

October 6, 2004

Mr. Dale E. Young, Vice President  
Crystal River Nuclear Plant (NA1B)  
ATTN: Supervisor, Licensing and  
Regulatory Programs  
15760 W. Power Line Street  
Crystal River, Florida 34428-6708

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING THE CRYSTAL RIVER UNIT 3 - SPECIAL REPORT 03-01: ONCE-THROUGH STEAM GENERATOR NOTIFICATIONS REQUIRED PRIOR TO MODE 4, AND SPECIAL REPORT 04-01: RESULTS OF THE ONCE-THROUGH STEAM GENERATOR TUBE INSERVICE INSPECTION CONDUCTED DURING REFUELING OUTAGE 13 (TAC NO. MC1853)

Dear Mr. Young:

By letters dated October 31, 2003 (ML033090110), January 27, 2004 (ML040350037), and August 10, 2004 (ML042320561), Florida Power Corporation, the licensee for Crystal River, Unit 3 (also doing business as Progress Energy-Florida), submitted information pertaining to the steam generator tube inspections at Crystal River in 2003.

During the course of review of these reports, the NRC staff determined that additional information is necessary to complete our review. The enclosed request for additional information (RAI) was e-mailed to your licensing staff on September 22, 2004. As discussed in the September 22, 2004, telephone call, your staff agreed to respond within 45 days of the receipt of this RAI. If circumstances result in the need to revise the target date, please call me at the earliest opportunity.

If you have any questions regarding this matter, please contact me at (301) 415-2020.

Sincerely,

*/RA/*

Brenda L. Mozafari, Senior Project Manager, Section 2  
Project Directorate II  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosure: As stated

cc w/enclosure:  
See next page

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Dear Mr. Young:

By letters dated October 31, 2003 (ML033090110), January 27, 2004 (ML040350037), and August 10, 2004 (ML042320561), Florida Power Corporation, the licensee for Crystal River, Unit 3 (also doing business as Progress Energy-Florida), submitted information pertaining to the steam generator tube inspections at Crystal River in 2003.

During the course of review of these reports, the NRC staff determined that additional information is necessary to complete our review. The enclosed request for additional information (RAI) was e-mailed to your licensing staff on September 9, 2004. As discussed in the September 10, 2004, telephone call, your staff agreed to respond within 45 days of the receipt of this RAI. If circumstances result in the need to revise the target date, please call me at the earliest opportunity.

If you have any questions regarding this matter, please contact me at (301) 415-2020.

Sincerely,  
**/RA/**

Brenda L. Mozafari, Senior Project Manager, Section 2  
Project Directorate II  
Division of Licensing Project Management  
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REQUEST FOR ADDITIONAL INFORMATION

REGARDING THE CRYSTAL RIVER UNIT 3 - SPECIAL REPORT 03-01:

ONCE-THROUGH STEAM GENERATOR NOTIFICATIONS REQUIRED PRIOR TO MODE 4,

AND SPECIAL REPORT 04-01: RESULTS OF THE ONCE-THROUGH STEAM GENERATOR

TUBE INSERVICE INSPECTION CONDUCTED

DURING REFUELING OUTAGE 13

DOCKET NO. 50-302

By letters dated October 31, 2003 (ML033090110), January 27, 2004 (ML040350037), and August 10, 2004 (ML042320561), Progress Energy, the licensee for the Crystal River Nuclear Power Plant, submitted information pertaining to the steam generator tube inspections at Crystal River in 2003.

In order for the NRC staff to complete its review, responses to the following questions are needed:

1. The calculated amount of leakage during postulated accident limits exceeded expectations and the leakage limit. A root cause analysis determined the cause for exceeding the as-found leakage limit was that the use of the probability of detection for tube end cracking does not provide sufficient margin to account for the increase in the number of tube end cracks in future outages. Given the root cause, please discuss how this affects your current projections for accident-induced leakage during the current operating cycle (as discussed in the original request for additional information). That is, address whether adequate leakage integrity will be maintained once the initiation of new indications are included in the existing leakage model. If adequate leakage integrity will not be maintained, discuss your proposed corrective action.
2. With respect to the number and extent of tubes inspected, please address the following:
  - a. Please clarify the number of tubes in the "kidney region."
  - b. Please clarify the number of sleeves currently installed (and in service) in the steam generators. Please clarify whether all sleeves are installed in the lane/wedge region or whether they are installed in other regions of the tube bundle.
  - c. Thirty-four percent of the dents greater than 2 volts were inspected with a rotating probe. Please discuss whether the voltage calibration at Crystal River is consistent with standard industry practice. If not, please clarify your calibration procedure to permit a comparison of the voltage readings at your plant to other plants.

- d. Please clarify what bobbin indications were further characterized with a rotating probe. For example, were all suspect wear locations inspected with a rotating probe to confirm the absence of cracking? If not, please address the technical basis for the criteria used to disposition potential wear locations.
  - e. Please clarify why the number of tubes examined with the bobbin coil does not equal the number of tube ends examined with a rotating probe. For example, Table 1 indicates that 15,151 upper tube ends were examined with a rotating probe in steam generator A, but 15,314 tubes were examined with a bobbin coil. Were the upper tube ends for approximately 150 tubes not examined? If not, why not?
  - f. Please clarify the scope and extent of any rotating probe inspections performed at re-roll locations in your steam generators.
3. It was indicated that the primary-to-secondary leakage prior to plant shutdown was less than 5 gallons per day (gpd), and the leakage after 13R is less than 2 gpd. Presumably the reduction in leakage could be a result of the repair of through-wall flaws; however, no in-situ testing was performed. Please clarify the types of degradation detected during the outage (including orientation and location), the number of indications for each type of degradation, and discuss the sizes of the larger indications of each of these types of indications. Tube end cracks (i.e., those near the cladding) and first span intergranular attack indications need not be included in this information; however, indications associated with the roll transition or roll expanded area should be provided.
  4. Several tubes were plugged preventively. Some of these preventive plugs were based on operating experience (OE) and some were plugged for wear. Please clarify the reasons for these preventive plugs (e.g., to address possible tube severance). In particular, discuss your criteria for when wear indications are preventively plugged.
  5. Several tubes with sleeves were plugged for obstructions. Clarify the extent of the obstruction, the location of the obstruction, whether the tube/sleeve had adequate integrity (e.g., would the joints still have met all design criteria), identify when the sleeves were installed, the potential for the associated degradation mechanism to affect other sleeved tubes, and the technical basis for your conclusions. Also address your basis for not expanding the scope of the sleeve inspections based on these results.
  6. In some cases a 0.460-inch rotating probe was used for the examinations whereas in other instances a 0.520-inch rotating probe was used. In some cases, a 0.460-inch probe was used at a location that should have been able to pass a larger sized probe (e.g., it is not anticipated that a sleeve was installed at the location). Given that a smaller sized probe has a lower fill factor and may have larger amounts of noise, discuss the criteria you use to select your probes and address why the more typical sized probe is not used at all locations (excluding sleeved tubes).
  7. A number of tubes were plugged for "rejected re-rolls." Please clarify whether these tubes were plugged because the re-roll installed during the 2003 outage was unacceptable or whether there was an indication in the re-rolled area (either following

re-rolling in 2003 or in a previous re-roll). Discuss your operating experience with re-rolls (e.g., how many have been installed and how many have been plugged in subsequent outages as a result of degradation associated with the reroll).

Mr. Dale E. Young  
Florida Power Corporation

Crystal River Nuclear Plant, Unit 3

cc:

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