PHILADELPHIA ELECTRIC COMPANY

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SHIELDS L. DALTROFF
VICE PRESIDENT
ELECTRIC PRODUCTION

September 17, 1984

Docket Nos. 50-277
50-278

Dr. Thomas E. Murley
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

SUBJECT: I.E. Bulletin 84-03 - Refueling Cavity Water Seal

Dear Dr. Murley:

The subject I.E. Bulletin requires licensees to evaluate the potential for and consequences of a refueling cavity water seal failure and provide a summary report of these actions by August 31, 1984, for plants currently in refueling outages.

Below is Philadelphia Electric Company's response for Peach Bottom Units 2 and 3. Unit 2 is currently in a refueling outage, with the next Unit 3 refueling outage scheduled for the Spring of 1985.

Late submission of this report, due to receipt of the Bulletin by the responsible staff within Philadelphia Electric Company on September 5, 1984, was discussed by R. H. Logue, Superintendent, Nuclear Services Section, with Jane Grant of the NRC Region I Staff. The NRC site inspector discussed the Peach Bottom drywell and refueling bellows seals with members of the Technical Staff.

The results of our evaluation are as stated below:

Peach Bottom does not utilize pneumatic seals in the refueling cavity seal design. Stainless steel bellows (per ASTM-A240) are used for both the refueling and drywell seals.

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Attachment 1 shows the arrangement of the refueling and drywell bellows.

The refueling bellows seal prevents water from entering the primary containment when the reactor cavity is flooded for refueling operations. The drywell bellows seal prevents water from entering the Reactor Building under the same conditions. Both the refueling and drywell bellows seals have a vertical orientation with a guard ring plate to protect them from work activities taking place during refueling. The refueling bellows seal is 3'-6" long, including connecting plates at each end. The drywell bellows seal is 1'-8 1/2" long, including connecting plates at each end. The thickness of the bellows is approximately 1/2 inch for the straight portion and 50 mils for the radial parts at each end.

A self-energizing spring seal, as shown in Attachment 2, is installed on the refueling bellows seal as a secondary seal in the event of a bellows seal rupture. If the bellows seal leakage rate is greater than can be drained by its 1 1/2 inch drain line, the spring seal will yield to make contact with the backing plate and prevent any significant leakage from entering primary containment.

There is no secondary seal for the drywell bellows seal; however, it is protected with the guard ring as mentioned above. If a leak in the drywell bellows seal occurs, 8-inch seal rupture drain piping would direct the water to a waste collector tank located in the Radwaste Building. An overflow of water into the Reactor Building is precluded because the 8-inch drain piping is of sufficient capacity to contain any credible leak.

Monitoring devices are located at each of the bellows for leak detection. Bellows seal leakage is alarmed locally and via a trouble alarm in the main control room. The alarms are initiated at a leak rate of one gallon per minute from the refueling bellows seal and at a leak rate of ten gallons per minute from the drywell bellows seal.

Based on the above discussion, we believe that a gross failure of the refueling cavity water seals, as described in I.E. Bulletin 84-03, is very unlikely to occur at Peach Bottom. If the refueling bellows seal developed a leak, the backup spring seal would automatically preclude loss of water inventory to the drywell. If the drywell bellows seal leaks, the seal rupture drain line would carry the water directly to the Radwaste Building tanks. The leak rate, due to a postulated leak of the stainless steel drywell bellows seal, can be made up from normal

condensate tank makeup to the fuel pool. Also, the possibility that fuel could be uncovered in the spent fuel pool is eliminated because the design of the fuel pool provides for water coverage over the top of active fuel upon loss of water inventory. If fuel were actually being transferred at the time of a bellows seal leak, there would be sufficient time for the fuel to be returned to either the Reactor Pressure Vessel or its storage location at the bottom of the Spent Fuel Pool before it would become uncovered.

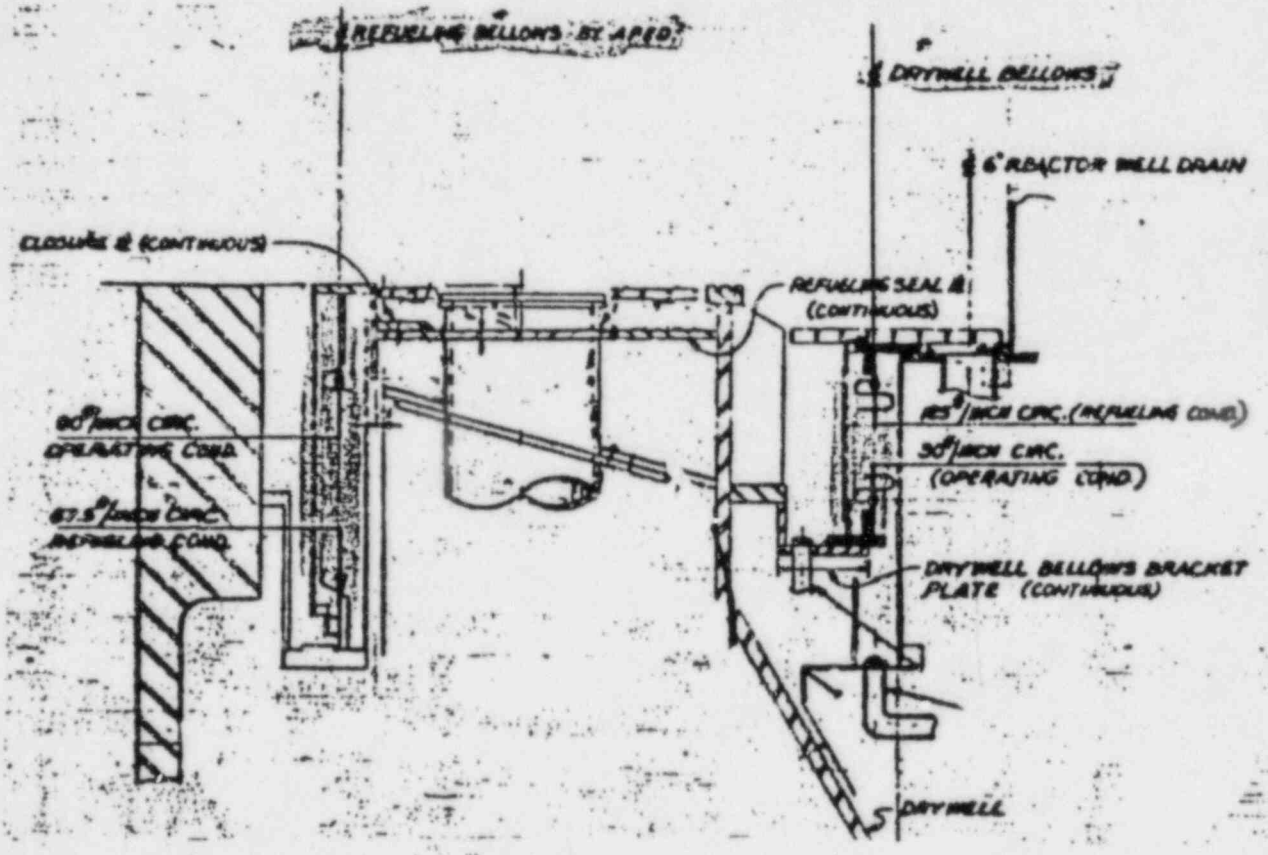
If you have any questions or require further information, please do not hesitate to contact us.

Very truly yours,

Attachments

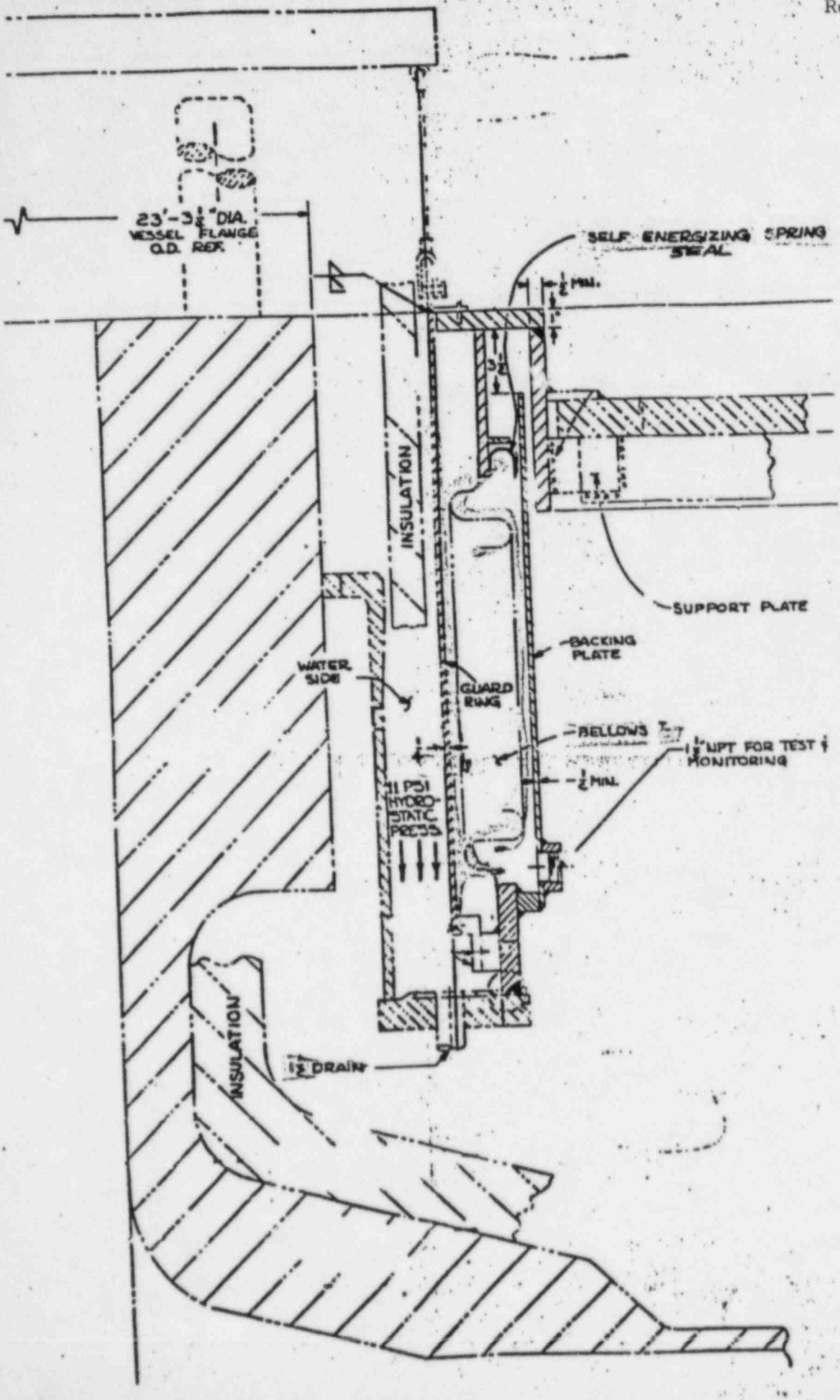
cc: A. R. Blough
NRC Document Control Desk

Attachment 1
General Arrangement
of Refueling and
Drywell Bellows



Attachment 2

Refueling Bellows



COMMONWEALTH OF PENNSYLVANIA :
: ss.
COUNTY OF PHILADELPHIA :

S. L. Daltroff, being first duly sworn, deposes and says:

That he is Vice President of Philadelphia Electric Company, the Applicant herein; that he has read the foregoing response to I.E. Bulletin 84-03 and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.

S. L. Daltroff

Subscribed and sworn to
before me this 14th day
of Sept., 1984

Patricia A. Jones
Notary Public

PATRICIA A. JONES
Notary Public, Phila., Phila. Co.
My Commission Expires Oct. 13, 1986