



Florida Power & Light Company, 6501 S. Ocean Drive, Jensen Beach, FL 34957

March 30, 2010

L-2010-067
10 CFR 50.46

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

Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Acceptance Criteria for Emergency Core Cooling
Systems for Light Water Nuclear Power Reactors
10 CFR 50.46 Annual Report

Pursuant to 10 CFR 50.46(a)(3)(ii), the nature of any change to or error discovered in the evaluation models for emergency core cooling systems (ECCS), or in the application of such models, that affect the fuel cladding temperature calculations for St. Lucie Units 1 and 2 is reported in the attachment to this letter. The estimated effect from any such change or error on the limiting ECCS analysis for each unit is also addressed. The data interval for the report is from January 1, 2009 through December 31, 2009.

Please contact us should you have any questions regarding this submittal.

Sincerely,

A handwritten signature in black ink that reads "Eric S. Katzman". The signature is written in a cursive, somewhat stylized script.

Eric S. Katzman
Licensing Manager
St. Lucie Plant

ESK/KWF

Attachment

A002
NRR

St. Lucie Units 1 and 2
10 CFR 50.46 Annual Report

Emergency core cooling system (ECCS) analyses for St. Lucie Unit 1 and St. Lucie Unit 2 are performed by AREVA and Westinghouse Electric Company (W), respectively. The following information pertaining to the evaluation models for small break loss of coolant accidents (SBLOCA) and large break loss of coolant accidents (LBLOCA), and the application of such models to each St. Lucie unit, is provided pursuant to 10 CFR 50.46(a)(3)(ii). A summary of calculated peak cladding temperature (PCT) changes is provided in Table 1. The data interval for this report is from January 1, 2009 through December 31, 2009. A discussion of the changes follows.

1.0 ST LUCIE UNIT 1

1.1 Changes to SBLOCA

1.1.1 No errors were found in the SBLOCA ECCS performance analysis since the previous report of Reference 3.2. The limiting SBLOCA PCT remains at 1702 °F and is documented in Table 1.

1.2 Changes to LBLOCA

1.2.1 No errors were found in the LBLOCA ECCS performance analysis since the previous report of Reference 3.2. The limiting LBLOCA PCT remains at 2079 °F and is documented in Table 1.

2.0 ST. LUCIE UNIT 2

2.1 Changes to SBLOCA

2.1.1 No errors were found in the SBLOCA ECCS performance analysis since the previous report of Reference 3.1. The limiting SBLOCA PCT remains at 1943° F and is documented in Table 1.

2.2 Changes to LBLOCA

2.2.1 Re-analysis due to Radial Enrichment Zoning

The St. Lucie Unit 2 LBLOCA analysis was re-analyzed to account for changes in the core parameters due to the implementation of radial enrichment zoning. The re-analysis, performed with the replacement steam generator parameters, used the same method as that of the previous analysis. The re-analysis resulted in changing the PCT from 2130°F to 2104°F.

2.2.2 Correction of a Steam Generator Input Error

An error was identified in the calculation of the secondary side cross-sectional area for the steam generators. The error resulted in an over-prediction of the mass and energy of the secondary side. The impact was estimated to be -4°F, resulting in a final PCT of 2100°F as documented in Table 1.

3.0 REFERENCES

- 3.1 FPL Letter L-2009-061, Eric Katzman to U.S. Nuclear Regulatory Commission Document Control Desk, "St. Lucie Units 1 and 2 Docket Nos. 50-335 and 50-389 Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Reactors 10 CFR 50.46 Annual Report," March 11, 2009.
- 3.2 FPL Letter L-2009-277, Eric Katzman to U.S. Nuclear Regulatory Commission Document Control Desk, "St. Lucie Unit 1 Docket No. 50-335 Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Reactors 10 CFR 50.46 Change Report," November 30, 2009.
- 3.3 FPL Letter L-2008-254, Eric Katzman to U.S. Nuclear Regulatory Commission Document Control Desk, "St. Lucie Unit 1 Docket No. 50-335 Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Reactors 10 CFR 50.46 Change Report," December 4, 2008.

Table 1: 2009 St. Lucie Units 1 and 2 SBLOCA and LBLOCA PCT Summary

Unit 1 SBLOCA Summary

Evaluation Model: XN-NF-82-49(P)(A), Revision 1, Supplement 1

Evaluation Model PCT: 1765°F

			<u>Net PCT Effect</u>	<u>Absolute PCT Effect</u>
A	Prior 10 CFR 50.46 Changes or Error Corrections – Previous Years	Δ PCT	-7 °F	11 °F
B	Prior 10 CFR 50.46 Changes or Errors Corrections – Year 2009	Δ PCT	-56 °F	72 °F*
C	10 CFR 50.46 Changes in Year 2009 Since Item B	Δ PCT	0 °F	0 °F
D	Absolute Sum of 10 CFR 50.46 Changes	Δ PCT		83 °F

The sum of the PCT from the most recent analysis using an acceptable evaluation model and the estimates of PCT impact for changes and errors identified since this analysis

1702°F < 2200°F

Unit 1 LBLOCA Summary

Evaluation Model: EMF-2087(P)(A), Revision 0

Evaluation Model PCT: 2005°F

			<u>Net PCT Effect</u>	<u>Absolute PCT Effect</u>
A	Prior 10 CFR 50.46 Changes or Error Corrections – Previous Years	Δ PCT	+54 °F	56 °F**
B	Prior 10 CFR 50.46 Changes or Errors Corrections – Year 2009	Δ PCT	+20 °F	20 °F*
C	10 CFR 50.46 Changes in Year 2009 Since Item B	Δ PCT	0 °F	0 °F
D	Absolute Sum of 10 CFR 50.46 Changes	Δ PCT		76°F

The sum of the PCT from the most recent analysis using an acceptable evaluation model and the estimates of PCT impact for changes and errors identified since this analysis

2079°F < 2200°F

* Reference 3.2 contains a 30 day report related to this cumulative PCT.

** Reference 3.3 contains a 30 day report related to this cumulative PCT.

Unit 2 SBLOCA Summary
Evaluation Model: CENPD-137, Supplement 2-P-A
Evaluation Model PCT: 1943°F

			<u>Net PCT Effect</u>	<u>Absolute PCT Effect</u>
A	Prior 10 CFR 50.46 Changes or Error Corrections – Previous Years	Δ PCT	0 °F	0 °F
B	Prior 10 CFR 50.46 Changes or Errors Corrections – Year 2009	Δ PCT	0 °F	0 °F
C	10 CFR 50.46 Changes in Year 2009 Since Item B	Δ PCT	0 °F	0 °F
D	Absolute Sum of 10 CFR 50.46 Changes	Δ PCT		0 °F

The sum of the PCT from the most recent analysis using an acceptable evaluation model and the estimates of PCT impact for changes and errors identified since this analysis

1943°F < 2200°F

Unit 2 LBLOCA Summary
Evaluation Model: CENPD-132, Supplement 4-P-A (1999 EM)
Evaluation Model PCT: 2104°F

			<u>Net PCT Effect</u>	<u>Absolute PCT Effect</u>
Previous Evaluation Model		PCT	2130°F	
A	Prior 10 CFR 50.46 Changes or Error Corrections – Previous Years	Δ PCT	0 °F	0 °F
B	Prior 10 CFR 50.46 Changes or Errors Corrections – Year 2009	Δ PCT	0 °F	0 °F
C	10 CFR 50.46 Changes in Year 2009 Since Item B	Δ PCT	(see below)	(see below)
New Evaluation Model PCT due to Re-analysis		PCT	2104 °F	
Steam generator Input Error		Δ PCT	-4 °F	4 °F
D	Absolute Sum of 10 CFR 50.46 Changes	Δ PCT		4 °F

The sum of the PCT from the most recent analysis using an acceptable evaluation model and the estimates of PCT impact for changes and errors identified since this analysis

2100°F < 2200°F