Florida Power
CORPORATION

February 1, 1985
3F0285-01

Director of Nuclear Reactor Regulation
Attention: Mr. John F. Stolz, Chief
Operating Reactors Branch #4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Crystal River Unit 3
Docket No. 50-302
Operating License No. DPR-72
REQUEST FOR DEFERRAL IN INSTALLATION OF
REACTOR VESSEL HEAD LEVEL TREND SYSTEM
FOR INADEQUATE COOLING (ICC)

References: (1) NRC letter to FPC, Eisenhut to Hancock, December 10, 1982
(2) FPC letter to NRC, Westafer to Director, NRR, October 22, 1984

Dear Sir:

By Reference 1, the Nuclear Regulatory Commission (NRC) issued a Confirmatory Order for the Florida Power Corporation (FPC) to install a water level trend measurement system. The Order was intended to increase the margin of safety for restoring coolant coverage of the core following a postulated Inadequate Core Cooling (ICC) event. In accordance with the Confirmatory Order, Section III, FPC hereby requests a schedular extension for installation of one of the differential pressure systems intended to detect trends in water level.

The current FPC design to comply with the Order is based on two level trending systems which measure differential pressure between two elevations:

System A - between the bottom of the hot legs to the top of the hot legs;

System B - between the bottom of the hot legs to the top of the reactor vessel head.

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System A is intended to detect a trend in water level in the hot leg. System B is intended to detect a trend in water level in the reactor vessel head. It should be noted that the accuracy of each of these level trend measurements increases as flow rate decreases and therefore neither system is operable when reactor coolant pumps (RCP's) are operating. Pump power transducers are used during RCP operation to detect RC system voids.

The results of Once Through Integral System (OTIS) tests performed in April and May of 1984 (Reference 2) have led FPC to a re-examination of the ICC water level trending systems. Our conclusion is that System B is not necessary. Reasons for this conclusion are:

1) ICC procedures require opening of the hot leg high point vents based on indications that the fuel clad temperature has reached 1400°F. These indications are based on system pressure and core exit thermocouple readings. Below 1400°F clad temperature, no significant non-condensables would be formed by clad-water reactions. Opening the vents at 1400°F assures that any gasses formed above 1400°F would be vented from the hot leg since the vents remain open until forced cooling is restored. With hot leg gasses removed, natural circulation cooling can be established.

2) ICC procedures limit the rate of depressurization of the reactor coolant system to that permitted by venting through the pressurizer high point vent when natural circulation is used for core cooling. This limitation assures that expansion of any bubble from the reactor vessel head region into the hot legs will occur at a rate which can be vented via the hot legs through the high point vents without interruption of natural circulation cooling.

3) As observed in the 1984 OTIS tests for FPC and the Sacramento Municipal Utilities District (Reference 2), presence of a gas bubble in the OTIS vessel head region did not interfere with cooling of the core following a simulated ICC event. This was demonstrated for both natural circulation cooling and the feed/bleed cooling option.

4) Based on the ICC procedures and the OTIS test results, the presence of a complete void in the CR-3 reactor vessel head above the hot legs would have no adverse influence on the ability to cool the core. Therefore, a differential pressure water level trend indicator is not essential to assure core cooling and provides no information to the operator which is essential to accomplishing the required tasks.

5) Any postulated operator action which might be specified in reaction to System B indications would already have been taken based on existing instrumentation which is more reliable. These responses which would have provided earlier core cooling protection are based on loss of subcooling margin as detected by the core exit thermocouples.

6) The lack of accuracy associated with System B is a potential source of confusion to operators.

The reasons cited above support our conclusion that there is no net safety benefit or increased core cooling protection provided from the installation of System B. In addition, there would also be associated negative safety effects and expense which would be required to provide for System B if the current design is implemented:

- The central control rod would be removed and not replaced reducing available shutdown margin.

- High pressure piping would be installed to the vessel head to provide access for an instrument probe pressure tap. Added structure would be required to support the piping and to provide for whip and impingement restraints.

- Assembly and disassembly of the added structure would be required each time the reactor vessel head is removed. Such work would always be performed in a radiation area, increasing the radiation exposure to workers.

- The probability exists for increased reactor downtime since the added piping and associated connections and seals increase the probability of primary system leakage and repair.

Consideration of all of the adverse factors cited above, along with no identifiable net benefit to reactor safety, has convinced FPC that System B should not be installed.

In many respects, the reasoning of FPC parallels that of the NRC as evident in the proposed Backfitting Rule which would not require backfitting if a systematic and documented analysis of the relevant and material factors does not indicate any increase in the overall protection of the public health and safety or the common defense and security. Such analysis includes consideration of:

- No potential reduction in the risk to the public from the accidental off-site release of radioactive material.

- Potential impact on radiologic exposure of facility employees.

- Installation and continuing costs associated with the backfit.

Refuel VI is currently scheduled for the Fall of 1986. Refuel V is scheduled to begin in March 1985. Under current planning, the alterations for the trending systems which began in Refuel IV will be completed during Refuel V.

FPC requests NRC concurrence for completing only the installation of the hot leg level trending portion, System A, during Refuel V. Deferral of the head level portion, System B, will provide additional time for dialogue with NRC regarding its real value and does not preclude its installation (if required) during Refuel VI, scheduled for the Fall of 1986.

NRC's concurrence is needed by March 15, 1985, to allow for completion of our installation planning efforts for Refuel V.

Pursuant to 10 CFR 170, a submittal fee of $150 is attached. Should you have any questions, please contact this office.

Sincerely,

G. R. Westafer

G. R. Westafer
Manager, Nuclear Operations
Licensing and Fuel Management

EHD/feb

STATE OF FLORIDA

COUNTY OF PINELLAS

G. R. Westafer states that he is the Manager, Nuclear Operations Licensing and Fuel Management for Florida Power Corporation; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission the information attached hereto; and that all such statements made and matters set forth therein are true and correct to the best of his knowledge, information, and belief.

G. R. Westafer
Manager, Nuclear Operations
Licensing and Fuel Management

Subscribed and sworn to before me, a Notary Public in and for the State and County above named, this 1st day of February, 1985.

Notary Public

Notary Public, State of Florida at Large,

My Commission Expires: November 19, 1986