Progress Energy

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

Ref: 10 CFR 50.46(a)(3)

October 3, 2003
3F1003-06

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

Subject: Crystal River Unit 3 – Notification of Change in Peak Clad Temperature for Large Break Loss-Of-Coolant Accident Analyses

References 1) Framatome ANP Topical Report BAW-10166P-A, Revision 4, "BEACH – Computer Program for Reflood Heat Transfer During LOCA," February 1996

2) Framatome ANP Topical Report BAW-10095A, Revision 1, "CONTEMPT – Computer Program for Predicting Containment Pressure Temperature Response to a LOCA," April 1978

3) FPC to NRC letter, dated January 7, 1999, "Change in Analysis of Record for Small Break Loss of Coolant Accident and 10 CFR 50.46 Notification"

4) FPC to NRC letter, dated November 10, 1999, "Notification of Change in Peak Clad Temperature for Small Break Loss of Coolant Accident in Accordance with 10 CFR 50.46(a)(3) and Change in the Analysis of Record for Large Break Loss of Coolant Accident"

Dear Sir:

Pursuant to 10 CFR 50.46(a)(3), Progress Energy Florida, Inc. (PEF) hereby provides notification of a change in peak clad temperature (PCT) greater than 50 °F in the Crystal River Unit 3 (CR-3) Cycle 13 large break loss of coolant accident (LBLOCA) analysis. Errors were discovered in two inputs used in the LBLOCA analyses that result in an absolute magnitude change of 81.8 °F (4.2 °F increase and 77.6 °F decrease). This change is greater than 50 °F and, therefore, is considered significant and is reportable under 10 CFR 50.46(a)(3).

While developing the LOCA analysis for Cycle 14, two errors were discovered in the existing LBLOCA analyses. The first error involved using the core inlet flow area for Mark-B11 fuel as an input parameter to the BEACH analysis (Reference 1) instead of using the core inlet flow area for the Mark-B10 fuel utilized during Cycle 13. Correcting this error resulted in an increase in PCT of 4.2 °F. Additionally, errors were found with the mass and energy release to the reactor

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containment and the containment structure heat absorption used in the CONTEMPT analysis (Reference 2). Correcting these errors resulted in a decrease in PCT of 77.6 °F. The net outcome of these errors is decrease in PCT of 73.4 °F. The resulting PCT for LBLOCA is 1937 °F. The PCT for small break LOCA (SBLOCA) remains unchanged at 1400 °F.

The methods for the current analyses of record were adopted in 1999 (References 3 and 4). Two tables summarizing changes made to these evaluation models and to PCT since that time is included as an attachment to this letter. Table 1 summarizes changes in the evaluation model and PCT for LBLOCA. Table 2 summarizes changes in the evaluation model and PCT for SBLOCA.

No new regulatory commitments are made in this letter.

If you have any questions regarding this submittal, please contact Mr. Sid Powell, Supervisor, Licensing and Regulatory Programs at (352) 563-4883.

Sincerely,

Jon A. Franke
Plant General Manager

JAF/pei

Attachment: Summary of Changes to Evaluation Models and PCT for LBLOCA and SBLOCA

xc: NRR Project Manager
Regional Administrator, Region II
Senior Resident Inspector

PROGRESS ENERGY FLORIDA, INC.

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ATTACHMENT

Summary of Changes to Evaluation Models and PCT for LBLOCA and SBLOCA

Table 1: Summary of Changes to Evaluation Model and PCT for Large Break LOCA					
Date and Reference	**Description**	**CR/NCR**	**ΔPCT (°F)**	**PCT (°F)**	**Comments**
11/10/99 3F1199-01	Notification of Change in Peak Clad Temperature for Small Break Loss of Coolant Accident in Accordance with 10 CFR 50.46(a)(3) and Change in the Analysis of Record for Large Break Loss of Coolant Accident	N/A	-41 CRAFT2 2051 RELAP5 2010	2010	Change in EM from CRAFT2 to RELAP5. Reported under 10 CFR 50.46.
02/16/00 FANP 47-5007106-00	1999 Draft ECCS Annual Letter (This letter is compiled by the Babcock and Wilcox Owners Group [BWOG] for member utility use)	N/A	N/A	2010	The letter summarizes LOCA analysis changes that occurred during 1999. The CR-3 LBLOCA changes had been previously reported via 3F1199-01. No additional 10 CFR 50.46 report was made.
04/11/01 FANP 47-5011843-00	2000 Draft ECCS Annual Letter (This letter is compiled by the BWOG for member utility use)	N/A	N/A	2010	No analyses were performed for CR-3. No 10 CFR 50.46 report was submitted by CR-3.
04/16/02 FANP 47-5017330-00	2001 Draft ECCS Annual Letter. (This letter is compiled by the BWOG for member utility use)	N/A	0 (Break down below)	2010	No PCT change. No 10 CFR 50.46 report was submitted by CR-3.
	BEACH Topical Report Correction: Extension of the SER restriction on the initial cladding temperatures		0		
	Mark-B9: 2 and 8 weight percent Gadolinia		0 Analyzed		
	Reanalysis of Mark-B9: 3 and 6 weight percent Gadolinia with EDF (energy deposition factor) change		0 Analyzed		
	Reanalysis of Mark-B9 UO2 with EDF change		0 Analyzed		

Table 1: Summary of Changes to Evaluation Model and PCT for Large Break LOCA					
Date and Reference	**Description**	**CR/NCR**	**ΔPCT (°F)**	**PCT (°F)**	**Comments**
04/28/03 FANP 47-5026040-00	2002 Draft ECCS Annual Letter (This letter is compiled by the BWOG for member utility use) Approval of RELAP5/MOD-2 B&W Topical Revision (BAW-10164, R4) Changes include: Model hot assembly as hot pin and hot bundle, improved TACO3 steady state fuel temperature uncertainties, and automation of the BEACH blockage limitation	N/A	0	2010	No PCT change. The revised methodology has not been applied to CR-3. No 10 CFR 50.46 report was submitted by CR-3.
09/04/03 JFM:03:023 Rev.1 (Received 09/08/03)	10 CFR 50.46 LBLOCA PCT Change	A/R 103960	-73.4 (Break down below)	1937	This change reported under 10 CFR 50.46 in this letter.
	BEACH inlet junction error correction	FANP NCR 6025586	+4.2		
	Containment pressure error corrections	FANP NCRs 6025570 6027344	-77.6		
Cumulative changes since last 10 CFR 50.46 Report (11/10/99) Sum of absolute magnitude of changes since last 10 CFR 50.46 Report (11/10/99)			-73.4 81.8	1937	

Table 2: Summary of Changes to Evaluation Model and PCT for Small Break LOCA

Date and Reference	Description	CR/NCR	ΔPCT (°F)	PCT (°F)	Comments
01/07/99 3F0199-02	Change in Analysis of Record for Small Break Loss of Coolant Accident and 10 CFR 50.46 Notification	N/A	-276 CRAFT2 1859 RELAP5 1583	1583	Change in EM from CRAFT2 to RELAP5. Reported under 10 CFR 50.46.
11/10/99 3F1199-01	Notification of Change in Peak Clad Temperature for Small Break Loss of Coolant Accident in Accordance with 10 CFR 50.46(a)(3) and Change in the Analysis of Record for Large Break Loss of Coolant Accident	N/A	-183	1400	Change in SBLOCA analysis to reflect HPI Upgrade modification (LAR # 241, ITS Amendment 178). SBLOCA analysis ESAS setpoint on RCS low pressure for HPI actuation raised from 1495 psia to 1640 psia. Reported under 10 CFR 50.46.
02/16/00 FANP 47-5007106-00	1999 Draft ECCS Annual Letter (This letter is compiled by the BWOG for member utility use)	N/A	N/A	1400	The letter summarizes LOCA analysis changes that occurred during 1999. The CR-3 SBLOCA changes had been previously reported via 3F1199-01. No additional 10 CFR 50.46 report was made.
04/11/01 FANP 47-5011843-00	2000 Draft ECCS Annual Letter (This letter is compiled by the BWOG for member utility use)	N/A	N/A	1400	No analyses were performed for CR-3. No 10 CFR 50.46 report was made.

Table 2: Summary of Changes to Evaluation Model and PCT for Small Break LOCA

Date and Reference	Description	CR/NCR	ΔPCT (°F)	PCT (°F)	Comments
04/16/02 FANP 47-5017330-00	2001 Draft ECCS Annual Letter (This letter is compiled by the BWOG for member utility use)	N/A	0 (Break down below)	1400	No PCT change. No 10 CFR 50.46 report was made.
	Correction of RCP Degradation Model for SBLOCA; PSC 2-00, SBLOCA considering LOOP and 1 Minute RCP Trip		0 Analyzed		
	BEACH Topical Report Correction: Extension of the SER restriction on the initial cladding temperatures		0		
04/28/03 FANP 47-5026040-00	2002 Draft ECCS Annual Letter (This letter is compiled by the BWOG for member utility use)	N/A	0 (Break down below)	1400	No PCT change. No 10 CFR 50.46 report was made.
	Approval of RELAP5/MOD-2 B&W Topical Revision (BAW-10164, R4) Changes include: Model hot assembly as hot pin and hot bundle, improved TACO3 steady state fuel temperature uncertainties, and automation of the BEACH blockage limitation		N/A		The revised methodology has not been applied to CR-3.
	Reduction in HPI flows above 1815 psia		0		
Cumulative changes since last 10 CFR 50.46 Report (11/10/99) Sum of absolute magnitude of changes since last 10 CFR 50.46 Report (11/10/99)			0 0	1400	