Florida Power
CORPORATION

March 30, 1990
3F0390-26

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
Core Flood Nozzle To Safe-End Examination
Relief Request No. 90-10

Dear Sir:

Florida Power Corporation (FPC) is submitting the attached Relief Request No. 90-10 for the core flood nozzle surface examination. As discussed in a conversation with Robert A. Hermann of your staff on March 28, 1990, FPC is requesting that relief be granted based on the following:

- ALARA Considerations: Approximately 3.5 man-REM was received when surface examination was performed on a core flood nozzle in 1985.
- There have been no indications of inconel metal cracking at Crystal River Unit 3 (CR-3).
- New examination techniques and technology are available and will be used in a proposed volumetric examination of the nozzle which will take place during the second interval. These new techniques will assume a 100 percent effective examination of the welds.

FPC filed a request on October 31, 1984, for an exemption from the surface examination of the core flood nozzles. In a June 25, 1985 letter, the NRC denied the requested exemption but left FPC with the option to demonstrate that the inner diameter ultrasonic examination which was scheduled to be performed later in 1985, would detect a surface flaw. FPC performed a surface examination on one of the core flood nozzles during Refuel 6 and performed a demonstration on August 8, 1989. As a result of the demonstration, FPC scheduled examination of the second nozzle during Refuel 7.

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Clarification provided during an ISI Inspection conducted at CR-3 by J.L. Coley on March 27, 1990 encouraged FPC to request relief from the examination of the second nozzle for the first 10 year ISI plan and to commit to examine both nozzles using the remote technique in a refueling outage prior to 1995. These examinations would be conducted during the reactor vessel inspection in accordance with the second 10 year ISI Plan. A demonstration of the ultrasonic technique will be scheduled before the examination to verify its ability to find and size surface cracks.

The following clarification is provided in answer to Mr. Hermann's questions (telecon of March 28, 1990) on Emergency Core Cooling System capabilities of Core Flood Tanks. For CR-3, the LPI system and the Core Flooding system utilize common injection nozzles on the reactor vessel.

FPC has telecopied Relief Request 90-10 to your staff for their review and verbal approval. Your timely consideration is greatly appreciated.

Sincerely,

G.L. Boldt
Vice President
Nuclear Production

LVC:wla

Attachment

xc: Regional Administrator, Region II
Senior Resident Inspector

FLORIDA POWER CORPORATION

INSERVICE INSPECTION

CRYSTAL RIVER - UNIT 3

RELIEF REQUEST #90-10

REFERENCE CODE: ASME Boiler and Pressure Vessel Code, Section XI, 1974 Edition through Summer 1975 Addenda.

I. Component for which exemption is requested:

(a) Name and Identification Number:

Core-flood nozzle to safe-end (FSAR Figure 6-2; FD-318-702)

(b) Function:

Provide Reactor Vessel Core Flooding capability

(c) ASME Section III Code Class:

Class 1

(d) Category:

Category B-F nozzle to safe-end welds.

II. Reference Code Requirement that has been determined to be impractical:

ASME Boiler and Pressure Vessel Code, Section XI, item B1.6, examination category B-F surface examination.

III. Basis for Requesting Relief:

The B&W Company conducted a demonstration of their ultrasonic flaw detection capabilities on a mock-up for the Crystal River Unit 3 core-flood nozzle to safe-end welds in Lynchburg, Virginia on August 8, 1989. The following examination capabilities and limitations of the B&W equipment and techniques as shown in the NRC inspectors report No. 50-302/89-21 and additional actualities form this basis.

1. Opposite surface reflectors down to 2.3% through wall were detectable in two axial directions in the carbon steel nozzle material.

2. Opposite surface reflectors down to 2.3% through wall were detectable in the inconel butter material when scanned in the safe-end direction.

3. Opposite surface reflectors down to 2.3% through wall were detectable in the stainless steel safe-end when scanned in the nozzle direction. Opposite surface reflectors down to 5.6% through wall were detectable in the stainless steel safe-end when scanned in the safe-end direction.

4. None of the opposite surface reflectors, regardless of size or direction scanned, could be detected in the inconel weld material using the parameters of the 1985 ultrasonic examination procedure however, we have had no history of inconel weld metal cracking.

5. The demonstration showed that notch reflectors in the heat affected zone of the carbon steel nozzle and the stainless steel safe-end could be detected within code recordable levels, although significant amplitude variations were noted between the two materials.

6. The procedure used by B&W for the actual core-flood nozzle UT required evaluation of indications producing a response greater than 20% of DAC reference level to determine if they were cracks.

7. Techniques used during the 1985 examination were the most advanced at that time.

8. Dye-penetrant examination of one core-flood nozzle during Refuel 6 showed no indication of cracking.

9. The core-flood nozzle is in a high radiation area . Personnel involved in preparation and performance of the dye-penetrant exam are expected to receive >3.5 man-REM.

IV. Alternate Examination:

None for the first interval.

Before the ultrasonic core-flood nozzle examination scheduled close to the end of this interval, FPC will conduct a performance demonstration of the ultrasonic technique to be used to demonstrate its' ability to find and size surface cracks.