M. Christopher Nolan
Vice President

New Nuclear Generation Strategy& Regulatory Engagement
13225 Hagers Ferry Rd., MG011E
Huntersville, NC 28078

(704) 382-7426

Chris.Nolan@duke-energy.com

Serial: RA-24-0111
April 30, 2024

10 CFR 52, Appendix D, X.B
10 CFR 50.59
10 CFR 52.97
10 CFR 50.46

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

WILLIAM STATES LEE III NUCLEAR STATION, UNITS 1 AND 2
COMBINED LICENSE NOS NPF-101 AND NPF-102
DOCKET NOS. 52-018 AND 52-019

SUBJECT: Submission of Periodic Reports and Annual 10 CFR 50.46 Report

REFERENCES:

1. Letter from M. Christopher Nolan (Duke Energy) to U.S. Nuclear Regulatory Commission (NRC), dated November 17, 2023, "Submission of Periodic Reports and Annual Updated Final Safety Analysis Report (UFSAR) Update," (ADAMS Accession No. ML23324A140).

The purpose of this letter is to submit periodic reports for William States Lee III Nuclear Station (WLS), Units 1 and 2 as required by NRC regulations and/or license conditions for a Part 52 combined license (COL) holder. These reports address various annual or semi-annual reporting requirements. The following reports are addressed by this letter:

- Semi-Annual Changes, Tests, and Experiments Report
- Semi-Annual Departures Report
- Semi-Annual Schedule for Implementation of Operational Programs
- Annual 10 CFR 50.46 Report

Semi-Annual Departures Report and Semi-Annual Changes, Tests, and Experiments Report. For the WLS Units 1 and 2, in accordance with the requirements of 10 CFR 50.59(d)(2) and 10 CFR 52, Appendix D, paragraphs X.B.1 and X.B.3.b, during the period of November 1, 2023 through April 30, 2024:

- no changes, tests or experiments were implemented pursuant to 10 CFR 50.59(c), and
- no plant-specific departures were implemented under 10 CFR 52, Appendix D, Section VIII.

Semi-Annual Schedule for Implementation of Operational Programs. Pursuant to the WLS COL Section 2.D.(11), a schedule for implementation of operational programs is required to be submitted within one year of the date of COL issuance, with subsequent reports submitted on a

semi-annual basis until the 10 CFR 52.103(g) finding. There are no changes to the schedule since the letter sent in Reference 1. Therefore, the previously submitted schedule continues to be current.

Annual 10 CFR 50.46 Report. In accordance with 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors," for the WLS Units 1 and 2, a design certification holder is required to report to the NRC in accordance with 10 CFR 50.46(a)(3). This same regulation requires a similar report from any COL holder and COL applicant. The Duke Energy COL for WLS Units 1 and 2 incorporated by reference the AP1000 design certification document and thus, also utilizes the peak cladding temperature calculations performed by Westinghouse Electric Company (WEC). As such, the WEC report, provided in the Enclosure, is applicable to the WLS Units 1 and 2.

This letter contains no new regulatory commitments.

Please address any comments or questions regarding this matter to Lee Grzeck, Licensing Manager – New Nuclear Generation at (980) 373-1530.

Sincerely,

M. Christopher Nolan

Vice President, New Nuclear Generation Strategy and Regulatory Engagement

Enclosure:

Letter from Zachary S. Harper, Westinghouse Electric Company (WEC), to the U. S. Nuclear Regulatory Commission, 10 CFR 50.46 Annual Report for the AP1000 Plant Design, Letter No. DCP_NRC_003348, dated March 24, 2024.

cc: L. Dudes, U.S. NRC Region II Administrator
D. Murray, U.S. NRC Project Manager

Enclosure

Letter from Zachary S. Harper, Westinghouse Electric Company (WEC), to the U. S. Nuclear Regulatory Commission, 10 CFR 50.46 Annual Report for the AP1000 Plant Design, Letter No. DCP_NRC_003348, dated March 25, 2024

Westinghouse Electric Company
1000 Westinghouse Drive
Cranberry Township, Pennsylvania, 16066
USA

U.S. Nuclear Regulatory Commission
Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

Direct tel: 412-374-5093
Direct fax: 724-940-8505
e-mail: harperzs@westinghouse.com

Your Ref: Docket No. 52-006
Our Ref: DCP_NRC_003348

March 25, 2024

Subject: 10 CFR 50.46 Annual Report for the AP1000® Plant Design

Pursuant to 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors", Westinghouse Electric Company, LLC is submitting this report to document emergency core cooling system (ECCS) evaluation model changes or errors for the 2023 Model Year (i.e., 01/01/2023 – 12/31/2023) that affect the peak cladding temperature (PCT) calculations for the AP1000® plant design.

As described below, the following AP1000 analysis of record (AORs) is reported:

AP1000 Design Certification AOR:
On December 30th, 2011, the U.S. Nuclear Regulatory Commission certified an amendment to the Design Certification Rule for the AP1000 plant. As such, AP1000 Design Control Document (DCD) Revision 19 documents the AOR for the AP1000 Design Certification. The limiting transient for the AP1000 Design Certification is the Best Estimate Large Break Loss-of-Coolant Accident (LBLOCA). Westinghouse last provided an annual reporting letter to the NRC in March 2023 (DCP_NRC_003347) which presented an estimated PCT of 2010°F for the LBLOCA evaluation. There are no new ECCS model changes that impact PCT for the 2023 model year. The estimated PCT for LBLOCA remains at 2010°F and does not exceed the 10 CFR 50.46 (b)(1) acceptance criterion of 2200°F.

The summary of the PCT margin allocations and their bases for the AP1000 Design Certification AOR are provided in the Attachment 1.

By copy of this letter, COL Holders and COL Applicants are hereby notified of any changes or errors in the AP1000 standard plant design PCT calculations as required by 10 CFR 50.46(a)(3)(iii).

Questions or requests for additional information related to content and preparation of this information should be directed to Westinghouse. Please send copies of such questions or requests to the respective COL Holders and COL Applicants referencing the amended AP1000 Design Certification Rule for the AP1000 nuclear power plant. A representative for each COL Holder and COL Applicant is included on the cc: list of this letter.

Sincerely,

Zachary S. Harper
Manager, Licensing Engineering

/Attachments

1. 10 CFR 50.46 Annual Report for the AP1000 Design Certification AOR, 2023 Model Year

Cc:

M. Hayes	- U.S. NRC	J. Douglass	- SNC	R. Christian	- Westinghouse
B. Gleaves	- U.S. NRC	A. Quarles	- SNC	D. McDevitt	- Westinghouse
K. Lowery	- SNC	A. Zaremba	- Duke	M. Sheaffer	- Westinghouse
R. Joyce	- SNC	A. Brown	- NextEra	M. Barca	- Westinghouse
A. Chamberlain	- SNC	C. Zozula	- Westinghouse	L. Conner	- Westinghouse
J. Baker	- SNC	M. Arnold	- Westinghouse		

Attachment 1

10 CFR 50.46 Annual Report for the AP1000 Design Certification AOR, 2023 Model Year

GENERAL CODE MAINTENANCE

Background

Various changes have been made to enhance the usability of codes and to streamline future analyses. Examples of these changes include improving the input diagnostic checks; enhancing the code output; optimizing active coding; and eliminating inactive coding. These changes represent Discretionary Changes that will be implemented on a forward-fit basis in accordance with Section 4.1.1 of WCAP-13451.

Affected Evaluation Model(s)

2004 Westinghouse Realistic Large Break LOCA Evaluation Model Using ASTRUM

Estimated Effect

The nature of these changes leads to an estimated peak cladding temperature impact of 0°F.

LOCA Peak Cladding Temperature (PCT) Summary

Plant Name: AP1000
EM: ASTRUM (2004)
AOR Description: Best Estimate Large Break
Summary Sheet Status: DCD

	PCT (°F)	Reference #	Note #
ANALYSIS-OF-RECORD	1837	1	

ASSESSMENTS*	Delta PCT (°ΔF)	Reference #	Note #	Reporting Year**
1. Evaluation of Pellet Thermal Conductivity Degradation and Peaking Factor Burndown	139	2		2012
2. Revised Heat Transfer Multiplier Distributions	11	3		2013
3. Error in Burst Strain Application	23	4		2013

AOR + ASSESSMENTS **PCT =** 2010.0 °F

* The licensee should determine the reportability of these assessments pursuant to 10 CFR 50.46.

** The "Reporting Year" refers to the annual reporting year in which this assessment was included.

REFERENCES

1 APP-GW-GL-700, Revision 19, "AP1000 Design Control Document," June 2011.

2 LTR-LIS-12-288, "Information Regarding the Evaluation of Fuel Pellet Thermal Conductivity Degradation and Peaking Factor Burndown Including Analysis Input Changes for AP1000 Large Break LOCA Analysis," June 2012.

3 LTR-LIS-13-357, "AP1000 Plant 10 CFR 50.46 Report for Revised Heat Transfer Multiplier Distributions," July 2013.

4 LTR-LIS-14-41, "AP1000 Plant 10 CFR 50.46 Report for the HOTSPOT Burst Strain Error Correction," January 2014.

NOTES:

(a) None

LOCA Peak Cladding Temperature (PCT) Summary

Plant Name: AP1000
EM: NOTRUMP-AP
AOR Description: Appendix K Small Break
Summary Sheet Status: DCD

	PCT (°F)	Reference #	Note #
ANALYSIS-OF-RECORD	1370	1	(a)

ASSESSMENTS*	Delta PCT (°ΔF)	Reference #	Note #	Reporting Year**
1. Adiabatic Heat-up Calculation	264	2	(a)	2010

AOR + ASSESSMENTS **PCT =** 1634.0 °F

* The licensee should determine the reportability of these assessments pursuant to 10 CFR 50.46.

** The "Reporting Year" refers to the annual reporting year in which this assessment was included.

REFERENCES

1 APP-GW-GL-700, Revision 19, "AP1000 Design Control Document," June 2011.

2 LTR-LIS-10-373, "10 CFR 50.46 Report for the Evaluation of AP1000 SBLOCA 10-inch Transient Adiabatic Heat-up Calculation," June 2010.

NOTES:

(a) This is an adiabatic heat-up calculated PCT.