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

December 21, 2021

Mr. John A. Krakuszeski
Site Vice President
Brunswick Steam Electric Plant
Duke Energy Progress, LLC
8470 River Rd. SE (M/C BNP001)
Southport, NC 28461

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 − REGULATORY AUDIT SUMMARY REGARDING LICENSE AMENDMENT REQUEST TO REVISE TECHNICAL SPECIFICATIONS TO ADOPT RISK-INFORMED COMPLETION TIMES (EPID L-2021-LLA-0060)

Dear Mr. Krakuszeski:

By letter dated April 1, 2021, Duke Energy Progress, LLC (Duke Energy, the licensee) requested to amend license No. DPR-71 and DPR-62 for Brunswick Steam Electric Plant (Brunswick), Units 1 and 2, respectively, to adopt Technical Specifications Task Force (TSTF) Traveler 505 (TSTF-505), “Provide Risk-informed Extended Completion Times, RITSTF Initiative 4b,” to permit the use of risk-informed technical specification completion times for certain actions required when limiting conditions for operation are not met.

To support its review, the U.S. Nuclear Regulatory Commission staff conducted a virtual regulatory audit from September 27, 2021, through September 30, 2021. The staff reviewed documents and held discussions with Duke Energy personnel supporting the proposed license amendment. The regulatory audit summary is enclosed with this letter.

If you have any questions, please contact me at (301) 415-0272 or by e-mail at Lucas.Haeg@nrc.gov.

Sincerely,

/RA/

Lucas Haeg, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos.: 50-325 and 50-324

Enclosure:
Regulatory Audit Summary

cc: Listserv

OFFICE OF NUCLEAR REACTOR REGULATION

REGULATORY AUDIT SUMMARY FOR SEPTEMBER 27 – 30, 2021, AUDIT

IN SUPPORT OF LICENSE AMENDMENT REQUEST TO ADOPT TSTF-505

DUKE ENERGY PROGRESS, LLC

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2

DOCKET NOS. 50-325 AND 50-324

1.0 BACKGROUND

By letter dated April 1, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21091A053), Duke Energy Progress, LLC (Duke Energy, the licensee) submitted a license amendment request (LAR) to amend license No. DPR-71 and DPR-62 for Brunswick Steam Electric Plant (Brunswick), Units 1 and 2, respectively. The proposed amendment would modify the plant's technical specifications (TSs) to permit the use of risk-informed completion times (RICTs) in accordance with Technical Specification Task Force (TSTF) Traveler TSTF-505, "Provide Risk-informed Extended Completion Times, RITSTF [Risk-Informed Technical Specification Task Force] Initiative 4b" (ADAMS Accession No. ML18183A493). These RICTs would apply to certain actions required when limiting conditions for operation are not met. The U.S. Nuclear Regulatory Commission (NRC) issued a final model safety evaluation approving TSTF-505, Revision 2, on November 21, 2018 (ADAMS Package Accession No. ML18269A041).

An audit team, consisting of NRC staff and a contractor from the Pacific Northwest National Laboratory (PNNL), conducted a remote regulatory audit to support the review of the LAR from September 27, 2021, through September 30, 2021. The audit was a planned activity that included the examination and evaluation of primarily non-docketed information. The purpose of the audit was to gain an understanding of the information needed to support the NRC staff's licensing decision regarding the LAR and to develop requests for additional information (RAIs). Specifically, the audit was conducted with the intent to gain understanding, to verify information, and/or to identify information that will require docketing to support the basis of a licensing or regulatory decision.

Performing a regulatory audit of the licensee's information is expected to assist the staff in efficiently conducting its review or gain insights on the licensee's processes or procedures. Information that the NRC staff relies upon to make the safety determination must be submitted on the docket. However, the NRC staff may review supporting information retained as records under Title 10 of the *Code of Federal Regulations* (10 CFR) 50.71 and/or 10 CFR 54.37, which, although not required to be submitted as part of the licensing action, would help the staff better understand the licensee's submitted information. The information submitted in support of the LAR is under final review, and any additional information needed to support the LAR review will be formally requested by the staff using the RAI process in accordance with Office of Nuclear Reactor Regulation Office Instruction LIC–101, "License Amendment Review Procedures" (ADAMS Accession No. ML19248C539).

2.0 AUDIT ACTIVITIES

The NRC audit team consisted primarily of staff from the Division of Risk Assessment, Probabilistic Risk Assessment (PRA) Licensing Branches (A, B and C) and one PNNL contractor. The audit was also supported by NRC staff from the NRR Division of Operating Reactor Licensing (DORL), Division of Engineering and External Hazards (DEX) and the Division of Safety Systems (DSS). Attachment 1 provides the list of attendees from NRC, PNNL, and Duke Energy.

The NRC audit team held an entrance meeting on Monday, September 27, 2021, with the licensee's staff. During the remainder of the audit, the NRC audit team participated in technical discussions with the licensee based on discipline according to the audit plan (ADAMS Accession No. ML21260A074). Technical discussions were focused on the following major areas: PRA, external hazards, TSs, electrical engineering, instrumentation and controls, and plant systems. The NRC audit team participated in an audit exit meeting with the licensee on Thursday, September 30, 2021, where the NRC staff provided a brief conclusion of the team's goals, objectives, and technical discussions. There were no open items in the discussion and no deviation from the audit plan. Duke Energy stated that it intended to submit a supplement to the LAR to address audit discussion points and potential RAIs. Attachment 2 contains a list of documents reviewed by the team during the audit.

3.0 RESULTS OF THE AUDIT

Duke Energy provided a LAR supplement to the NRC on November 1, 2021 (ADAMS Accession No. ML21305A891). No RAIs were identified as part of the NRC staff's review of the supplement.

Attachments:
1. List of Participants
2. List of Documents Reviewed During the Audit

List of Participants

U.S. Nuclear Regulatory Commission (NRC) Audit Team

Name	Role and Organization
Hon, Andrew	Project Manager, NRR/DORL/LPL2-2
Jessup, William (Bill)	Team Lead, PRA Licensing Reviewer, DRA/APLA
Biro, Mihaela	PRA Licensing Reviewer, DRA/APLA
Grenier, Bernard	Program Technical Assistant, DRA/APLB
Kleeh, Edmund	Electrical Engineering Reviewer, DEX/EEEB
Lee, Brian	Containment Systems Reviewer, DSS/SCPB
Li, Ming	Instrumentation & Controls Reviewer, DEX/EICB
Nguyen, Khoi	Electrical Engineering Reviewer, DEX/EEEB
Pascarelli, Robert	PRA Licensing A Branch Chief, DRA/APLA
Valentin-Olmeda, Milton	PRA Licensing Reviewer, DRA/APLC
West, Khadijah	Technical Specifications Reviewer, DSS/STSB
Wilk, Mark	Contractor, PNNL
Wu, De (Wesley)	PRA Licensing Reviewer, DRA/APLC

Acronyms:

APLA	PRA Licensing Branch A
APLB	PRA Licensing Branch B
APLC	PRA Licensing Branch C
DEX	Division of Engineering and External Hazards
DORL	Division of Operating Reactor Licensing
DRA	Division of Risk Assessment
DSS	Division of Safety Systems
EEEB	Electrical Engineering Branch
EICB	Instrumentation & Controls Branch
LPL2-2	Plant Licensing Branch 2-2
PNNL	Pacific Northwest National Laboratory
SCPB	Containment and Plant Systems Branch
STSB	Technical Specifications Branch.

Duke Energy Progress, LLC – Brunswick Steam Electric Plant, Units 1 and 2, Audit Team

Name	Role and Organization
Vaughan, Jordan	Lead Nuclear Engineer/Fleet Licensing
Boyer, Robert	Principal Engineer/PRA
Carroll, Bryan	Manager – Nuclear Engineering/PRA
De Rego, Christopher	Engineer II/PRA
Doran, Brian	Senior Nuclear Engineer/Brunswick Engineering
Grzeck, Lee	Fleet Licensing Manager/Nuclear Regulatory Affairs
Isbell, Robert	Lead Nuclear Engineer/PRA
Kang, Myung	Lead Nuclear Engineer/PRA
McCrory, Jamie	Lead Nuclear Engineer/PRA
Mironenko, Artur	Senior Nuclear Engineer/PRA

Duke Energy Progress, LLC – Brunswick Steam Electric Plant, Units 1 and 2, Audit Team

Name	Role and Organization
Needham, Dan	Brunswick Operations
Nolan, Chris	Vice President – Nuclear Regulatory Affairs, Policy & Emergency Preparedness
Rishel, Robert	Director Nuclear Engineering/PRA
Schlichting, William	Lead Nuclear Engineer/PRA
Szews, Heather	Manager – Nuclear Engineering/PRA
Thrailkill, Mark	Lead Nuclear Engineer/Brunswick Engineering
Turkal, Mark	Lead Nuclear Engineer/Fleet Licensing
Varnedoe, Jennifer	Lead Nuclear Engineer/PRA
Woody, Douglas	Lead Nuclear Engineer/PRA
Zaremba, Arthur	Fleet Licensing Manager/Nuclear Regulatory Affairs

List of Documents Reviewed During the Audit

Documents Available for Review on the Certrec Inspection Management System Portal

The licensee provided an extensive list of supporting documents (e.g., analyses, calculations, reports, procedures) on the document portal available during the week of the audit.

Calculations and Supporting Analysis Material

- Brunswick Nuclear Plant Calculation BNP-PSA-075, “Brunswick Nuclear Plant PRA - Uncertainty Analysis,” Revision 3
- Brunswick Nuclear Plant Calculation BNP-PSA-100, “BNP High Wind Probabilistic Risk Assessment (HWPRA): Quantification,” Revision 4
- Brunswick Nuclear Plant Calculation BNP-PSA-094, “PSA Model External Flooding Analysis,” Revision 4
- Brunswick Nuclear Plant Calculation BNP-PSA-113, “BNP Phoenix Electronic Risk Assessment Tool (ERAT),” Revision 2
- Brunswick Nuclear Plant Calculation BNP-PSA-062, “Brunswick Nuclear Plant PRA: System Notebook Appendix 25 – Supplemental Diesel and FLEX Equipment,” Revision 13
- Brunswick Nuclear Plant Calculation BNP-PSA-034, “Brunswick Nuclear Plant PRA – Human Reliability Analysis, OPER-FLEX-COMP, Failure to Stage and Align FLEX Air Compressor,” Revision 19
- Microsoft Excel Spreadsheet for Fire PRA Uncertainty Screening (BNP Uncertainties_FIRE.xlsx)
- Microsoft Excel Spreadsheet for Level 2 PRA Uncertainty Screening, (BNP Generic LERF Uncertainties.xlsx)
- Microsoft Excel Spreadsheet for Internal Events and Internal Flooding PRA Uncertainty Screening (BNP Uncertainties_IE_IF_rev1.xlsx)
- Microsoft Excel Spreadsheet for Risk Informed Completion Time Estimate Inputs (RICT Estimate Inputs.xlsx)
- Brunswick Nuclear Plant Calculation BNP-E-7-010, Emergency Diesel Generator Static & Dynamic Load Study, Revision 19

PRA Acceptability

- Brunswick Nuclear Plant Calculation BNP-PSA-068 Attachment 3, “BNP 2010 PRA Peer Review Report,” June 2010, Revision 5
- Brunswick Nuclear Plant Calculation BNP-PSA-068 Attachment 5, “2012 Fire Peer Review Report,” February 2012, Revision 5
- Brunswick Nuclear Plant Calculation BNP-PSA-068 Attachment 6, “2015 Focused Scope Fire PRA Peer Review,” May 2015, Revision 5
- Brunswick Nuclear Plant Calculation BNP-PSA-068 Attachment 7, “2016 Focused Scope Internal Flood PRA Peer Review,” December 2016, Revision 6

- Brunswick Nuclear Plant Calculation BNP-PSA-068 Attachment 8, “2017 F&O Closure for Internal Events & Internal Flood,” August 2017, Revision 6
- Brunswick Nuclear Plant Calculation BNP-PSA-068 Attachment 12, “Brunswick Nuclear Plant Units 1 and 2 PRA Facts and Observations Independent Assessment Report Using NEI 05-04/07 – 12/12-13 Appendix X,” January 2020, Revision 10
- Brunswick Nuclear Plant Calculation BNP-PSA-068 Attachment 13, “Independent Assessment of Facts & Observations Closure of the Brunswick Internal Events and Internal Flooding Probabilistic Risk Assessment,” June 12, 2020, Revision 10
- Engineering Planning and Management, Inc. Report R2919-002-003, “F&O Closeout by Independent Assessment of the Brunswick Nuclear Plant (BNP) Fire PRA Model,” October 2018, Revision 1

Fleet and Plant Procedures

- Duke Energy Procedure AD-OP-ALL-0204, “Plant Status Control,” Revision 5
- Duke Energy Procedure AD-OP-ALL-0212, “Risk Informed Completion Time Program Calculations,” Revision 0
- Duke Energy Procedure, AD-NF-NGO-0502, “Probabilistic Risk Assessment (PRA) Model Technical Adequacy,” Revision 4
- Duke Energy Procedure, AD-WC-ALL-0200, “On-Line Work Management,” Revision 20
- Duke Energy Procedure, AD-WC-ALL-0240, “On-Line Risk Management Process,” Revision 3
- Brunswick Nuclear Plant Procedure 0OWP-51/1, “Removal of 125 VDC Battery System from Service Including DC Control Power Alignment,” Revision 56
- Brunswick Nuclear Plant Procedure 0OWP-51/4, “Removal of a Unit 1/2 125/250 Volt D.C. Switchboard from Service,” Revision 12
- Brunswick Nuclear Plant Procedure 0AOP-36.1, “Loss of Any 4160V Buses or 480V E-Buses,” Revision 82
- Brunswick Nuclear Plant Procedure 0OI-50, “125/250 and 24/48 VDC Electrical Load List,” Revision 81
- Brunswick Nuclear Plant Procedure, 0OI-50.1, “4160V Emergency Bus E-1 Electrical Load List,” Revision 73
- Brunswick Nuclear Plant Procedure, 0OI-50.2, “4160V Emergency Bus E-2 Electrical Load List,” Revision 87
- Brunswick Nuclear Plant Procedure, 0OI-50.3, ‘4160V Emergency Bus E-3 Electrical Load List,” Revision 74
- Brunswick Nuclear Plant Procedure, 0OI-50.4, “4160V Emergency Bus E-4 Electrical Load List,” Revision 64
- Brunswick Nuclear Plant Procedure, 0OI-50.5, “120V UPS Bus 1-1A and 2-2A Electrical Load List,” Revision 37
- Brunswick Nuclear Plant Procedure 0OI-01.01, “BNP Conduct of Operations Supplement,” Revision 109
- Brunswick Nuclear Plant Procedure 2EOP-01-SBO, “Station Blackout,” Revision 4

Miscellaneous Documentation

- Brunswick Nuclear Plant Design Basis Document DBD-106, “Hazard Analysis,” Revision 4
- Microsoft Word Document for Summary of Risk Management Action Methodology (RMAs.docx)
- Microsoft Word Document for Overview of Risk Informed Completion Time Calculation Approach (Documentation supporting RICT calcs.docx)
- Microsoft PowerPoint Presentation for Brunswick Nuclear Plant Electrical Distribution Overview (Electrical Overview.pptx)
- Brunswick Nuclear Plant Unit 1 125 VDC Distribution System Diagram
- Brunswick Nuclear Plant Unit 2 125 VDC Distribution System Diagram
- Brunswick Nuclear Plant Units 1 & 2 Electrical Power Distribution System Diagram

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ADAMS Accession No.: ML21348A719

OFFICE	NRR/DORL/LPL2-2/PM	NRR/DORL/LPL2-2/LA	NRR/DORL/LPL2-2/BC	NRR/DORL/LPL2-2/PM
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DATE	12/14/2021	12/20/2021	12/21/2021	12/21/2021

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