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April 28, 2015
L-2015-113
10 CFR 50.46

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555-0001
Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
10 CFR 50.46, "Acceptance Criteria for
Emergency Core Cooling Systems in Light Water
Nuclear Power Reactors" – 2014 Annual Report

References:

1. FPL letter from Michael Kiley to U.S. NRC Document Control Desk, "Turkey Point Units 3 and 4, Docket Nos. 50-250 and 50-251, 10 CFR 50.46, 'Acceptance Criteria for Emergency Core Cooling Systems in Light Water Nuclear Power Reactors' – 2013 Annual Report and 30-Day Special Report," L-2014-084, April 6, 2014.
2. FPL Letter, M. Kiley to U. S. Nuclear Regulatory Commission, "Turkey Point Units 3 and 4, Dockets Nos. 50-250 and 50-251, 10 CFR 50.46, 'Acceptance Criteria for Emergency Core Cooling Systems in Light Water Nuclear Power Reactors' – 30 Day Special Report," L-2014-037, Accession No. ML14069A082, February 18, 2014.
3. FPL letter, M. Kiley to U. S. Nuclear Regulatory Commission, "Turkey Point Unit 3, Dockets No. 50-250, 10 CFR 50.46, 'Acceptance Criteria for Emergency Core Cooling Systems in Light Water Nuclear Power Reactors' – 30 Day Special Report," L-2014-077, Accession No. ML14098A469, March 24, 2014.
4. FPL letter, M. Kiley to U. S. Nuclear Regulatory Commission, "Turkey Point Units 4, Dockets No. 50-251, 10 CFR 50.46, 'Acceptance Criteria for Emergency Core Cooling Systems in Light Water Nuclear Power Reactors' – 30 Day Special Report," L-2014-302, Accession No. ML14310A292, October 15, 2014
5. FPL letter, M. Kiley to U. S. Nuclear Regulatory Commission, "Turkey Point Units 3 and 4, Dockets Nos. 50-250 and 50-251, 10 CFR 50.46, 'Acceptance Criteria for Emergency Core Cooling Systems in Light Water Nuclear Power Reactors' – 30 Day Special Report," L-2014-359, Accession No. ML14351A073, December 3, 2014.
6. Westinghouse Letter, M. W. James to R. Klein, "Florida Power and Light Company Turkey Point Units 3 & 4 – 10 CFR 50.46 Annual Notification and Reporting for 2014," NF-NEXT-15-46, March 9, 2015.

10 CFR 50.46 2013 Annual Report

10 CFR 50.46(a)(3)(ii) requires that licensees report to the Commission at least annually the nature of changes to, or errors discovered in, the Emergency Core Cooling System (ECCS) evaluation models (EM), or in the application of such models that affect the peak clad temperature calculation and their effect on the limiting ECCS analysis. Table 1 provides the Florida Power & Light Company (FPL) 10 CFR 50.46 Peak Cladding Temperature (PCT) 2014 report for Turkey Point Units 3 and 4.

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FPL letter L-2014-084 (Reference 1), submitted the 2013 10 CFR 50.46 Annual Report and a 30-Day Special Report. The 2013 annual report documented the Extended Power Uprate (EPU) Large Break Loss of Cooling Accident (LBLOCA) PCT of 2115°F and EPU Small Break LOCA (SBLOCA) PCT of 1231°F for Turkey Point Units 3 and 4.

FPL letter L-2014-037 (Reference 2), submitted a 30-Day Special Report documenting an error in the LBLOCA EM in the calculation of the burst strain performed by the HOTSPOT code (Reference 2). The impact of this error resulted in an estimated PCT impact of +18 °F. The revised LBLOCA PCT for Turkey Point Units 3 and 4 was 2133 °F with a cumulative change of 89°F due to the EM error. The SBLOCA EM is not affected by the identified error.

FPL letter L-2014-084 (Reference 1), submitted a 30-Day Special Report documenting several LBLOCA EM errors. One issue was related to the grid heat transfer enhancement calculation which potentially affected the heat transfer at gridded elevations. Another error was introduced due to a change in the methodology used to calculate grid blockage ratio and porosity. The methodology change resulted in a change to the grid inputs which affected the heat transfer in the core during a LBLOCA. In addition, deficiencies were identified in the vessel Section 7 Mid-Level Elevation modeling documentation. The LBLOCA EM errors and documentation deficiencies had a negligible effect on LBLOCA analysis results, leading to an estimated PCT impact of 0°F. The 30-Day Special Report also reported the estimated PCT impact of +18 °F due to an error in the LBLOCA EM previously reported by FPL letter L-2014-037. The revised LBLOCA PCT for Turkey Point Units 3 and 4 was 2133 °F with a cumulative change of 89°F due to the EM error.

FPL letters L-2014-077 (Reference 3) and L-2014-302 (Reference 4) submitted a 30-Day Special Report for Units 3 and 4 respectively. The LBLOCA PCT reported in the 30 -Day special report removed the 12°F mixed core penalty no longer applicable for Unit 3 Cycle 27 and Unit 4 Cycle 28 and future cycles with only 15x15 Upgraded fuel assemblies. The SBLOCA PCT was not affected by the mixed core penalty.

FPL letter L-2014-359 (Reference 5) submitted a 30-Day Special Report for Turkey Point Units 3 and 4 documenting an error in the LBLOCA EM in the calculation of decay heat in the WCOBRA/TRAC code. The correction of this error resulted in an estimated impact of +3 °F on LBLOCA PCT for Turkey Point Units 3 and 4. The SBLOCA EM was not affected by the identified errors.

By letter dated March 9, 2015, Westinghouse identified several errors in the SBLOCA EM not previously discussed. Two errors were associated with the NOTRUMP computer code (reactor coolant system response model). One error was related to the fuel rod gap conductance model. Another error was identified in the calculation of the radiation heat transfer coefficient within the fuel rod model. Other errors were identified in the pre-departure from nucleate boiling (pre-DNB) cladding surface heat transfer coefficient calculation in the SBLOCTA code (cladding heat-up calculations). The SBLOCA EM errors had a negligible effect on small break LOCA analysis results, leading to an estimated PCT impact of 0°F. The magnitude of these SBLOCA errors and the resultant cumulative changes and errors for the SBLOCA EM remain below the 50 °F 30-day reporting threshold of 10 CFR 50.46(a)(3)(i) and (ii).

Table 1 provides the Turkey Point Units 3 and 4 2014 Annual Summary listing all the changes and errors identified by Westinghouse in 2014 in the LBLOCA and SBLOCA EMs. The 2014 Turkey Point Units 3 and 4 LBLOCA and SBLOCA PCTs are 2124°F and 1231°F, respectively. The PCT cumulative changes are 80°F for LBLOCA and 0 °F for SBLOCA, respectively.

10 CFR 50.46(a)(3)(ii) also requires that a schedule for reanalysis be provided or compliance with the requirements of the regulation be shown if the error is significant. Compliance with 10 CFR 50.46 requirements is demonstrated by total estimated LBLOCA and SBLOCA PCTs of 2124°F and 1231°F, respectively, both remaining below the limit of 2200°F.

Should there be any questions, please contact Mitch Guth, Licensing Manager, at 305-246-6698.

Very truly yours,

Michael Kiley
Vice President
Turkey Point Nuclear Plant

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

TABLE 1

Turkey Point Units 3 and 4
LBLOCA and SBLOCA PCT 2014 Annual Report

LBLOCA	Peak Clad Temperature	Cumulative Change
2013 10 CFR 50.46 Annual Report (Ref. 1)	2115 °F	71 °F
Errors in 2014		
- Error in Burst Strain Application (Ref. 2)	+18 °F	+18 °F
- Grid Heat Transfer Enhancement Calculation (Ref. 1)	0 °F	0 °F
- Changes to Grid Blockage Ratio and Porosity (Ref. 1)	0 °F	0 °F
- Vessel Section 7 Mid-Level Elevation Modeling (Ref. 1)	0 °F	0 °F
- Decay Group Uncertainty Factors Errors (Ref. 5)	+3 °F	+3 °F
- Temporary Mixed Core Penalty Removed (Ref. 3)(Ref. 4)	-12 °F	-12 °F
2014 10 CFR 50.46 Annual Report	**2124 °F**	**80 °F**
SBLOCA		
2013 10 CFR 50.46 Annual Report (Ref. 1)	1231 °F	0 °F
Errors in 2014		
- Fuel Rod Gap Conductance (Ref. 6)	0 °F	0 °F
- Radiation Heat Transfer Model (Ref. 6)	0 °F	0 °F
- SBLOCTA Pre-DNB Cladding Surface Area Heat Transfer Coefficient (Ref. 6)	0 °F	0 °F
2014 10 CFR 50.46 Annual Report	**1231 °F**	**0 °F**