Progress Energy

Crystal River Nuclear Plant
Docket No. 50-302
Operating License No. DPR-72

January 29, 2007
3F0107-04

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Inspection and Mitigation of Alloy 600/82/182 Pressurizer Butt Welds

References:

1. NRC Bulletin 2004-01, "Inspection of Alloy 82/182/600 Materials Used in the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized-Water Reactors"

2. PEF to NRC letter dated July 26, 2004, Crystal River Unit 3 – 60 Day Response to NRC Bulletin 2004-01, "Inspection of Alloy 82/182/600 Materials Used in the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized-Water Reactors"

3. PEF to NRC letter dated February 7, 2006, Crystal River Unit 3 – Response to Item (2)(a) of NRC Bulletin 2004-01, "Inspection of Alloy 82/182/600 Materials Used in the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized-Water Reactors"

4. PEF to NRC letter dated September 18, 2006, Crystal River Unit 3 – Supplemental Information and Revised Commitment Regarding 60 Day Response to NRC Bulletin 2004-01, "Inspection of Alloy 82/182/600 Materials Used in the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized-Water Reactors"

Dear Sir:

In October of 2006, while performing inspections of its pressurizer Alloy 82/182 butt welds in accordance with MRP-139, a PWR licensee discovered several circumferential indications in its pressurizer surge, safety and relief nozzles. Because of the potential importance of this issue, Florida Power Corporation, doing business as Progress Energy Florida Inc. (PEF) is submitting this letter to notify you of actions planned for inspecting and mitigating Alloy 600/82/182 butt welds on pressurizer spray, surge and relief lines at Crystal River Unit 3 (CR-3).

Inspection of pressurizer Alloy 600/82/182 butt welds per MRP-139 at CR-3 has not yet been completed, but we will complete our inspection and mitigation activities on these locations during Refuel Outage 15 (15R), which is scheduled for Fall 2007. Details concerning inspection and mitigation activities for pressurizer Alloy 600/82/182 butt welds at CR-3 are provided in Attachment 1.

Results of inspections during 14R (10-29-05 through 12-10-05) are shown in Attachment 2. These examinations were performed using visual aids and visual examination personnel certified in accordance with Progress Energy's written practice and ASME Section XI, as supplemented by the March 2002

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15760 W. Powerline Street
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If CR-3 should shut down due to excessive primary system unidentified leakage, and if the leakage cannot be confirmed to originate from a source other than the pressurizer, a bare metal visual examination of Alloy 600/82/182 butt weld locations on the pressurizer will be performed to determine whether the leakage originated at those locations.

The NRC will be informed prior to any revision of the information contained in this letter.

This letter contains regulatory commitments as shown in Attachment 3.

Our staff is available to meet with the NRC to discuss any of the information in this letter. If there are any questions, please contact Mr. Paul Infanger, Supervisor, Licensing and Regulatory Programs at (352) 563-4796.

Sincerely,

Dale E Young

Dale E. Young
Vice President
Crystal River Nuclear Plant

DEY/seb

Attachments:
1. Inspection and Mitigation Summary for Alloy 600/82/182 Pressurizer Butt Welds
2. Results of 14R Inspections of Alloy 600/82/182 Pressurizer Butt Welds
3. Regulatory Commitments

xc: NRC Project Manager
NRC Regional Office
NRC Resident Inspector

Electric Power Research Institute (EPRI) report as applicable. The Bare Metal Visual examinations on the weld and adjacent base metal in the immediate visible vicinity found no evidence of boric acid, through-wall leakage, or component degradation on the pressurizer shell or dissimilar metal welds. As such, no follow up NDE was required and no corrective actions or repairs were necessary.

Future inspections of pressurizer butt welds at CR-3 will be performed in accordance with industry guidance (MRP-139). The results of future inspections or mitigations of pressurizer Alloy 600/82/182 butt weld locations will be reported to the NRC within 60 days of startup from the outage during which they are performed.

In addition to the inspection and mitigation actions described above and in the attached tables, CR-3 has enhanced its procedure for monitoring primary system leakage. CR-3 implements a Reactor Coolant System leakage monitoring program as described in station procedure Surveillance Procedure SP-317, RC System Water Inventory Balance. In addition, plant operators monitor parameters such as Reactor Building sump level and Reactor Building radiation monitors. This leakage determination process involves stabilization of the plant to minimize inaccuracies and then using a software program to calculate a Reactor Coolant System mass balance using a linear regression algorithm. The typical duration of this surveillance period is 6 to 8 hours during steady state conditions and is performed at least once per 72 hours.

CR-3 utilizes a statistical approach to analyzing the Unidentified Leakage results obtained from the SP-317 leakage calculation. In addition to the absolute Unidentified Leakage limits defined in the station's Technical Specifications, the following action levels are prescribed where U is defined as a 90 day rolling average of Unidentified Leakage and σ (currently .02 gpm) is defined as the standard deviation.

- ACTION LEVEL 1 - Five consecutive unidentified leakage results are > U plus σ
  - VALIDATE quality of instrumentation by inspection or trending, (Makeup Tank, Reactor Coolant Drain Tank, etc.).
  - LOOK for changes in Reactor Building sump rate of rise.
  - CHECK RM-A6 (Reactor Building Radiation Monitor) count rate for trends.
  - CHECK for changes for Auxiliary Building Sump rate of rise.

- ACTION LEVEL 2 – Three consecutive unidentified leakage results are $\geq$ U plus 2σ
  - COMPLETE actions of Action Level 1.
  - PERFORM another surveillance within 24 hours to verify leak rate.
  - WALK DOWN Makeup and Purification System for potential leaks.
  - RECORD results of above inspections in Superintendent of Shift Operations Log.

- ACTION LEVEL 3 - Any unidentified leakage results are $\geq$ U plus 3σ
  - COMPLETE actions of Action Level 1 and Action Level 2.
  - As determined by Plant Management, PERFORM a Reactor Building entry.

Also, the Reactor Coolant System Engineer reviews pertinent Reactor Coolant System parameters and leakage results as a part of routine system monitoring activities.

Reactor Coolant System leakage is given a high priority by CR-3 management. This sensitivity is reflected by taking actions beyond that of the procedural requirements on a routine bases. Reactor Coolant System Unidentified Leakage information is included in daily plant information meetings and is a point of discussion at senior plant management meetings.

The enhanced guidance provides adequate assurance that structural integrity is maintained and that any primary system pressure boundary leakage is discovered in a timely manner.

STATE OF FLORIDA

COUNTY OF CITRUS

Dale E. Young states that he is the Vice President, Crystal River Nuclear Plant for Florida Power Corporation, doing business as Progress Energy Florida, Inc.; 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.

Dale E. Young
Vice President
Crystal River Nuclear Plant

The foregoing document was acknowledged before me this 29 day of Jan., 2007, by Dale E. Young.

Signature of Notary Public
State of Florida

ELLEN DEPPOLDER
MY COMMISSION # DD 408539
EXPIRES: July 8, 2009
Bonded Thru Notary Public Underwriters

(Print, type, or stamp Commissioned
Name of Notary Public)

Personally Known ✓ -OR- Produced Identification _____

PROGRESS ENERGY FLORIDA, INC.

CRYSTAL RIVER - UNIT 3

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Inspection and Mitigation of Alloy 600/82/182 Pressurizer Butt Welds

Attachment 1

Inspection and Mitigation Summary for Alloy 600/82/182 Pressurizer Butt Welds

Inspection and Mitigation Summary for Alloy 600/82/182 Pressurizer Butt Welds

Nozzle		MRP-139 Volumetric Inspection Requirement Met or to be Met		Mitigation Completed or to be Completed	Comments
Function / Designation	**Susceptible Material Description**	**Outage Designation**	**Start Date (MM/YYYY)**	**Outage Designation**	
4 inch Spray Line Nozzle Safe End	Nozzle-to Safe end weld, A600 safe end and safe end to pipe weld	15R	11/07	15R	Structural Weld Overlay
4 inch Spray Line Nozzle Extension Pin	Nozzle-to extension pin weld, A600 extension pin and extension pin to pipe weld	NA	NA	None	Internal to pressurizer vessel, non-pressure retaining
2.5 inch Pressure Relief Nozzle (RCV-8)	Nozzle-to safe end weld only	15R	11/07	15R	Structural Weld Overlay
2.5 inch Pressure Relief Nozzle (RCV-9)	Nozzle-to safe end weld only	15R	11/07	15R	Structural Weld Overlay
2.5 inch Pressure Relief Nozzle (RCV-11)	Nozzle-to safe end weld only	15R	11/07	15R	Structural Weld Overlay
10 inch Surge Nozzle	Nozzle-to safe end weld only	15R	11/07	15R	Structural Weld Overlay

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Attachment 2

Results of 14R Inspections of Alloy 600/82/182 Pressurizer Butt Welds

Results of 14R Inspections of Alloy 600/82/182 Pressurizer Butt Welds

Function / Designation	Susceptible Material Description	PDI Qualified Inspection	14R Inspections	14R Results
4 inch Spray Line Nozzle Safe End	Nozzle-to Safe end weld, A600 safe end and safe end to pipe weld	None	VT-2, BMV, UT	No evidence of leakage or degradation
4 inch Spray Line Nozzle Extension Pin	Nozzle-to extension pin weld, A600 extension pin and extension pin to pipe weld	None	None	Manway not opened.
2.5 inch Pressure Relief Nozzle (RCV-8)	Nozzle-to safe end weld only	None	VT-2, BMV	No evidence of leakage or degradation
2.5 inch Pressure Relief Nozzle (RCV-9)	Nozzle-to safe end weld only	None	VT-2, BMV	No evidence of leakage or degradation
2.5 inch Pressure Relief Nozzle (RCV-11)	Nozzle-to safe end weld only	None	VT-2, BMV	No evidence of leakage or degradation
10 inch Surge Nozzle	Nozzle-to safe end weld only	None	VT-2, BMV	No evidence of leakage or degradation

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Inspection and Mitigation of Alloy 600/82/182 Pressurizer Butt Welds

Attachment 3

Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Progress Energy Florida (PEF) in this document. Any other actions discussed in the submittal represent intended or planned actions by PEF. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Supervisor, Licensing and Regulatory Programs of any questions regarding this document or any associated regulatory commitments.

Commitment	Due Date
The results of future inspections or mitigations of pressurizer Alloy 600/82/182 weld locations will be reported to the NRC within 60 days of startup from the outage during which they are performed.	60 days after the end of 15R scheduled for Fall 2007
If CR-3 should shut down due to excessive primary system unidentified leakage, and if the leakage cannot be confirmed to originate from a source other than the pressurizer, a bare metal visual examination of Alloy 600/82/182 weld locations on the pressurizer will be performed to determine whether the leakage originated at those locations.	Ongoing until mitigation of pressurizer Alloy 82/182 welds
CR-3 will mitigate and inspect the pressurizer Alloy 600/82/182 butt welds during Refuel Outage 15 (15R), scheduled for Fall 2007.	End of 15R scheduled for Fall 2007