



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 3, 2018

Mr. Adam C. Heflin
President, Chief Executive Officer,
and Chief Nuclear Officer
Wolf Creek Nuclear Operating Corporation
Post Office Box 411
Burlington, KS 66839

SUBJECT: WOLF CREEK GENERATING STATION, UNIT 1 – REGULATORY AUDIT SUMMARY REGARDING LICENSE AMENDMENT REQUEST FOR TRANSITION TO WESTINGHOUSE CORE DESIGN AND SAFETY ANALYSES INCLUDING ADOPTION OF ALTERNATIVE SOURCE TERM (CAC NO. MF9307; EPID L-2017-LLA-0211)

Dear Mr. Heflin:

By letter dated January 17, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17054C103), as supplemented by letters dated March 22, May 4, July 13, October 18, and November 14, 2017; and January 15 and January 29, 2018 (ADAMS Accession Nos. ML17088A635, ML17130A915, ML17200C939, ML17297A478, ML17325A982, ML18024A477, and ML18033B024, respectively), Wolf Creek Nuclear Operating Corporation (the licensee) submitted a license amendment request for transition to Westinghouse Core Design and Safety Analyses including adoption of Alternative Source Term in accordance with Title 10 of the *Code of Federal Regulations* Section 50.67 for the Wolf Creek Generating Station, Unit 1.

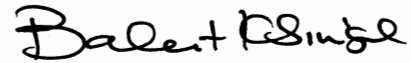
To support its review of the license amendment request, the U.S. Nuclear Regulatory Commission staff conducted a regulatory audit at the Westinghouse facility in Rockville, Maryland from March 19, 2018, to March 20, 2018, to verify information submitted by the licensee and the supporting calculations. The regulatory audit summary is enclosed with this letter.

A. Heflin

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If you have any questions, please contact me at 301-415-3016 or via e-mail at Balwant.Singal@nrc.gov.

Sincerely,



Balwant K. Singal, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosure:
Regulatory Audit Summary

cc: Listserv

REGULATORY AUDIT SUMMARY FOR MARCH 19 - MARCH 20, 2018, AUDIT
IN SUPPORT OF THE REVIEW OF LICENSE AMENDMENT REQUEST
FOR TRANSITION TO WESTINGHOUSE CORE DESIGN AND SAFETY ANALYSES
INCLUDING ADOPTION OF ALTERNATIVE SOURCE TERM
WOLF CREEK NUCLEAR OPERATING CORPORATION
WOLF CREEK GENERATING STATION, UNIT 1
DOCKET NO. 50-482

1.0 BACKGROUND

By letter dated January 17, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17054C103), as supplemented by letters dated March 22, May 4, July 13, October 18, and November 14, 2017; and January 15 and January 29, 2018 (ADAMS Accession Nos. ML17088A635, ML17130A915, ML17200C939, ML17297A478, ML17325A982, ML18024A477, and ML18033B024, respectively), Wolf Creek Nuclear Operating Corporation (WCNOC, the licensee) submitted a license amendment request (LAR) for transition to Westinghouse Core Design and Safety Analyses including adopting an Alternative Source Term (AST) for the Wolf Creek Generating Station, Unit 1 (WCGS).

The proposed amendment would revise the WCGS Technical Specifications (TSs) to replace the existing WCNOC methodology for performing core design, non-loss-of-coolant accident (non-LOCA) and LOCA safety analyses with standard Westinghouse developed and U. S. Nuclear Regulatory Commission (NRC)-approved analysis methodology. The proposed LAR would also change the TSs to revise WCGS licensing basis by adopting the AST radiological analysis methodology in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.67, "Accident source term."

The NRC staff reviewed the impact of implementing an AST on currently analyzed design-basis accidents in the WCGS licensing basis and identified the need for additional information in order to complete the review of the LAR. By letters dated January 15 and January 29, 2018, the licensee provided responses to the request for addition information (RAI). The NRC staff has performed a detailed review of the proposed TS changes and supporting calculations and determined that face-to-face interactions with the WCNOC staff can resolve complex technical issues more quickly than multiple rounds of RAIs. Hence, the NRC staff determined the need for a regulatory audit to be conducted in accordance with the Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-111, "Regulatory Audits" (ADAMS Accession No. ML082900195), for the NRC staff to gain a better understanding of the licensee's calculations and other aspects of the LAR. An audit plan was issued by the NRC staff by letter dated March 8, 2018 (ADAMS Accession No. ML18066A050). The scope of the audit was primarily focused on changes to the WCGS licensing basis for adopting the AST radiological analysis methodology. In addition to examining the audit documents,

the NRC staff held discussions with the Westinghouse and WCNOG subject matter experts to better understand WCNOG's response to the RAIs, provided by letters dated January 15 and January 29, 2018.

2.0 AUDIT DATES AND LOCATION

The regulatory audit was held at the Westinghouse facility in Rockville, Maryland. The audit was originally planned for March 19, March 20, and March 21, 2018. However, the NRC staff was able to complete it in 2 days (March 19 and March 20, 2018).

3.0 AUDIT TEAM MEMBERS

The following NRC audit team members consisted of:

- Mark Blumberg, Lead Technical Reviewer, NRR, Division of Risk Assessment (DRA), Radiation Protection and Consequences Branch (ARCB)
- Kristy Bucholtz, Technical Reviewer, NRR/DRA/ARCB (Part Time)
- Balwant Singal, Senior Project Manager, NRR, Division of Operating Reactor Licensing (DORL). Plant Licensing Branch IV (LPL4)
- Siva Lingam, Project Manager, NRR/DORL/LPL4 (Part Time)
- John Hughey, Technical Reviewer, NRR/DRA, Probabilistic Risk Assessment and Human Factors Branch (APHB) (Part Time)
- Kevin Quinlan, Office of New Reactors, Division of Site and Environmental Analysis, Hydrology and Meteorology Branch, Meteorology Team (Part Time)

The following WCNOG and Westinghouse staff (in support of the licensee) participated in the audit:

- Nicole Good, Licensing Engineer, WCNOG
- Dustin Wirth, Westinghouse (WCGS Site Supervisor)
- Sean Kinnas, Containment Radiological Analysis, Westinghouse
- Alex Markivich, Radiation Engineering and Analysis, Westinghouse
- Jim Smith, Licensing Manager, Westinghouse
- Mike Watson, Project Manager, Westinghouse

4.0 DOCUMENTS AUDITED

The following documents were reviewed at the Audit:

- a. The radiological calculations and documents which support the LAR and the RAI responses dated January 15 and January 29, 2018.
- b. The RADTRAD computer code input and output decks used to support the LAR.

5.0 AUDIT ACTIVITIES

The audit consisted of the following activities:

- NRC's staff entrance briefing.
- A period in which the staff examined the documents and held discussions with WCNOG and Westinghouse participants as needed for technical understanding.
- Exit briefing for NRC to present observations in person and Westinghouse to seek clarification.

6.0 AUDIT SUMMARY

The purpose of this regulatory audit was to determine if calculations performed by the licensee support the bases for the proposed changes to the TSs and the modifications to the design basis in accordance with 10 CFR 50.67. The area of focus during the audit was the licensee's response to RAIs, by letters dated January 15 and January 29, 2018, and the calculations performed by the licensee in support of the proposed LAR (RAIs were issued by the NRC staff by letter dated December 4, 2017 (ADAMS Accession No. ML17331A178)).

Results of the Audit

- a. Based on the review of the RAI responses, the NRC staff indicated that the NRC staff currently does not have any followup questions for the following RAIs:¹ LOAC-2, LLBA-1, LOCA-2, LOCA-4, FHA-1, FHA-4, FHA-7, SGTR-1, SGTR-4, WT-1, WT-2, CREA-2, Control Room-5, and General-1
- b. Based on the clarifications provided by the licensee during the audit, the NRC staff indicated that the NRC staff currently does not have any further questions on the following RAIs:¹ LLBA-3, SGTR-3, Control Room-1, Control Room-2, Control Room-6, General-3.
- c. Based on the review of the calculations and discussions during the audit, the licensee indicated that it understands the NRC staff concerns and intends to supplement its previous RAI response for the following RAI questions:¹ LOCA-1, LOAC-1, LLBA-2, LLBA-4, LOCA-1, LOCA-3, FHA-2, FHA-5, FHA-6, SGTR-2, SGTR-6, LRA-1, MSLB-1, MSLB-2, WT-3, WT-4, WT-5, CREA-1, Control Room-3, Control Room-4, and General-2.

¹ All RAI numbers to be preceded by ARCB1

- d. The discussions could not be concluded on RAIs ARCB1-LOCA-5, ARCB1-FHA-3, and ARCB1-SGTR-5. It was decided to have follow-up discussions on these RAIs after the conclusion of the audit. Follow-up discussions may result in additional RAIs.

7.0 EXIT BRIEFING

As described in Section 6.0 of this summary, the exit discussion summarized the status of each RAI. As described in Section 6.0, either based on the RAI responses provided by the licensee by letters dated January 15 and January 29, 2018, or as a result of clarifications provided during the audit, the NRC staff currently has no followup questions for the RAIs listed in 6a and 6b. The licensee intends to provide a supplemental response for RAIs listed in item 6c to address the NRC staff concerns relating to the RAI responses provided earlier, and further discussions are needed to resolve the pending NRC staff concerns for RAIs listed in 6d.

The licensee proposed to provide the supplemental response in two phases. The licensee proposed to provide the response to the first set of RAIs (RAIs not requiring additional analysis) within 30 days from the conclusion of the audit and requested for 60 to 90 days for responding to the RAIs potentially requiring additional analysis. It was decided that the proposed schedule will be discussed with the DORL and DRA management before providing a final response.

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ADAMS Accession No.: ML18107A756

*via e-mail

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| OFFICE | NRR/DORL/LPL4/PM | NRR/DORL/LPL4/LA | NRR/DSS/STSB/BC* | NRR/DRA/ARCB/BC* |
| NAME | BSingal | PBlechman | VCusmano | KHsueh |
| DATE | 04/19/18 | 04/19/18 | 04/25/18 | 04/24/18 |
| OFFICE | NRR/DRA/APHB/BC* | NRO/DSEA/RHM/BC* | NRR/DORL/LPL4/BC | NRR/DORL/LPL4/PM |
| NAME | CFong | CCook | RPascarelli | BSingal |
| DATE | 04/24/18 | 04/23/18 | 05/01/18 | 05/03/18 |

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