Florida Power
CORPORATION

February 13, 1990
3F0290-01

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

Subject: Crystal River Unit 3
Docket No. 50-302
Operating License No. DPR-72
Technical Specification Change Request No. 180

Dear Sir:

Florida Power Corporation (FPC) hereby submits Technical Specification Change Request No. 180 requesting amendment to Appendix A of Operating License No. DPR-72. Proposed replacement pages for both the current Crystal River 3 (CR-3) Technical Specifications and the Improved Technical Specifications are provided.

This submittal changes the Technical Specifications to allow an interlock which will eliminate the automatic, simultaneous operation of the motor driven emergency feedwater pump and the low pressure injection system when off-site power is not available. The submittal also incorporates corrections to the required response times for the Low Pressure Injection and High Pressure Injection Systems.

FPC requests this amendment be implemented upon restart from Refuel 7, scheduled to begin in March 14, 1990.

Sincerely,

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

PMB:AEF:

Attachment

xc: Regional Administrator, Region II
Senior Resident Inspector

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A Florida Progress Company

STATE OF FLORIDA

COUNTY OF CITRUS

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 13th day of February, 1990.

Notary Public

Notary Public, State of Florida at Large,

My Commission Expires: NOTARY PUBLIC, STATE OF FLORIDA. MY COMMISSION EXPIRES: AUG. 30, 1993. BONDED THRU NOTARY PUBLIC UNDERWRITERS.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF	)	
	)	DOCKET NO. 50-302
FLORIDA POWER CORPORATION	)	

CERTIFICATE OF SERVICE

P. M. Beard, Jr. deposes and says that the following has been served on the Chief Executive of Citrus County, Florida, and Designated State Representative by deposit in the United States mail, addressed as follows:

Chairman
Board of County Commissioners
of Citrus County
Citrus County Courthouse
Inverness, FL 32650

Administrator
Radiological Health Services
Department of Health and
Rehabilitative Services
1323 Winewood Blvd.
Tallahassee, FL 32301

A copy of Technical Specification Change Request No. 180, requesting Amendment to Appendix A of Operating License No. DPR-72.

Florida Power Corporation

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

SWORN TO AND SUBSCRIBED BEFORE ME THIS 13TH DAY OF FEBRUARY 1990.

Susan D. Wlenfurler
Notary Public

Notary Public, State of Florida at Large
My Commission Expires: NOTARY PUBLIC, STATE OF FLORIDA.
MY COMMISSION EXPIRES: AUG. 30, 1993.
BONDED THRU NOTARY PUBLIC UNDERWRITERS.

FLORIDA POWER CORPORATION
CRYSTAL RIVER UNIT 3
DOCKET NO. 50-302/LICENSE NO. DPR-72
REQUEST NO. 180, REVISION 0
ENGINEERED SAFETY FEATURE ACTUATION AND RESPONSE TIME

LICENSE DOCUMENT INVOLVED: Technical Specifications

PORTIONS:

Specification 3.3.2.1, Table 3.3-3, Page 3/4 3-10, 14 and 14a
Table 3.3-5, Page 3/4 3-17
Specification 3.7.1.2, Page 3/4 7-4

DESCRIPTION OF REQUEST:

This submittal changes the Technical Specifications to add notes to Tables 3.3-3 and 3.3-5 of specification 3.3.2.1 indicating that the Reactor Building Pressure High actuation function of Low Pressure Injection is bypassed when offsite power is not available. Further, this submittal requests a note be added to the Limiting Condition for Operation of Specification 3.7.1.2 for the motor driven emergency feedwater pump indicating that the pump in not operable following a low pressure injection actuation.

This submittal also corrects the required Engineered Safety Features Response Times for Low Pressure and High Pressure Injection from 25 to 35 seconds.

REASON FOR REQUEST:

In 1987, the electrical load on one of the required emergency diesel generators (EDG) was found to be greater than the 30 minute rating during certain design basis accident scenarios. Temporary modifications were installed to reduce the load and a commitment to a long term fix was made.

On March 30, 1988, Florida Power Corporation (FPC) met with the NRC staff to discuss the EDG loading concerns. FPC presented, and the NRC conceptually agreed to, a proposed motor driven emergency feedwater pump block/trip design concept that would resolve the diesel loading concern. That modification involves elimination of automatic, simultaneous operation of the Low Pressure Injection System and the motor driven emergency feedwater pump when offsite power is unavailable. The modification will be installed during Refuel 7 beginning in March 1990. Additional information on the design features of the modification was submitted July 22, 1988. This Technical Specification change adds notes to the appropriate specifications indicating the existence of this interlock.

Also during Refuel 7, a modification will be installed to rearrange the diesel generator block loading. This modification is being installed to reduce the voltage and frequency transient during block loading. Along with other changes, the low pressure injection pumps are being moved from block 1 to block 4. To gain margin between the actual time delay associated with the equipment starting, and the Technical Specification requirement, the response time for low pressure injection is being changed from 25 to 35 seconds. The safety analysis assumed a 35 second delay for both low pressure injection and high pressure injection; therefore, the response time for high pressure injection is also being changed.

EVALUATION OF REQUEST:

The design of the modification provides for selectively starting the motor driven emergency feedwater pump or the low pressure injection pumps based on the type of transient detected by the Engineered Safeguards Actuation System. The modification reduces the diesel loading by:

(a) preventing the low pressure injection pumps from starting for those scenarios where the Reactor Coolant System pressure remains above 500 psig; and

(b) blocking the start or tripping the motor driven emergency feedwater pump when Reactor Coolant System pressure is below 500 psig.

This is accomplished by:

(a) eliminating the low pressure injection pump start on 1500 psig decreasing Reactor Coolant System pressure;

(b) eliminating the low pressure injection pump start on 4 psig Reactor Building pressure only when off-site power is unavailable; and,

(c) tripping or preventing the start of the motor driven emergency feedwater pump when Reactor Coolant System pressure is below 500 psig and off-site power is unavailable.

The basic operation and functional requirements of the Engineered Safeguards, Emergency Feedwater, and Low Pressure Injection Systems are unchanged. The emergency feedwater pump start logic is unchanged when off-site power is available.

During a large break loss of coolant accident (LOCA), the coolant is lost through the break at a rate greater than the high pressure injection pumps' capacity. Low pressure injection is required to assure adequate inventory is maintained in the Reactor Coolant System for decay heat removal. Voiding occurs in the Reactor Coolant System hot leg piping, leading to decoupling of the primary and secondary systems. This eliminates the ability to remove heat through the steam generators. Thus, the Emergency Feedwater System is no longer supporting the performance of any safety function. The availability of emergency feedwater does not increase the probability the core will be adequately cooled. Therefore, tripping the motor driven emergency feedwater pump when low pressure injection is actuated and offsite power is not available does not decrease safety.

During a small break LOCA, the Emergency Feedwater System is required to remove decay heat, while the High Pressure Injection System provides the necessary makeup water to the Reactor Coolant System to maintain core coverage. During such scenarios, the Low Pressure Injection System performs no safety function since the Reactor Coolant System pressure exceeds the shutoff head of the low pressure injection pumps. Therefore, elimination of the starting of the low pressure injection pumps when the Reactor Coolant System pressure is greater than 500 psig does not decrease safety.

Emergency Feedwater is also required during loss of main feedwater events. Since the Reactor Coolant System does not depressurize to below the shutoff head for the low pressure injection pumps, the Low Pressure Injection System is not able to add water to the Reactor Coolant System. Therefore, inhibiting the starting of the low pressure injection pumps when Reactor Coolant System pressure is above 500 psig and offsite power is not available does not decrease safety.

The LOCA analysis performed for all B&W 177 fuel assembly plants assumes that high pressure injection and low pressure injection flow is available following a 35 second delay after reaching the actuation setpoint (Reference 1). This change increases the allowed response time to agree with the value used in the LOCA analysis.

The main steam line break analysis also assumes the High Pressure Injection System actuates following a main steam line break. Documentation is not readily available of the time delay assumed in that analysis. During this event, the High Pressure Injection System injects fluid into the Reactor Coolant System to help offset the contraction associated with the overcooling. The water is borated to ensure additional reactivity control following a reactor trip. The steam line break event analysis does not take credit for the boration. However, the additional cooling associated with the borated water is accounted for and aggravates the overcooling during the transient. Since the acceptance criteria for the event are met without credit for the boration, and the cold water injection makes the event worse, a longer delay is acceptable and does not violate the safety analysis assumptions. Since the analysis shows the Reactor Coolant System pressure does not get low enough to allow low pressure injection flow, the delay time for low pressure injection is not constrained by the steam line break event. Therefore, increasing the allowed response time for high pressure and low pressure injection to 35 seconds does not decrease safety.

REFERENCES

1. R. C. Jones, et al., "ECCS Analysis of B&W's 177-FA Lowered-Loop NSS," BAW-10103A, Rev. 3, July 1977.

SHOLLY EVALUATION OF REQUEST:

The proposed change in the low pressure injection/emergency feedwater initiation logic and the high and low pressure injection response times does not involve a significant hazard consideration. The revised specification will continue to ensure these systems function as assumed in the safety analysis and as such, represents a continuance of the present level of safety.

Based on the above, FPC concludes this change will not:

1. Involve a significant increase in the probability or consequence of an accident previously evaluated because the reliability of the systems is essentially unaffected by the change. The consequences of the accidents remain bounded by the safety analysis.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated because the proposed change assures the systems involved will continue to function as assumed in the safety analysis.

3. Involve a significant reduction in the margin of safety because the systems involved will continue to be fully capable of mitigating design basis transients and accidents.