Florida Power
CORPORATION

January 25, 1990
3F0190-03

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

Subject: Crystal River Unit 3
Docket No. 50-302
Operating License No. DPR-72
Response to NRC Bulletin No. 89-03

Dear Sir:

Florida Power Corporation (FPC) hereby provides the attached response to NRC Bulletin No. 89-03 "Potential Loss of Required Shutdown Margin During Refueling Operations." FPC proposed actions contained herein, with the exception of future operator training, will be completed prior to the next Crystal River Unit 3 (CR-3) refueling, currently scheduled for March 1990.

Sincerely,

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

Attachment

PMB:BPW

xc: Regional Administrator, Region II
Senior Resident Inspector

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STATE OF FLORIDA

COUNTY OF PINELLAS

P. M. Beard, Jr. states that he is the Senior Vice President, Nuclear Operations 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.

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

Subscribed and sworn to before me, a Notary Public in and for the State and County above named, this 25th day of January, 1990.

Notary Public

Notary Public, State of Florida at Large,

My Commission Expires: NOTARY PUBLIC STATE OF FLORIDA MY COMMISSION EXP JULY 22,1993 BONDED THRU GENERAL INS. UND.

ATTACHMENT TO LETTER DATED JANUARY 25, 1990.

Requested Actions:

Action #1 Assure that any intermediate fuel assembly configuration (including control rods) intended to be used during refueling is identified and evaluated to maintain sufficient refueling boron concentration to result in a minimum shutdown margin of approximately 5%.

FPC Response:

Refueling boron concentration is calculated for the final core configuration and ensures a minimum 5% shutdown margin. The calculated shutdown margin does not include credit for the control rods being fully inserted (worth approximately 5%) and also assumes a 1% allowance for uncertainties. This translates to an actual shutdown margin for the final core configuration of approximately 11%. By ensuring the shutdown margin for the final core configuration, at the beginning of the fuel cycle, is at least 5% per the above assumptions and limiting deviations from approved move sheets to those noted in Action #2 below, intermediate fuel loading steps leading to this final configuration are bounded.

In addition to the conservative calculation discussed above, the operations staff closely monitors reactor neutron flux during refueling. Technical Specification 3.9.2 requires two source range neutron monitors be operable during all core alterations with each monitor required to provide visual indication in the control room. One monitor with audible indication in the control room is also required. Should count rate unexpectedly double during any single fueling or defueling step, all core alterations are suspended and an evaluation conducted as to the cause.

Action #2 Assure that fuel loading procedures only allow those intermediate fuel assembly configurations that do not violate the allowable shutdown margin and that these procedures are strictly adhered to.

FPC Response:

Florida Power revised CR-3 refueling procedure FP-203 "Refueling and Defueling Operations " to address the concerns in NRC Information Notice No. 89-51 "Potential Loss of Required Shutdown Margin During Refueling Operations" dated May 31, 1989. The procedure allows for certain deviations from the order of the Fuel/ Control Component Move Sheets. Several steps were added to the procedure to specify the required actions to be taken in the event a deviation was necessary. The procedure has been revised to require verification that the fuel planned for that location in the

final core configuration is of equal or greater reactivity than that of the fuel assembly placed in the location in the interim. Should it be necessary to place fuel in locations other than that shown in the final core configuration and the fuel planned for these locations is not of greater or equal reactivity worth, further restrictions are applied. Adequate shutdown margin is maintained by meeting the following restrictions:

a) no more than two control rods shall be withdrawn from that part of the core containing fuel,

b) new fuel assemblies shall not be placed directly adjacent to each other (side to side) unless this configuration is reflected in the final core configuration. A new fuel assembly may be placed diagonally adjacent (corner to corner) to as many as two other new fuel assemblies also not shown in the final core configuration,

c) the "dummy" fuel assembly should be used instead of a new assembly on one face (side, not corner) of the location being blocked in, unless it results in significant fuel assembly hang-up problems.

Strict adherence to written policies and verbatim compliance with procedures concerned with the operation and support of CR-3 is required of all permanent and contract personnel.

Action #3 Assure that the staff responsible for refueling operations is trained in the procedures recommended in Item 2 above and understand the potential consequences of violating these procedures. This training should include the fundamental aspects of criticality control with higher enriched fuel assemblies.

FPC Response:

The concerns of NRC Bulletin No 89-03 and the changes to Refueling Procedures FP-203 Revision 24 "Refueling and Defueling Operations" will be covered in CR-3 Operator Requalification Training prior to Refuel 7. An additional step will be added to FP-203 describing the concerns in NRC Bulletin 89-03. The Refueling Supervisor and Shift Supervisor for each operation shift are required to discuss the limits and precautions of this procedure - including the concerns of Bulletin 89-03 - with his shift during pre-shift briefings. This revision will also be completed prior to Refuel 7. The concern of higher enriched fuel will be included in future licensed operator training.