

USNRC REGION II
ATLANTA, GEORGIA



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October 3, 1984
L-84-267

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

Dear Mr. O'Reilly:

Re: St. Lucie Unit No. 2
Docket No. 50-389
IE Bulletin 84-03

Attached is Florida Power & Light Company's response to IE Bulletin 84-03 for St. Lucie Unit 2.

Very truly yours,

J. W. Williams, Jr,
Group Vice President
Nuclear Energy

JWW/RJS/cab

Attachment

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ATTACHMENT

Re: St. Lucie Unit 2
Docket No. 50-389
IE Bulletin 84-03

Response to IE Bulletin 84-03

"Refueling Cavity Water Seal"

The reactor cavity is an annular gap between the reactor vessel flange, radius 9'-1" and the primary shield wall concrete, radius 11'-0". During refueling, a box section toroid, the cavity seal ring, inside diameter 18'-4", outside diameter 21'-10" is placed in the reactor cavity leaving two - one inch wide annular slots with centerline diameters of 18'-3" and 21'-11". The cavity seal ring rests on six 16 WF 36 beams imbedded in the primary shield wall at 60° intervals. Reactor cavity details are shown in Figure 1.

The two annular slots are filled with specially designed wedge shaped inflatable seals, Seal Master type P-25, during refueling to assure that a positive water seal is maintained. The seal cross section is shown in Figure 2. The top of the seals are fastened at 10° intervals to a one-inch thick seal plate which spans the entire cavity. The seals are attached to the seal plate by bolts that extend through the seal plate into a female threaded fitting embedded in the rubber seal. The seal plate bolts to the reactor vessel flange and an embedment ring on the primary shield wall stabilizing the seals and holding the entire assembly in place.

The cavity seal ring, seals, and seal plate are attached through the lifting assembly to allow the entire assembly to be installed or removed with one lift. See Figure 3 for a sketch of the entire assembly.

The design of the St. Lucie reactor cavity seal ring provides a double seal against leakage. The primary seal is created by the seal plate forcing the wedge portion of each seal into the annular gaps. The inner seal wedges between the reactor vessel flange and the inner ring plate on the cavity seal ring. The outer seal wedges between the outer ring plate on the cavity seal ring and the embedment ring on the primary shield wall. After the seals have been installed and the seal plate has been fastened in place and torqued, the seals are inflated. The balloon portion of the seals expands against the sides of each annular gap, to provide a secondary seal for each gap.

Because of the primary seal, loss of air to the seal will not result in water leakage around the seal nor contribute to failure of the sealing system.

FPL has analyzed the potential for gross seal failure as occurred at the Haddam Neck Plant on August 21, 1984, and has concluded that gross seal failure is not a credible event at St. Lucie. The loads on the seal caused by inflation and water pressure from refueling pool head were determined and compared to the maximum allowable load on the seal to seal plate fasteners. The result showed that the seal will remain fastened to the seal plate, and therefore gross seal failure is not a consideration at St. Lucie. The detailed calculations of consequences as requested by the Bulletin have therefore, not been addressed.

FIGURE 1 - REACTOR CAVITY DETAILS

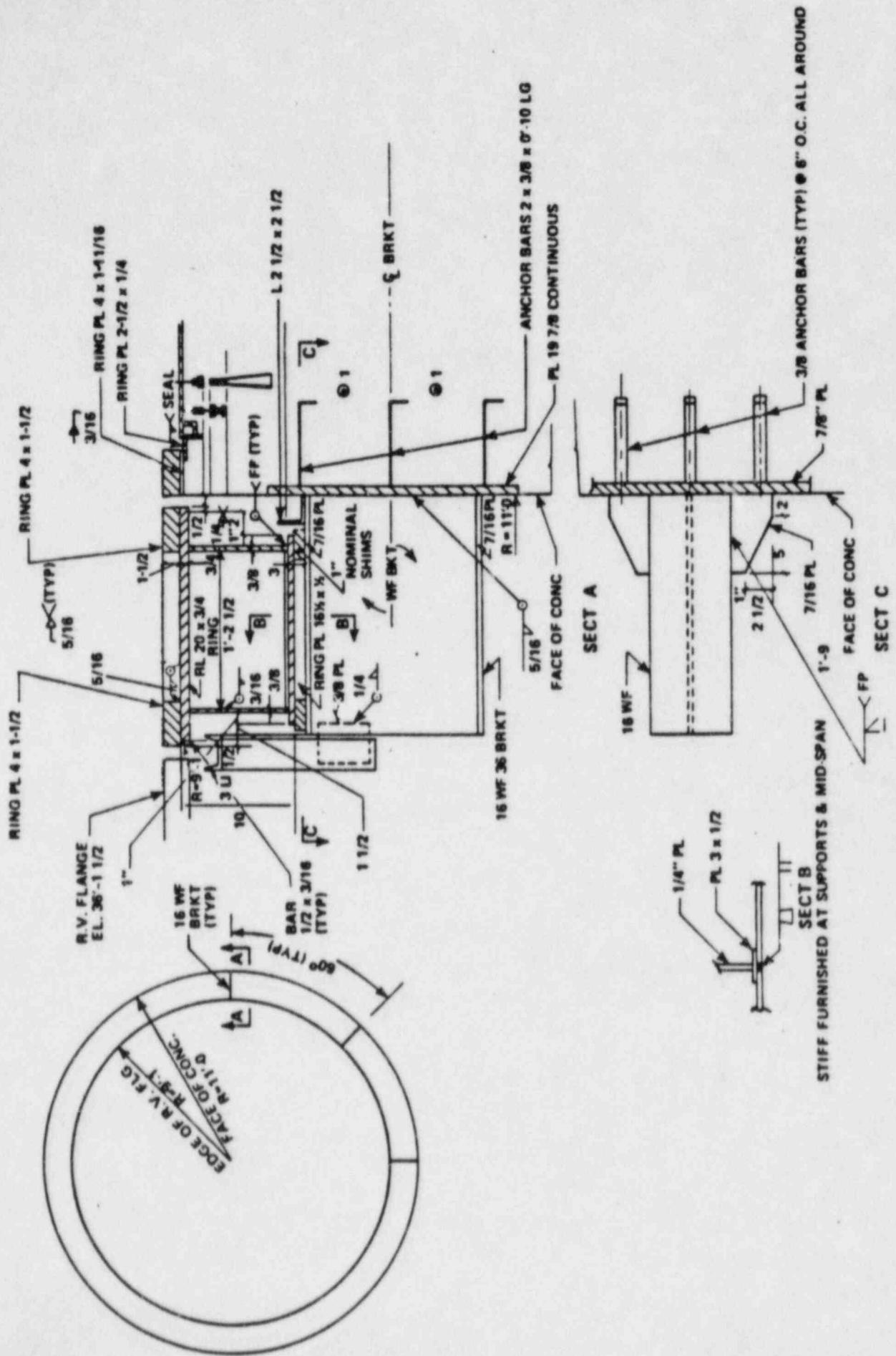
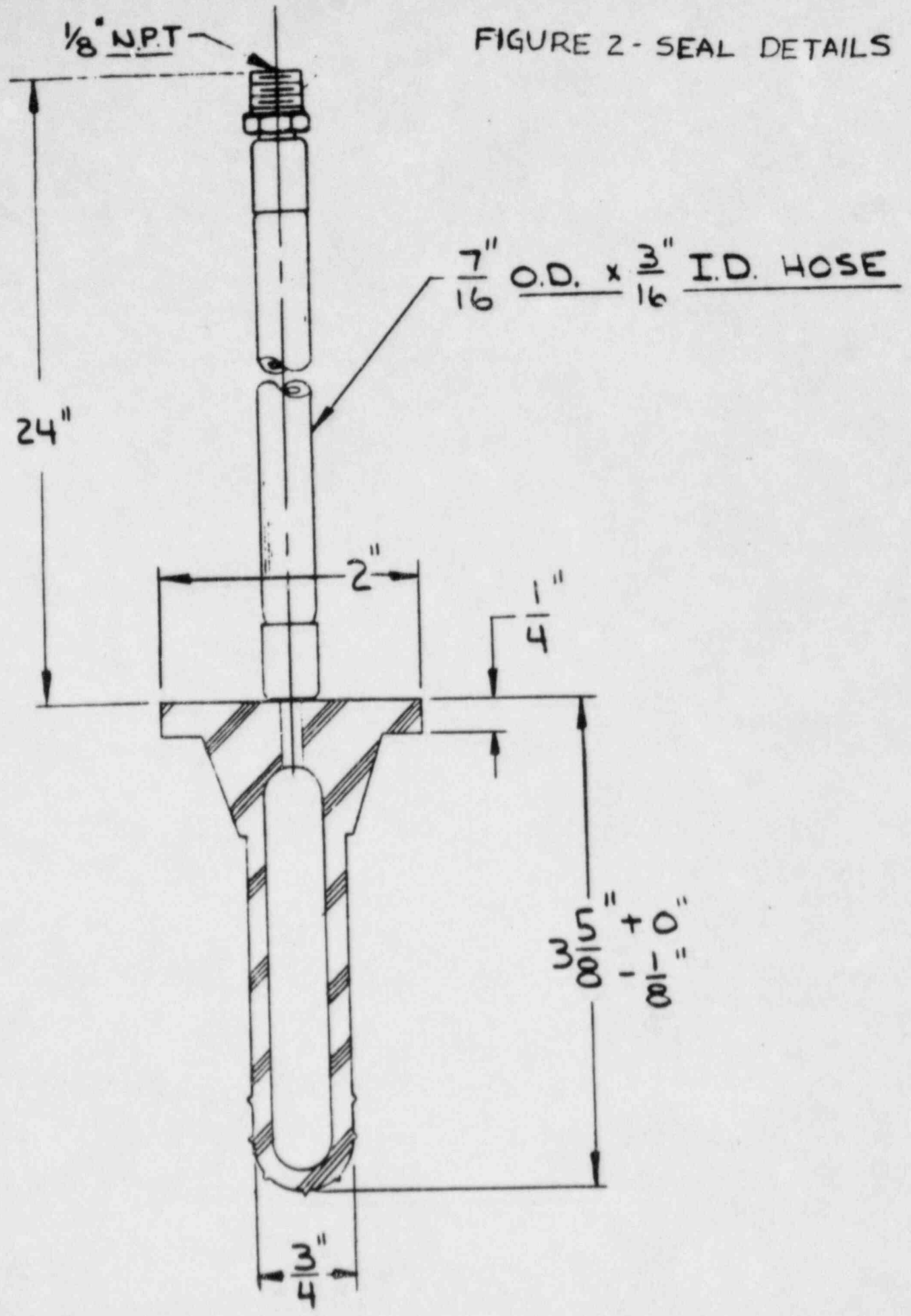


FIGURE 2 - SEAL DETAILS

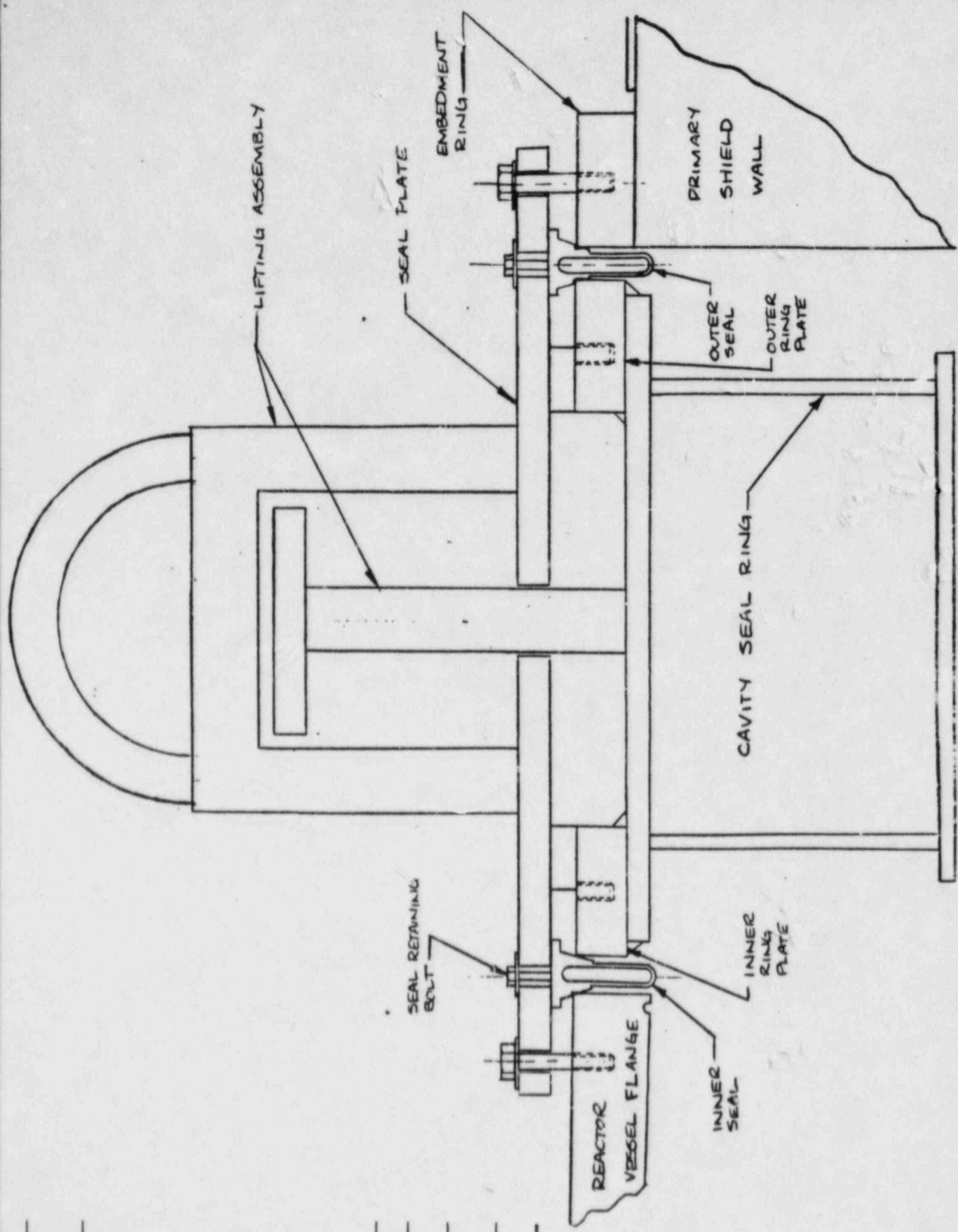


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FIGURE 3 - REACTOR CAVITY SEAL RING ASSEMBLY

DIVISION ENGINEER

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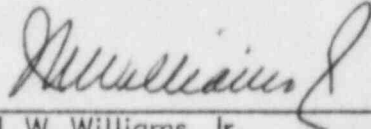
FLORIDA POWER & LIGHT COMPANY
 DATE _____
 SCALE _____

STATE OF FLORIDA)
) ss.
COUNTY OF DADE)

J. W. Williams, Jr. being first duly sworn, deposes and says:

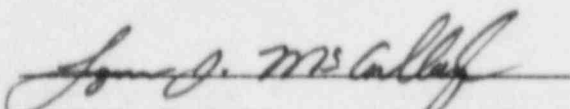
That he is a Group Vice President of Florida Power & Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information, and belief, and that he is authorized to execute the document on behalf of said Licensee.



J. W. Williams, Jr.

Subscribed and sworn to before me this
3 day of OCTOBER, 1984.



NOTARY PUBLIC, in and for the County
of Dade, State of Florida

NOTARY PUBLIC STATE OF FLORIDA
MY COMMISSION EXP. FEB. 14, 1988
BONDED THRU GENERAL INS. UND.

My Commission expires: 2/14/88