Florida Power
CORPORATION

Docket No. 50-302
Crystal River Unit 3

May 2, 1991
3F0591-01

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

Subject: Technical Specification Change Request No. (TSCRN) 181
Additional Information

References: A. FPC to NRC Letter dated April 6, 1990, TSCRN 181

B. NRC to FPC letter dated January 4, 1991, Request for Additional Information on TSCRN 181.

Dear Sir:

Reference A submitted Technical Specification Change Request No. (TSCRN) 181 "Once-Through Steam Generator Tube Sleeving" for the Crystal River Unit 3 (CR-3) nuclear plant. Attachment 1 provides the additional information requested in Reference B. Attachment 2 contains proposed revisions to the appropriate TS pages reflecting these responses.

In addition to the detailed comments addressed in Attachment 1 to this letter, Reference B requested consideration of Inconel Alloy 690 once-through steam generator (OTSG) tube sleeves rather than sleeves made from Alloy 600. This request was based on recent industry indications of stress corrosion cracking (SCC) discovered in Alloy 600 material applications. TSCRN 181 was based upon installation of Alloy 600 tube sleeves. However, much has been learned about the behavior of Alloy 600 (and 690) since the development of the topical report upon which the TSCRN was based and TSCRN 181 was submitted. The nuclear industry has made significant progress toward understanding SCC mechanisms and the susceptibility of certain materials. FPC intends to use Alloy 690 for future steam generator tube repairs (sleeves and plugs). B&W Nuclear Services Company, CR-3 steam generator vendor, has completed qualification of an Alloy 690 sleeve for this purpose and submitted qualification report, BAW 2120P "OTSG 80" Mechanical Sleeve Qualification (Alloy 690)" to the NRC on March 26, 1991 for review and approval.

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The qualification performed for Alloy 690 was patterned after Alloy 600 sleeve qualification and concluded with similar results. Based upon this, the TSCRN 181 evaluation remains valid.

Sincerely,

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

Attachments

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

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

IN THE MATTER	)	
	)	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 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 Florida Power Corporation's response to the Nuclear Regulatory Commission Request for Additional Information on Technical Specification Change Request No. 181, Revision 0, 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 SECOND DAY OF MAY 1991.

Notary Public

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

NOTARY PUBLIC, STATE OF FLORIDA
MY COMMISSION EXPIRES JUNE 21, 1991
BONDED THRU NOTARY PUBLIC UNDERWRITERS

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 me, a Notary Public in and for the State and County above named, this second day of May, 1991.

Notary Public

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

NOTARY PUBLIC, STATE OF FLORIDA.
MY COMMISSION EXPIRES: JUNE 21, 1991.
BONDED THRU NOTARY PUBLIC UNDERWRITERS

Item 1:

It is stated that the degraded tube criteria in the technical specification acceptance criteria is proposed to be changed because the testing capability to detect 20% through-wall penetrations has not been demonstrated for all areas of the tube/sleeve interface. We believe that the technology of steam generator tube inspection is progressing to the point where this sensitivity soon can be achieved. We can not accept inspection technology that does not meet industry capability. Please describe your program and commitment to implement this capability in your steam generator tube integrity program when it is commercially available.

FPC Response:

The probe currently used by B&W Nuclear Service Company (CR-3 OTSG vendor) to inspect the sleeve and parent tube behind the sleeve is a crosswound probe wound over a special ferrite core. B&W has experimented with rotating pancake probes and ultrasonic test (U.T.) probes for inspecting the sleeve, parent tubes, and joints, but has found them to be not as sensitive as the special crosswound bobbin probe. The probe was developed by B&W and is currently licensed to Zetec for manufacture.

FPC, through the efforts of our OTSG vendor and other industry groups, is committed to the research and development of enhanced sleeve non-destructive examination (NDE), and NDE of the parent tube behind the sleeve. In addition to their own developments, B&W attempts to remain cognizant of evolving improvements in NDE by attending NDE conferences, and making regular visits to probe vendors. Should improved NDE techniques in these areas become commercially available, FPC will use that technology when performing future sleeve inspections.

Item 2:

In accordance with past staff positions, the "Surveillance Requirements" section of the Technical Specifications must include the following:

a. A statement that defective tubes may be repaired in accordance with a specific referenced (by number) topical report sleeving procedure.

b. The appropriate plugging limit for defects in the sleeve itself must be stated.

FPC Response:

a. A similar statement has been added to CR-3 Technical Specification Surveillance Requirement 4.4.5.4.b and the Bases for this specification. While the topical report reference has been added to the surveillance requirement, FPC disagrees with the NRC Office of General Council (OGC) position on the location of this reference. Consistent with the industry effort on improved technical specifications, this "design detail" information is inappropriate for the "Surveillance Requirements" section.

FPC Response (Cont.):

The topical report reference should more appropriately be placed in the Bases and maintained current as new methodology evolves. The OGC position also appears to conflict with other standard NRC policy and practice (i.e. the Interim Policy Statement on Technical Specification Improvement, etc.).

b. The appropriate plugging limit for defects in the sleeve itself was discussed in TSCRN 181 and given as 40% through-wall. Since the value of pressure boundary degradation (expressed in per cent through-wall) requiring tube repair was the same as that given in current TS, the value for the sleeve was not specifically called out. The words "or sleeve" have been added to CR-3 Technical Specification Surveillance 4.4.5.4.a.7 to provide this clarification.

Revised TS pages 3/4 4-9 and B 3/4 4-3, covering the two items discussed above, have been included with this submittal as Attachment 2.

Item 3:

In view of the susceptibility of Alloy 600 to stress corrosion cracking, explain why Alloy 690 is not used as the sleeve material.

FPC Response:

As discussed in the cover letter, FPC will use Alloy 690 sleeves when performing future sleeving repairs of the CR-3 OTSGs.