NRC PDR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

May 23, 1979

Docket No. 50-302

Mr. W. P. Stewart
Director, Power Production
Florida Power Corporation
P. O. Box 14042, Mail Stop C-4
St. Petersburg, Florida 33733

Dear Mr. Stewart:

We have reviewed your submittal of February 28, 1979 regarding the Crystal River Unit 3, Cycle 2 reload and have determined that the additional information identified in the enclosures is necessary to continue our review. Please provide this information as soon as possible.

Sincerely,

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Enclosures:
1. Cycle 2 Questions
2. Physics Startup Test Questions for Cycle 2

cc w/enclosures:
See next page

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Florida Power Corporation

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Crystal River Public Library
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Room 4, Holland Building
Tallahassee, Florida 32304

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Enclosure 1

CRYSTAL RIVER 3 - CYCLE 2 QUESTIONS

1. In table (5-1) of Reference 1, design cycle 1 length should be corrected to 450 EFPD.

2. In tables (5-1) and (7-1) of Reference 1, the following information is presented:

Table 5-1

I	Boron Worth - HFP, ppm/%$\Delta k/k$		
II	BOC	100 (cycle 1)	106 (cycle 2)
III	EOC	103 (cycle 1)	94 (cycle 2)
IV	Critical Boron - HFP, ppm		
V	BOC	1210 (cycle 1)	991 (cycle 2)

Table 7-1

I	Boron Worth - HFP, ppm/%$\Delta k/k$		
II		101 (cycle 1)	105 (cycle 2)
III	Initial Boron - HFP, ppm		
IV		795 (cycle 1)	1084 (cycle 2)

A. Please explain the difference between line II in both tables (5-1) and (7-1) above.

B. Explain the increased worth of the boron poison at EOC2 in line III of table (5-1).

C. Explain the difference between line V in table (5-1) and line IV in table (7-1).

3. In March, 1978 after BPRA and ORA removal, four partially burned Mark B2 fuel assemblies were loaded in the core to replace one damaged fuel assembly and three quarterly symmetric fuel assemblies (Reference 2). Those four fuel assemblies were not mentioned in the reload report.

A. Will the four fuel assemblies be unloaded from the core as part of batch 1, at EOC1?

B. If the answer to A above is no, has their exposure history been appropriately considered for cycle 2 operation?

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C. If the four fuel assemblies will stay through cycle 2, do the Mark B2 fuel assemblies have a higher flow resistance than Mark B3 and Mark B4? And if they do, has that been considered in the DNBR analyses?

4. For the pellet resinter test please confirm the use of the model accepted by the NRC.

References

1. Crystal River 3, Cycle 2 Reload Report, BAW-1521, February 1979.

2. Letter, W. P. Stewart to Director, ONRR, USNRC, July 21, 1978.

Enclosure 2

PHYSICS STARTUP TEST

QUESTIONS FOR CRYSTAL RIVER 3 CYCLE 2

Our current thinking as to startup tests, criteria and remedial actions is contained in the enclosed November 28, 1978 internal memorandum. The following questions on your proposed startup program are asked in light of that guidance.

1) Critical Boron Concentration

The criteria of ±100 ppm is an acceptable value for an acceptance criteria with remedial action involving total solution of the problem before going above 5% power. A review criteria of more like ±50 ppm corresponds to your stated remedial actions. Please supply a review criteria, the basis for it and associated remedial action. Also please supply the remedial actions associated with the ±100 ppm criteria.

2) Temperature Reactivity Coefficient

Please supply the basis for the $\pm .4 \times 10^{-4} \Delta k/k/\%$ value.

3) Control Rod Group Reactivity Worth

Criteria 1 with proposed remedial actions is acceptable.

Criteria 2 with proposed remedial actions is acceptable for $\frac{P-M}{M} < -10\%$

For $\frac{P-M}{M} > 10\%$ the remedial actions must be measurement of additional bank(s) in order to verify shutdown margin. Please state that this will be the remedial action for $\frac{P-M}{M} > 10\%$

4) Ejected Control Rod Reactivity Worth

Either all symmetric rods must be measured and compared for indication of tilt or there must be a quadrant symmetry test below 5% power. Please describe how this will be accomplished, the criteria and remedial actions.

5) Core Power Distribution Verification

Please supply the acceptance and/or review criteria for the comparison of measured and predicted power distribution on an assembly by assembly basis. Also please state the appropriate remedial actions.

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6) Procedure for Use When Acceptance Criteria Are Not Met

Please state that the resolution of not meeting an acceptance or review criteria will be made by the on-site Safety Review Committee and that why failure to meet review or acceptance criteria does not pose a safety question will be in the Safety Committee meeting minutes which are reviewable by I&E.

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