVE COMPONENTS

Due to the redundant pool gates and expansion joint seals it is not assumed 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 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 can be run in parallel. The Plant Service Water System provides a seismic Category I source of makeup water and takes suction directly from the Altamaha River. Maximum filling capacity of the Plant Service Water System is approximately 350 gpm.

POTENTIAL EFFECT ON STORED FUEL AND FUEL IN TRANSFER

For the worst case scenario of a complete bellows assembly failure and 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. Per the Hatch Unit 2 FSAR evaluation in Section 9.1.2.3.1 rapid boiling of the remaining water in the spent fuel pool will not occur. Corrective actions to be taken on low fuel pool level are:

1. reposition of the gates over the canal entrance

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

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

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 will permit the operator to secure fuel movement prior to fuel becoming uncovered. Therefore, no analysis has been done to determine the effect on fuel in transfer. Any evaluation of uncovered fuel in transfer is practically a new DBA and any effort would require extensive generic evaluation not completed todate. It has been concluded that any effects on stored fuel have been evaluated in the Hatch Unit 2 FSAR and are 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 is never uncovered and since the shutdown cooling system will not be degraded by a bellows rupture.

EMERGENCY OPERATING PROCEDURES

The emergency operating procedures (HNP-1-2087, HNP-1-2085, HNP-2-2087, and HNP-2-2085) reflect the corrective actions discussed previously and listed in 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 the one that occurred at Haddam Neck. Also the consequences of such a postulated failure will not result in any adverse effects on plant or public safety. Therefore, no corrective actions are required.

If you have any questions, please advise.

Very truly yours,
Original signed by
C. E. Feltman SEP 2 1 1984

Gaffour A. Kosi
Project Engineer

GAK:KLK:DED:KRL:mmf
cc: Southern Company Services, Inc.
W. F. Garner
L. B. Long

Georgia Power Company (Atl)
J. R. Jordan

Georgia Power Company (HNP)
H. C. Nix, Jr.
Manager of Reg. Compl.
Superintendent of Plant Engineering & Services

bcc: M. Donahue

MECH1

Interoffice Correspondence

Georgia Power

Date: March 21, 1985
SRC 85-42

Re:
Plant E. I. Hatch
Response to IEN 84-93

From: S. B. Tipps

To: C. T. Jones

1. Summary of Root document's subject(s):

IEN 84-93 concerns potential loss of water from the refueling cavity. The Haddam Neck Plant experienced a failure of the pneumatic seal of the refueling cavity water seal. This failure drained the cavity in about 20 minutes. The primary concerns are failure of pneumatic (inflatable) seals.

2. Description of Plant Hatch equipment/activities as related to root document subject(s):

Plant Hatch does have pneumatic seals in the Unit 1 to Unit 2 Fuel Transfer Canal, in the spent Fuel Storage Pool to Reactor Well Gates and in the Dryer/Separator Storage Pool to Reactor Well Gate. The Drywell to Reactor Well Bellows and Refueling Bellows are both flexible metal bellows with no pneumatic seals.

3. Why this is/is not a problem at Plant Hatch:

The potential exists for a seal/bellows assembly failure with a subsequent loss of water from the refueling cavity. Level switches which will detect and annunciate increased leakage, indicative of seal/bellows failure, are presently installed. Appropriate NOP and ARP procedures are in place (HNP-1,2-1949, HNP-1,2-2085 and HNP-1,2-2087) to provide for water restoration.

4. Description of actions that have been taken or will be taken:

None required.

5. Schedule for completion of any actions required but not completed at time of response:

None required.

FOI-87-76

D/14

Please contact E. M Burkett at extension 2468 if you have any further questions.

Steve B. Tipps

S. B. Tipps
Superintendent of
Regulatory Compliance

SBT/SPES/CRG/vlz

xc: Site QA Manager
Secretary Nonlicensed Training Committee
Senior Shift Technical Advisor
C. R. Goodman
Document Control (IEN 84-93)
File