

Florida Power

CORPORATION
Crystal River Unit 3
Docket No. 50-302

March 10, 1993
3F0393-04

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

Subject: Reactor Vessel Cavity Seal Plate

References: 1. FPC to NRC letter, dated May 18, 1990 (3F0590-10)
2. NRC to FPC letter, dated February 2, 1978 (3N0278-02)
3. FPC to NRC letter, dated June 6, 1979 (3F0679-02)
4. NRC to FPC letter, dated May 23, 1986 (3N0586-30)

Dear Sir:

Florida Power Corporation (FPC) is submitting this letter to advise the NRC that FPC is changing its commitment described in Reference 1 regarding the storage location of the reactor cavity annulus seal ring. In an effort to minimize personnel exposure and decrease the potential for leakage into the reactor vessel cavity, FPC has designed a new seal plate which will be permanently installed by welding it to the existing canal shield plate and the RV ledge. Our plans are to have the new seal plate in place following startup from the Mid-Cycle 9 outage. As discussed with the NRC Staff several weeks ago, this modification is being installed by FPC under the provisions of 10 CFR 50.59. The letter provides a background about the existing seal ring and briefly describes the new seal plate.

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GENERAL OFFICE: 3201 Thirty-fourth Street South • P.O. Box 14042 • St. Petersburg, Florida 33733 • (813) 866-5151

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ADD 1

BACKGROUND

The bottom of the refueling canal surrounds the upper part of the reactor vessel in the vicinity of the RV head flange at Crystal River Unit 3. During operation, a gap exists between the RV and the refueling canal. This gap allows ventilation air in the reactor vessel cavity to escape, thereby cooling the concrete and instrumentation. During refueling operations, it is necessary to seal this gap to prevent leakage of the canal water into the RV cavity. The hardware used to close this gap is a removable circular reactor cavity annulus seal ring made of stainless steel plate with rubber gaskets attached.

Reference 2 is an NRC letter about potential missiles from the reactor cavity annulus seal ring and biological shielding. FPC responded in Reference 3 to the NRC letter by committing to store the reactor cavity annulus seal ring on the floor of the 160 ft elevation of the reactor building during plant operations. FPC stated the seal ring would remain stored on the floor until a design could be finalized which would permit it to be stored in the vicinity of the RV cavity. The seal ring remained stored on the 160 ft elevation until 1990 when FPC completed the required analysis which determined that a storage location just above the RV flange was acceptable. Reference 1 advised the NRC that the seal ring would be stored just above the RV flange during power operations.

FPC evaluated this storage position just above the RV flange to assure sufficient ventilation air flowed from the RV cavity to cool the concrete and instrumentation. The location was also evaluated as a potential missile due to a loss-of-coolant accident (LOCA) that could pressurize the RV cavity. A core flood line break was used as the initiating LOCA to evaluate the missile potential of the seal plate. By applying leak before break (LBB) methodology to larger reactor coolant piping, the postulated core flood line break was selected as the initiating event for evaluating seal integrity. FPC has used the LBB methodology before for the redesign of the CR-3 reactor coolant pump supports (Amendment No. 89 to the CR-3 Operating License [Reference 4]).

NEW SEAL PLATE

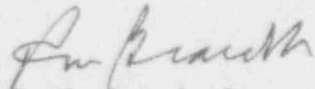
FPC is also applying LBB methodology in the design of the new seal plate which will be located in the same area as the old seal ring around the reactor vessel. The seal plate will be installed by welding it to the existing shield plate and the RV ledge. The attached sketch shows the configuration of the new permanent seal plate. The eight 12" x 18" holes in the seal plate provide a pathway for ventilation air to pass out of the reactor vessel cavity. These holes also afford a pressure relief path for a LOCA created by a double-ended guillotine rupture of a core flood line.

Before the refueling canal is flooded, covers will be installed on each of the 12" x 18" ventilation holes. The covers contain a seal material that will prevent leakage from the canal to the reactor cavity. After the refueling canal is drained, these covers will be removed. The seal plate is being designed to

allow portions of it to be removed and replaced to provide access to the reactor cavity or reactor vessel nozzles for inspection purposes.

FPC expects the new seal plate to improve FPC's personnel radiation exposure rates long-term by reducing the time and the number of personnel in the reactor building. We also expect to decrease our outage times by cutting the time it takes to establish a good seal and restore the reactor vessel cavity to its normal operating condition.

Sincerely,



P. M. Beard, Jr.
Senior Vice President
Nuclear Operations

PMB/JWT

xc: Regional Administrator, Region II
Senior Resident Inspector
NRR Project Manager

