Florida Power
CORPORATION

June 20, 1983
3F-0683-10

Director of Nuclear Reactor Regulation
Attention: Mr. John F. Stolz, Chief
Operating Reactors Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Crystal River Unit 3
Docket No. 50-302
Operating License No. DPR-72
Reactor Internal Bolting

Dear Sir:

The purpose of this letter is to update the status of the Florida Power Corporation (FPC) internals bolting repair activities at the Crystal River Unit 3 (CR-3) reactor. Our last status letter was sent on May 20, 1983, to the Director of Nuclear Reactor Regulation, Attention: Mr. John F. Stolz. Additional information was provided at the briefing for NRC by the B&W Owners Group (BWOG) on May 6, 1983, and by the Owners' summary report (BAW 1784) transmitted to the NRC on May 20, 1983. We will also update those portions of BAW 1784 applicable to CR-3 which warrant revision based on information obtained since May 20, 1983. We understand that information in this letter will be utilized by the Nuclear Regulatory Commission (NRC) in completing a Safety Evaluation Report (SER) scheduled for issuance on June 24, 1983, on the internals bolting problem.

The following repair activities are completed at CR-3 as of June 17, 1983: All 96 thermal shield bolts have been replaced with Inconel X-750 stud/nut fasteners; the upper core barrel bolts have been replaced with improved A-286 bolt design, fabrication, and torqueing techniques; and partial replacement of the surveillance specimen holder tube (SSHT) bolts is completed.

An analysis has been performed which shows that an SSHT assembly can withstand normal and anticipated transients with a minimum of two bolts per upper and lower restraint block. Support from the middle bracket is not required. The repair work is intended to provide at least three good (no ultrasonic flaw indications) fasteners per upper and lower bracket although most brackets will still have four. The replacement SSHT fasteners are a stud/nut design made of Inconel X-750.

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With respect to the updating of BAW 1784 based on information obtained since May 20, 1983, the enclosures provide current information for CR-3.

We hope that this letter will complete the information needed by the NRC on the internals bolting problems, analyses, repairs, and plans for CR-3. It is our judgement that the stress analysis (performed by Babcock and Wilcox, affirmed by MPR, and reviewed by FPC) plus the margins afforded by our repair plans, give assurance that the reactor internals at CR-3 are suitable for return to full power operation.

Sincerely,

G. R. Westafer

G. R. Westafer
Manager
Nuclear Licensing and Fuel Management

Enclosures (3)

ED/LBT:mm

cc: R. Hernan
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

S. Miner
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. James P. O'Reillly
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
Atlanta, GA 30303

Enclosure 1

Update of BAW 1784 for CR-3
Ultrasonic Flaw Indications/Bolts Examined

	5/6/83	6/17/83
Surveillance Holder Tube	25/72	20/72
Lower Thermal Shield	73/96	74/96
	69 Heads Twisted off	71 Heads Twisted off

NOTE: Ultrasonic Flaw Indication changes from 5/6/83 to 6/17/83 result from additional measurements and/or interpretations.

Enclosure 2

Table D-1 (1)
Stress Levels for CR3 Internals Bolting
Cycles 1-4

Bolting Location	Nominal Preload Stress (KSI)	Nominal Operating Stress (KSI)	Total Stress (KSI)	(2) Stress Concentration Factor (K_T)	Peak Stress (KSI)
Upper Core Barrel	36.5	5	41.5	2.99	124
Lower Core Barrel	28	8	36	2.99	108
Upper Thermal Shield	20	3	23	2.27	52
Flow Distributor	33	2	35	2.34	82
Lower Thermal Shield (Initial Installation)	33	32	65	2.45	159
Surveillance Holder Tube	45	3	48	2.62	126

Yield stress of A-286 varies from 100 to 134 KSI. Preload stress values based on neolube.

(1) Excerpts from B&W letter to NRC dated 6/7/83, Taylor To Miner.

(2)Values in this column were applicable to bolt head-to-shank transition region.

Enclosure 3

Stress Levels for CR-3 Internals Bolting
Cycle 5

Bolting Location	Nominal Preload Stress (KSI)	Nominal Operating Stress (KSI)	Total Stress (KSI)	Stress Concentration Factor (K_T)	Peak Stress (K_T)
Upper Core Barrel	18.5	4.1	22.6	3.45	78
Lower Core Barrel	28	8	36	2.99	108
Upper Thermal Shield	20	3	23	2.27	52
Flow Distributor	33	2	35	2.34	82
Lower Thermal Shield	28.5	26.8	55.3	(1)	(1)
Surveillance Holder Tube	30	14	44	(1)	(1)

(1) Not applicable - Stud/Nut Fastener has no head-to-shank transition region.