



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

December 31, 2020

MEMORANDUM TO: Michael I. Dudek, Chief
New Reactor Licensing Branch
Division of New Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: James Shea, Project Manager */RA/*
New Reactor Licensing Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

SUBJECT: AUDIT PLAN FOR THE REGULATORY AUDIT OF GE-HITACHI
NUCLEAR ENERGY AMERICAS, LLC TOPICAL REPORT
NEDC-33922, "BWRX-300 CONTAINMENT EVALUATION
METHOD"

By letter dated September 25, 2020, GE-Hitachi Nuclear Energy Americas, LLC (GEH) submitted Licensing Topical Report (LTR) NEDC-33922P, Revision 0, "BWRX-300 Containment Evaluation Method" (Agencywide Documents Access and Management System Accession No. ML20269A469), to the U.S. Nuclear Regulatory Commission (NRC) staff for its review and approval. Upon its acceptance of the topical report on November 13, 2020, the NRC staff started its technical review.

The purpose of the NRC's regulatory audit of the reactor systems is to: (1) gain a better understanding or confirm the NRC staff's understanding of the detailed calculations, analyses, and bases underlying the GEH LTR; (2) confirm information in the LTR and evaluate its conformance with the Standard Review Plan (SRP) or technical guidance; and (3) identify any information needed on the docket to support the basis of a reasonable assurance finding.

The audit will take place at GEH's offices in Wilmington, North Carolina; Washington, District of Columbia, and/or online via GEH's electronic reading room. The audit is currently scheduled to start on January 5, 2021, and last for the duration of the NRC staff's review of the LTR. The audit plan is provided as an enclosure.

Docket No. 99900003

EPID: L-2020-TOP-0055

Enclosure:
As stated

cc w/encl.: Listserv

CONTACT: James Shea, NRR/NRLB/PM
301-415-1388

SUBJECT: AUDIT PLAN FOR THE REGULATORY AUDIT OF GE-HITACHI NUCLEAR ENERGY AMERICAS, LLC TOPICAL REPORT NEDC-33922, "BWRX-300 CONTAINMENT EVALUATION METHOD"
DATED: DECEMBER 31, 2020

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OFFICE	DNRL/NRLB: PM	DNRL/NRLB: LA	NRR/DSS/SNSB	DNRL/NRLB: PM
NAME	MJohnson	CSmith	SKrepel	JShea
DATE	12/23/2020	12/29/2020	12/30/2020	12/30/2020

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UNITED STATES NUCLEAR REGULATORY COMMISSION
AUDIT PLAN FOR THE REGULATORY AUDIT OF
GE-HITACHI NUCLEAR ENERGY TOPICAL REPORT
NEDC-33922, "BWRX-300 CONTAINMENT EVALUATION METHOD"

Docket No. 99900003

APPLICANT: GE Hitachi Nuclear Energy (GEH)

APPLICANT CONTACT: George Wadkins

DURATION: January 5, 2021, through the completion of the U.S. Nuclear Regulatory Commission's (NRC's) review, currently scheduled to be completed by October 31, 2021

LOCATION: U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

GE Hitachi Nuclear Energy
Electronic reading room (eRR)

GE Hitachi Offices
1299 Pennsylvania Avenue
Washington, DC 20004

Ge Hitachi Offices
3901 Castle Hayne Rd
Wilmington, NC 28401

AUDIT TEAM: James Shea, NRR/NRLB/PM
Syed Haider, Audit Lead, NRR/DSS/SNSB
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Peter Lien, RES/DSA/CRAB
Andrew Ireland, RES/DSA/CRAB
Shawn Campbell, RES/DSA/FSTCB
Kevin Fice, Canadian Nuclear Safety Commission (CNSC)
**Other NRC staff members may be added as the need arises.

I. BACKGROUND AND OBJECTIVES

By letter dated September 25, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20269A469), GE-Hitachi Nuclear Energy Americas, LLC, submitted

Licensing Topical Report NEDC-33922, Revision 0, "BWRX-300 Containment Evaluation Method" (ADAMS Accession No. ML20269A471), for the NRC staff's review. The NRC staff has initiated its detailed technical review of NEDC-33922-P and determined that efficiencies can be gained through a regulatory audit of technical information supporting the topical report.

The objectives of this audit are for the NRC staff to:

- gain a better understanding of the detailed calculations, analyses, and bases in the GEH NEDC-33922, "BWRX-300 Containment Evaluation Method," and to confirm the NRC staff's understanding;
- gain a better understanding of the code, scaling, applicability and uncertainty (CSAU) relevant to the Phenomena Identification and Ranking Table (PIRT) in the NEDC-33922, "BWRX-300 Containment Evaluation Method," and to confirm the NRC staff's understanding;
- better understand if the methodology conforms to the NRC regulations and meets the acceptance criteria; and develop requests for additional information (RAIs).

The NRC staff requests that GEH provide the following:

1. Associated calculation notebooks, drawings and documentation of the BWRX-300 in sufficient detail that the NRC staff can develop independent confirmatory calculations with the NRC system thermal-hydraulic codes of the TRACG results (via the electronic reading room (eRR)).
2. List of code changes made to the TRACG code since the application to ESBWR (NEDC-33083PA, Revision 2) (via eRR).
3. GOTHIC documentation of sufficient detail, that the NRC staff can develop independent confirmatory calculations with the NRC's selected codes and evaluate the underlying fine mesh numerical schemes.
4. Isolation condenser LOCA trip logic and flow rate sensor conceptual design documentations if there are any.
5. PCCS and heat transfer calculation spreadsheet and the associated documentation.

As the NRC staff proceeds through its safety review of the topical report, additional material may be requested during the audit and questions may arise that will be discussed with the applicant during audit teleconferences. These discussions will inform the NRC staff of any requests for additional information. Issues of technical merit will be discussed during public meetings, some of which may be closed to the public to allow the exchange of proprietary information.

II. REGULATORY AUDIT BASIS

This regulatory audit is being initiated under the guidance contained in Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-500, Revision 8, "Topical Report Process," (ADAMS

Accession No. ML19123A252) and will be conducted in accordance with NRR Office Instruction LIC-111, Revision 1, "Regulatory Audits" (Reference 1).

The regulatory audit is based on the following regulations, as indicated by the applicant in the following submittals:

- Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.34(a)(1), "Contents of Applications; Technical Information."
- 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 2, "Design Bases for Protection Against Natural Phenomena."
- GDC 4, "Environmental and Dynamic Effects Design Bases."
- GDC 16, "Containment Design."
- GDC 19, "Control Room."
- GDC 38, "Containment Heat Removal."
- GDC 41, "Containment Atmosphere Cleanup."
- GDC 50, "Containment Design Basis."
- GDC 51, "Fracture Prevention of Containment Pressure Boundary."

Through the course of the review, the NRC staff may identify additional regulations or guidance that need to be incorporated into the audit. The applicant will be promptly notified of any additions.

III. REGULATORY AUDIT SCOPE

To further the NRC staff's understanding of the BWRX-300 design and containment evaluation methodology, the NRC staff will audit documents, analyses, and calculations that support assertions made by GEH in the topical report. The NRC staff will also audit relevant information regarding the codes, scaling, applicability, and uncertainty (CSAU) relevant to the PIRT in GEH LTR NEDC-33922, "BWRX-300 Containment Evaluation Method." The audit will inform the NRC staff of any requests for information, if such requests are needed.

IV. SPECIAL REQUESTS

The NRC staff requests that GEH: (1) provide access to its subject matter experts, as needed, during audit discussions and teleconferences, and (2) establish an eRR to facilitate a remote NRC audit of requested materials. Use of the eRR allows multiple auditors, in different geographic locations, to examine the same document at the same time, which improves the efficiency and reduces the cost of the audit. Additional documents may be identified as the audit progresses. When the NRC staff completes its review of the documents associated with a specific issue and has completed its audit summary, it will notify either the NRC Project Manager or GEH that these documents can be removed from eRR.

In addition, the NRC staff may request in-person audit meetings with GEH personnel to facilitate the NRC staff's understanding of any material being audited. Such meetings will be scheduled based on mutual availability.

V. AUDIT ACTIVITIES AND DELIVERABLES

The NRC staff will conduct this audit in accordance with the guidance provided in LIC-111 "Regulatory Audits," (Reference 2). The audit entrance will be held on January 5, 2021. The NRC staff acknowledges the proprietary nature of the information requested and will handle it appropriately throughout the audit. While the NRC staff will take notes, the NRC staff will not remove hard copies or electronic files from the audit site(s).

The NRC staff will issue an audit summary report documenting the audit activities, facts and observations, and potential requests for additional information. This report will be made available within 90 days after the completion of the audit and will be placed on the docket and in the NRC's Agencywide Documents Access and Management System separately for making regulatory decisions.

If necessary, any concerns related to the conduct of the audit will be communicated to James Shea (NRC) at 301-415-1388 or James.Shea@nrc.gov.

REFERENCES

1. Letter from GE-Hitachi Nuclear Energy Americas, LLC, "Pre-Application Submittal of NEDC-33922P, BWRX-300 Containment Evaluation Method Licensing Topical Report," issued September 25, 2020, ADAMS Accession No. ML20269A469.
2. LIC-111, "Regulatory Audits," issued October 31, 2019, ADAMS Accession No. ML19226A274.