VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

W. L. STEWART
VICE PRESIDENT
NUCLEAR OPERATIONS

October 9, 1984

Mr. James P. O'Reilly
Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 2900
Atlanta, Georgia 30323

Serial No. 591
NO/HLM/dn
Docket Nos: 50-280
50-281
License No: DPR-32
DPR-37

Dear Mr. O'Reilly:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNIT NOS. 1 AND 2
RESPONSE TO I.E. BULLETIN 84-03

We have reviewed I. E. Bulletin 84-03, "Refueling Cavity Water Seal", dated August 24, 1984. An evaluation of the potential for and the consequences of a refueling cavity water seal failure is provided in the attachment. Based on the evaluation and the design differences between the seals at Surry and the failed seals at Haddam Neck, we believe that the refueling cavity water seal being used at Surry is adequate.

The information contained in the attachment is true and accurate to the best of my knowledge and belief. Should you have any further questions, please contact us.

Very truly yours,

W. L. Stewart

Attachment

IE11 1/1

cc: U. S. Nuclear Regulatory Commission
Attn: Document Control Desk (2)
Washington, D. C. 20555

Mr. James R. Miller, Chief
Operating Reactors Branch No. 3
Division of Licensing

Mr. D. J. Burke
NRC Resident Inspector
Surry Power Station

SURRY POWER STATION
RESPONSE TO IEB 84-03
REFUELING CAVITY WATER SEAL

NRC QUESTION:

Action to be Taken By Plants Prior to Beginning Refueling Or Within 90 days Of Receipt Of This Bulletin, Whichever Is Sooner:

Evaluate the potential for and consequences of a refueling cavity water seal failure and provide a summary report of these actions.

Such evaluations should include consideration of: gross seal failure; maximum leak rate due to failure of active components such as inflated seals; makeup capacity; time to cladding damage without operator action; potential effect on stored fuel and fuel in transfer; and emergency operating procedures.

RESPONSE:

Status-Surry Unit 1 is currently in a refueling outage with refueling cavity fill scheduled for October 13, 1984 and fuel movement shortly thereafter. Surry Unit 2 is scheduled for refueling in May of 1985.

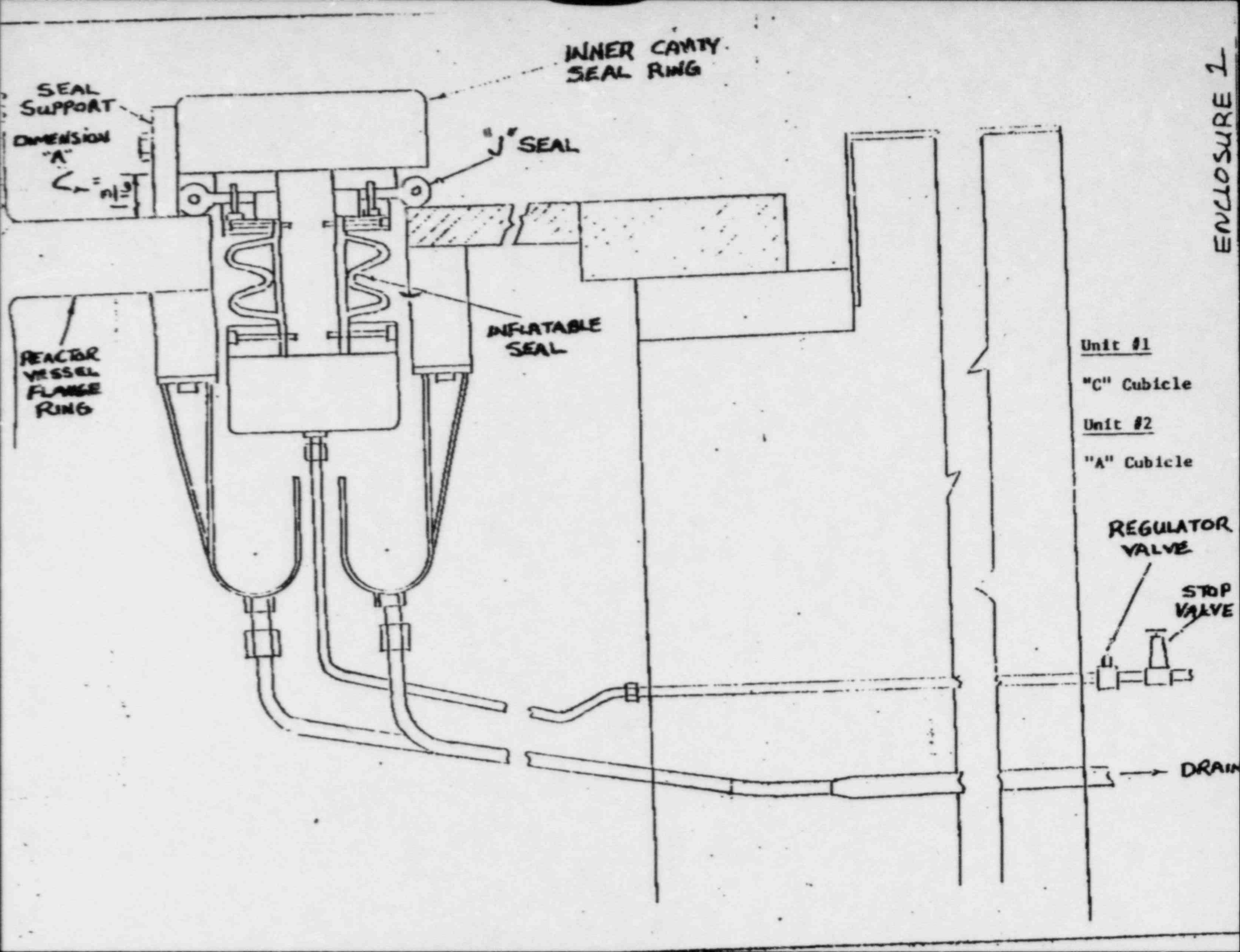
Seal Description-The reactor cavity seal for both Surry Units is a straddle ring design which consists of a ring permanently bolted to the reactor cavity liner and a removable redundant seal between the reactor vessel flange and the straddle ring (See enclosure 1). There are two 18 inch hatch openings in the straddle ring which are sealed by a machined surfaced and secured by 16 equally spaced bolts. The removable seal which is used during refuelings consists of a pressurized seal and a redundant passive seal. The pressurized seal uses inflatable gaskets (EPDM Material) to provide a watertight seal between the reactor vessel flange and the straddle ring. A regulated air supply is used to inflate this seal. The redundant passive seal ("J-Seal") seals with water pressure and by compression. Should the pressurized seal deflate, the passive sealing design will preclude failure and leakage. Procedures require a drop test of the pressurized seal and a physical

inspection of the passive "J-Seal" prior to each use of the removable seal assembly.

Consequences-At least one path of makeup is available to the reactor cavity at all times during refueling. Should the pressurized seal fail due to overinflation, loss of air or other means, any of the available make-up paths (e.g. charging/HHSI pumps (600 gpm), LHSI pumps (3200 gpm), or RWST recirculation pumps (600 gpm)) could be used, if required, to maintain water level while the passive "J-Seal" precludes leakage. Although a catastrophic failure is not credible because of the design, should such a failure occur, the elevation of the spent fuel transfer system would prevent a fuel assembly in the transfer system from being uncovered. In addition, a barrier in the spent fuel storage pool precludes the draining of the pool's water through the transfer system to less than 13 inches above the fuel racks.

Conclusion-A complete failure of the reactor cavity seal ring assembly is not a credible accident at Surry because of the design and redundancy of the refueling cavity seal. As a result of this I. E. Bulletin, the abnormal procedure applicable to fuel transfer has been modified and approved to further amplify necessary corrective actions to be taken on a decreasing refueling cavity water level.

ENCLOSURE 1


INNER CAVITY SEAL RING
SEAL SUPPORT
DIMENSION "A"
"J" SEAL
INFLATABLE SEAL
REACTOR VESSEL FLANGE RING
Unit #1
"C" Cubicle
Unit #2
"A" Cubicle
REGULATOR VALVE
STOP VALVE
DRAIN