Florida Power
CORPORATION

Crystal River Unit 3
Docket No. 50-302

June 25, 1991
3F0691-10

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

Subject: Technical Specification Change Request No. 188

Dear Sir:

Florida Power Corporation (FPC) hereby submits Technical Specification Change Request No. (TSCRN) 188 requesting amendment to Appendix A of Operating License No. DPR-72. As part of this request, the proposed replacement pages for Appendix A are provided.

This submittal requests a one-time extension to the surveillance interval for performing a channel calibration of the reactor coolant outlet resistance temperature detectors (RTDs). The affected surveillances would be performed during the Cycle 8 refueling outage scheduled to begin April 30, 1992. FPC requests approval of this amendment prior to October 1991. This will allow performance of the surveillances during the mid-cycle outage scheduled for that time frame should the request not be approved.

Sincerely,

Gary L. Boldt

G. L. Boldt
Vice President
Nuclear Production

GLB:BPW
Attachments

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

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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

CERTIFICATE OF SERVICE

G. L. Boldt deposes and says that the following has been served on the Designated State Representative and Chief Executive of Citrus County, Florida, 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. 188, requesting Amendment to Appendix A of Operating Licensing No. DPR-72.

FLORIDA POWER CORPORATION

Gary L. Boldt

G. L. Boldt
Vice President
Nuclear Production

SWORN TO AND SUBSCRIBED BEFORE ME THIS 25TH DAY OF JUNE, 1991

Joan Butler Carr

Notary Public

Notary Public, State of Florida at Large
My Commission Expires:

NOTARY PUBLIC, STATE OF FLORIDA.
MY COMMISSION EXPIRES: June 21, 1995.
BONDED THRU NOTARY PUBLIC UNDERWRITERS.

STATE OF FLORIDA
COUNTY OF CITRUS

G. L. Boldt states that he is the Vice President, Nuclear Production 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. L. Boldt
Vice President
Nuclear Production

Subscribed and sworn to before me, a Notary Public in and for the State and County above named, this 25th day of June, 1991.

Notary Public

Notary Public, State of Florida at Large
My Commission Expires:

NOTARY PUBLIC, STATE OF FLORIDA.
MY COMMISSION EXPIRES: July 31, 1995.
BONDED THRU NOTARY PUBLIC UNDERWRITERS.

FLORIDA POWER CORPORATION
CRYSTAL RIVER UNIT 3
DOCKET NO. 50-302/LICENSE NO. DPR-72
REQUEST NO. 188 , REVISION 0
RESISTANCE TEMPERATURE DETECTOR (RTD) CALIBRATION EXTENSION

LICENSE DOCUMENT INVOLVED: Technical Specifications

PORTIONS: 4.3.1.1.1 and Table 4.3-1 Functional Unit #3
4.3.3.5 and Table 4.3.6 Instrument #2
4.3.3.6 and Table 4.3-7 Instrument #4

DESCRIPTION OF REQUEST:

This change request proposes to add a footnote to the CHANNEL CALIBRATION surveillance requirement for the following instrumentation functions.

Reactor Protection System "RCS Outlet Temperature--High"

Remote Shutdown Monitoring "Reactor Coolant Temperature-Th"

Post-Accident Monitoring "Reactor Coolant Outlet Temperature"

The footnote would allow a one-time extension of the surveillance interval for performing a CHANNEL CALIBRATION of these instrument functions until Refuel 8. Refuel 8 (8R) is currently scheduled for April 30, 1992 to June 25, 1992.

REASON FOR REQUEST:

The due date for completion of the referenced surveillance requirements, including allowable extensions, will occur prior to the 1992 Refueling outage. Successful completion of these surveillance requirements is necessary to satisfy Technical Specifications and avoid a plant shutdown.

The requested extension will allow the referenced surveillance requirements to be completed during 8R instead of the mid-cycle outage (8M) scheduled for Fall 1991. The mid-cycle outage, as planned, is primarily scheduled to complete an Integrated Leak Rate Test. No work is included in the schedule that requires significant draining of the Reactor Coolant System (RCS). Without the requested extension, FPC could be forced to extend 8M to drain the primary plant in order to perform the surveillances. Extending 8M to include this workscope would result in increased personnel exposure and substantial replacement power costs to our customers with little or no overall safety benefit. An additional outage could be scheduled prior to April 1992 for the purposes of completing these surveillances, but this approach is even more burdensome.

The requested extension will also allow for completion and implementation of an alternate calibration technique (cross-channel correlation discussed later) for the reactor coolant outlet Resistance Temperature Detectors (RTDs). The improved calibration will be used to satisfy the sensor portion of the CHANNEL CALIBRATION requirements for future performances of these

surveillances, beginning in Refuel 8. The improved calibration technique results in reduced personnel exposure, fewer intrusive activities on the reactor coolant pressure boundary, and reduced outage impact. The proposed calibration technique is currently under development has been discussed with members of the NRC Staff, and will be submitted or formal NRC review and approval this Fall.

EVALUATION OF REQUEST:

The instrument functions listed have a requirement to perform a CHANNEL CALIBRATION on an 18 month frequency. CR-3 Technical Specifications define this CHANNEL CALIBRATION to be:

> "... the adjustment as necessary, of the channel output such that it responds w necessary range and accuracy to known values of the para er wh.ch the (Jannel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. CHANNEL CALIBRATION may be performed by any series of sequential, overlapping or total channel steps such that the entire channel is calibrated."

For the listed functions, an instrument channel includes the sensor, process instrumentation, instrumentation logic, indication, alarms, interlocks, bypasses, etc. FPC calibrates the "string" with two separate procedures. The sensor is calibrated with one procedure and the remainder of the instrument channel is calibrated with another. Both portions of the channel must be successfully completed to satisfy the technical specification requirement. FPC will calibrate the instrument channels, except for the sensor, during the upcoming mid-cycle outage.

Historically, FPC has met the intent of the CHANNEL CALIBRATION definition for the sensor (RTD) portion of the RCS Outlet Temperature channel by replacement. The RTD package consists of two RTDs mounted inside a thermowell. Output from one RTD is sent to a Reactor Protection System (RPS) channel and the other provides the indication signal to the Remote Shutdown Panel and Post-Accident Monitoring. The two RTDs are electrically separate, but one cannot be replaced without also replacing the other.

The schedular problem addressed by this extension request has become an issue primarily because of the disjoint between the CR-3 Technical Specification definition of Refueling and the length of the current reactor fuel cycle. CR-3 is currently operating on approximately a 24 calendar month reactor fuel cycle. A CHANNEL CALIBRATION of these instrument functions is required to be performed once each Refueling. The term "Refueling" is defined within the CR-3 Technical Specifications as at least once per 18 months. The due date for performance of these surveillances, including the 25% extension allowance of Technical Specification 4.0.2, occurs in April 1992. This date is prior to the current scheduled start of Refuel 8. As a long-term solution to this type of problem, FPC is

developing a license amendment request based upon NRC Generic Letter 91-04 "Changes in Technical Specification Intervals to Accommodate a 24-Month Fuel Cycle". This generic letter recognizes the conflict between the two constraints and outlines a process for licensees to use in requesting relief. The CR-3 Generic Letter 91-04 submittal is under development and will be submitted in the future as a single comprehensive submittal.

The one-time extension of the surveillance intervals for performing a CHANNEL CALIBRATION of the referenced instrument channels until Refuel 8 is considered acceptable based upon the following.

- The entire channel will be calibrated, with the exception of the sensor, during 8M.

- The actual extension period for completion of these surveillances is short. The due dates for completion of these surveillances, including the 25% extension allowance of Technical Specification 4.0.2, will occur in early April 1992. Refuel 8 is currently scheduled for April 30, 1992 to June 25, 1992.

- The effect of the extended calibration interval on instrument drift and safety analysis assumptions is minimal. This is discussed in more detail below.

- It is not the NRC intent to unduly restrict licensees operating on 24 month fuel cycles by imposing 18 month technical specification surveillance intervals on plant operation. This is provided licensees can confirm that the performance of surveillances at the bounding surveillance interval limit would not invalidate any assumptions in the plant licensing basis. This position has recently been documented in NRC Generic Letter 91-04.

This change request has been evaluated in light of NRC Generic Letter 91-04. Enclosure 2 to the generic letter contained a listing of seven items to be addressed when justifying increased calibration intervals for safety system instruments. FPC has chosen to address the overall philosophy of Enclosure 2 for this submittal rather than the seven individual items. That philosophy is to evaluate the effects of an increased interval on instrument errors in order to confirm that drift will not result in instrument errors that exceed the assumptions of the safety analysis. The CR-3 Generic Letter 91-04 response will address each of the seven items in detail.

Past calibrations of the RTDs have been performed by replacement of the sensor with a new, factory calibrated device. As such, complete calibration data (i.e., as-found readings) for the RTDs is not available. As-left data consisted of the manufacturer's calibration curves supplied with the new RTD. In lieu of as-found calibration plant data, the following is offered as evidence of RTD stability. Site testing at CR-3 of four channels of RPS

T_{hot} temperature instrumentation has been conducted over the last fuel cycle. These instruments have been tracked and plotted against each other for approximately 10 months. This limited cross calibration has shown less than 0.5°F variation of any channel in relation to the others. Based on these findings, a sensor drift of less than 1 °F can be expected over the interval requested with this submittal. This value of sensor drift is also well within the assumptions of the safety analysis.

Experimental findings on age-related RTD drift are published in NUREG/ CR-5560, "Aging of Nuclear Plant Resistance Temperature Detectors". The report states in part:

> "The aging of the RTD's did not result in a monotonic drift from which a reliable drift rate could be obtained. It was demonstrated that none of the normal aging conditions alone can generally produce more than an average of 0.2°C (0.36°F) drift and combining the aging effects will not increase the drift significantly beyond the largest drift from individual effects."

Testing conducted under this program included RTD's from several manufacturers including the Rosemount 177HW model used at CR-3. The methodology used in this testing is clearly outlined in NUREG/CR-5560, but is basically an 18 month program of frequent calibrations to support thermal aging, vibration aging, humidity aging, high temperature aging and thermal cycling drift studies. The conclusions of this report correspond well with observations at CR-3 and support the position that RTD's in-situ exhibit minimum drift.

SHOLLY EVALUATION OF REQUEST:

The proposed one-time surveillance interval extension for performing a channel calibration of the reactor coolant outlet resistance temperature detectors (RTDs) does not involve a significant hazard consideration. Operation in accordance with the revised specification continues to ensure the affected instrument functions operate consistent with the assumptions of the safety analysis. Therefore, the present level of safety will be maintained.

Based on the above, the proposed change will not:

1. Involve a significant increase in the probability or consequence of an accident previously evaluated. The instrument functions addressed by this change are not assumed as the primary means of mitigating any design basis accidents for Crystal River Unit 3. The instruments will continue to perform consistent with design assumptions for the functions assumed to be provided.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated because the proposed change does not alter the manner in which the technical specification surveillance is performed. The change only affects the next performance date for the surveillance.

3. Involve a significant reduction in the margin of safety because the instruments will continue to be fully capable of performing their design basis functions.