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

December 14, 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 – ISSUANCE OF AMENDMENT NOS. 306 AND 334 TO REVISE STANDBY LIQUID CONTROL SYSTEM BORON SOLUTION STORAGE TANK VOLUME TECHNICAL SPECIFICATIONS (EPID L-2021-LLA-0022)

Dear Mr. Krakuszeski:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment Nos. 306 and 334 to Renewed Facility Operating License Nos. DPR-71 and DPR-62 for the Brunswick Steam Electric Plant, Units 1 and 2, respectively. These license amendments are in response to your request dated February 23, 2021. Specifically, they increase the minimum boron solution storage tank volume requirements of Figure 3.1.7-1, "Sodium Pentaborate Solution Volume Versus Concentration Requirements," for the Standby Liquid Control (SLC) system.

A copy of the related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's monthly *Federal Register* Notice.

Sincerely,

/RA/

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

Docket Nos.: 50-325 and 50-324

Enclosures:
1. Amendment No. 306 to DPR-71
2. Amendment No. 334 to DPR-62
3. Safety Evaluation

cc: Listserv

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

DUKE ENERGY PROGRESS, LLC

DOCKET NO. 50-325

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 306
Renewed License No. DPR-71

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment filed by Duke Energy Progress, LLC (the licensee), dated February 23, 2021, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications, as indicated in the attachment to this license amendment; and paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-71 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 306, are hereby incorporated in the license. Duke Energy Progress, LLC shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented prior to startup from the 2022 Unit 1 refueling outage.

FOR THE NUCLEAR REGULATORY COMMISSION

David J. Wrona

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Date: 2021.12.14 15:34:44 -05'00'

David J. Wrona, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachments:
Changes to the Renewed Operating License, Technical Specifications

Date of Issuance: December 14, 2021

ATTACHMENT TO LICENSE AMENDMENT NO. 306

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1

RENEWED FACILITY OPERATING LICENSE NO. DPR-71

DOCKET NO. 50-325

Replace page 6 of Renewed Facility Operating License No. DPR-71 with the attached page 6.

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages	Insert Pages
3.1-23	3.1-23

(c) Transition License Conditions

1. Before achieving full compliance with 10 CFR 50.48(c), as specified by 2. below, risk-informed changes to the licensee's fire protection program may not be made without prior NRC review and approval unless the change has been demonstrated to have no more than a minimal risk impact, as described in 2. above.

2. The licensee shall implement the modifications to its facility, as described in Table S-1, "Plant Modifications Committed," of Duke letter BSEP 14-0122, dated November 20, 2014, to complete the transition to full compliance with 10 CFR 50.48(c) by the startup of the second refueling outage for each unit after issuance of the safety evaluation. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.

3. The licensee shall complete all implementation items, except item 9, listed in LAR Attachment S, Table S-2, "Implementation Items," of Duke letter BSEP 14-0122, dated November 20, 2014, within 180 days after NRC approval unless the 180th day falls within an outage window; then, in that case, completion of the implementation items, except item 9, shall occur no later than 60 days after startup from that particular outage. The licensee shall complete implementation of LAR Attachment S, Table S-2, Item 9, within 180 days after the startup of the second refueling outage for each unit after issuance of the safety evaluation.

C. This renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2923 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 306, are hereby incorporated in the license. Duke Energy Progress, LLC shall operate the facility in accordance with the Technical Specifications.

For Surveillance Requirements (SRs) that are new in Amendment 203 to Renewed Facility Operating License DPR-71, the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment 203. For SRs that existed prior to Amendment 203, including SRs with modified acceptance criteria and SRs whose frequency of

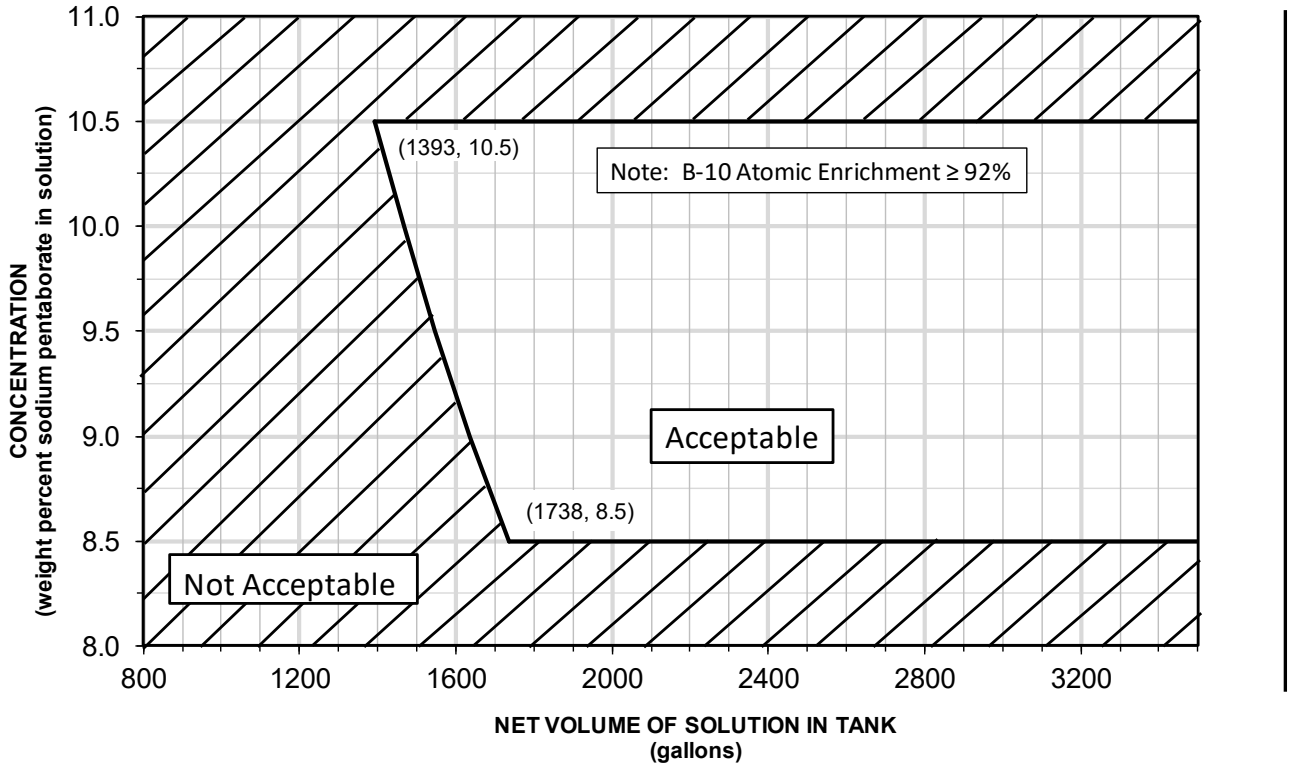

Figure 3.1.7-1 (page 1 of 1)
Sodium Pentaborate Solution Volume
Versus Concertation Requirements

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

DUKE ENERGY PROGRESS, LLC

DOCKET NO. 50-324

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 334
Renewed License No. DPR-62

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment filed by Duke Energy Progress, LLC (the licensee), dated February 23, 2021, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications, as indicated in the attachment to this license amendment; and paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-62 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 334, are hereby incorporated in the license. Duke Energy Progress, LLC shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented prior to startup from the 2023 Unit 2 refueling outage.

FOR THE NUCLEAR REGULATORY COMMISSION

David J. Wrona

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Date: 2021.12.14 15:35:19 -05'00'

David J. Wrona, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachments:
Changes to the Renewed Operating License, Technical Specifications

Date of Issuance: December 14, 2021

ATTACHMENT TO LICENSE AMENDMENT NO. 334

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 2

FACILITY OPERATING LICENSE NO. DPR-62

DOCKET NO. 50-324

Replace page 6 of Renewed Facility Operating License No. DPR-62 with the attached page 6.

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages	Insert Pages
3.1-23	3.1-23

(c) Transition License Conditions

1. Before achieving full compliance with 10 CFR 50.48(c), as specified by 2. below, risk-informed changes to the licensee's fire protection program may not be made without prior NRC review and approval unless the change has been demonstrated to have no more than a minimal risk impact, as described in 2. above.

2. The licensee shall implement the modifications to its facility, as described in Table S-1, "Plant Modifications Committed," of Duke letter BSEP 14-0122, dated November 20, 2014, to complete the transition to full compliance with 10 CFR 50.48(c) by the startup of the second refueling outage for each unit after issuance of the safety evaluation. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.

3. The licensee shall complete all implementation items, except Item 9, listed in LAR Attachment S, Table S-2, "Implementation Items," of Duke letter BSEP 14-0122, dated November 20, 2014, within 180 days after NRC approval unless the 180th day falls within an outage window; then, in that case, completion of the implementation items, except item 9, shall occur no later than 60 days after startup from that particular outage. The licensee shall complete implementation of LAR Attachment S, Table S-2, Item 9, within 180 days after the startup of the second refueling outage for each unit after issuance of the safety evaluation.

C. This renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2923 megawatts (thermal).

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 334, are hereby incorporated in the license. Duke Energy Progress, LLC shall operate the facility in accordance with the Technical Specifications.

For Surveillance Requirements (SRs) that are new in Amendment 233 to Renewed Facility Operating License DPR-62, the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment 233. For SRs that existed prior to Amendment 233,

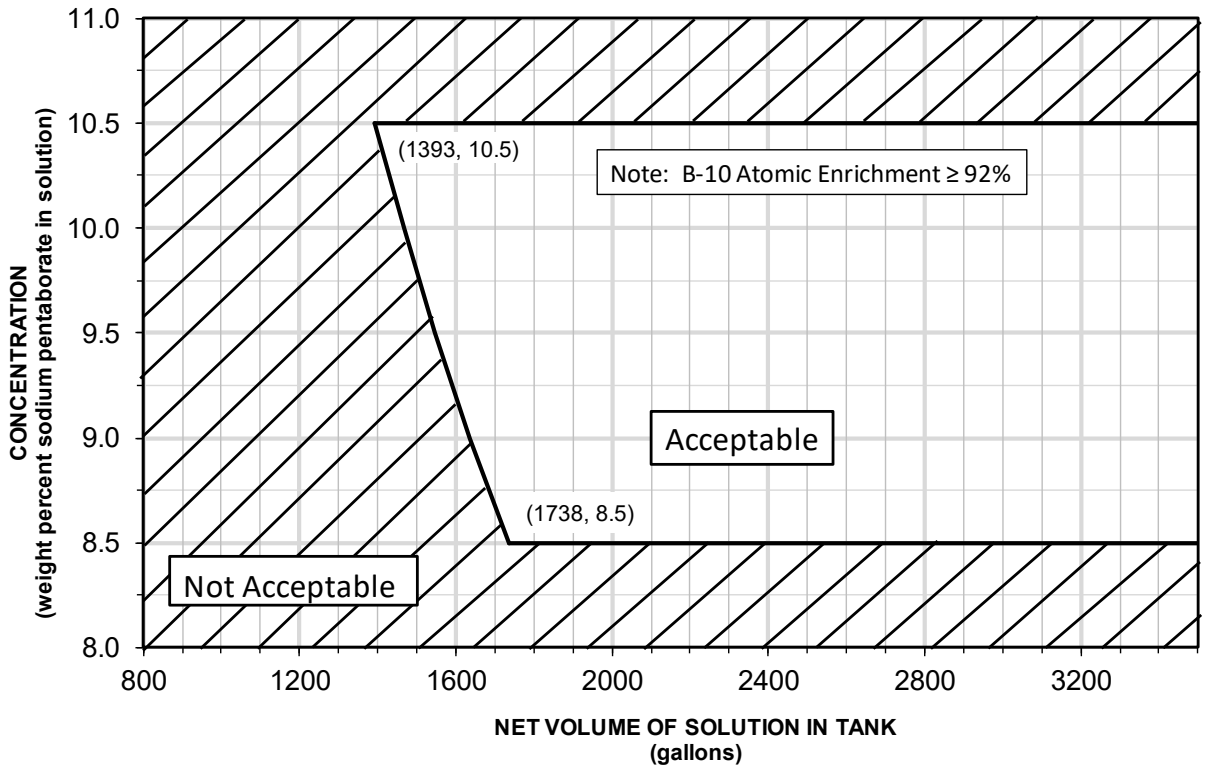

Figure 3.1.7-1 (page 1 of 1)
Sodium Pentaborate Solution Volume
Versus Concertation Requirements

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 306 AND 334

TO RENEWED FACILITY OPERATING LICENSE NOS. DPR-71 AND DPR-62

DUKE ENERGY PROGRESS, LLC

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2

DOCKET NOS. 50-325 AND 50-324

1.0 INTRODUCTION

By application dated February 23, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21054A197), Duke Energy Progress, LLC (Duke Energy, the licensee), submitted a license amendment request (LAR) to change the Facility Operating License Nos. DPR-71 and DPR-62 for Brunswick Steam Electric Plant, Units 1 and 2 (Brunswick). The proposed change increases the minimum boron solution storage tank volume requirements of the plant Technical Specification (TS) Figure 3.1.7-1, "Sodium Pentaborate Solution Volume Versus Concentration Requirements," for the Standby Liquid Control (SLC) system.

2.0 REGULATORY EVALUATION

2.1. Proposed Change

Brunswick currently uses a sodium pentaborate (SPB) solution with boron enriched to ≥ 92 atom-percent with boron-10 (B-10) isotope. The current net volume (gallons) of solution in tank versus concentration (weight percent SPB in solution) limits shown in TS Figure 3.1.7-1 were established to ensure that the SLC system injects a quantity of boron which produces a concentration of 720 parts per million (ppm) equivalent of natural boron in the reactor coolant at 70°F with normal reactor vessel water level. The requirement of this figure was established when implementing the NRC-approved Maximum Extended Load Line Limit Analysis Plus (MELLLA+) for Brunswick, "Issuance of Amendment Regarding Core Flow Operating Range Expansion (MELLLA+)," dated September 18, 2018 (ADAMS Accession No. ML18172A258).

In order to achieve future core reload flexibility for Brunswick and to add margin to the SLC shutdown capability, the licensee plans to increase natural boron concentration from 720 ppm equivalent of natural boron to 925 ppm in the reactor coolant. As a result, the proposed change would increase the minimum boron solution storage tank volume requirements of TS Figure 3.1.7-1 by shifting the left boundary of the "Acceptable" region of TS Figure 3.1.7-1 to the right. The licensee proposes that the existing minimum volume at a concentration of 10.5 weight

percent SPB in solution be increased from 1084 gallons to 1393 gallons. The existing minimum volume at a concentration of 8.5 weight percent SPB in solution would be increased from 1353 gallons to 1738 gallons. The licensee states that no other TS changes are required to support the increase in boron concentration of equivalent natural boron from 720 ppm to 925 ppm.

2.2. Reason for the Proposed Change

In the February 23, 2021 request, the licensee stated that to accommodate future core reload flexibility, the assumed 720 ppm equivalent of natural boron is being increased to 925 ppm. This increase in boron concentration is expected to add significant margin to the SLC shutdown margin analysis which will adequately bound future advancements in core designs without impacting operation. The licensee further stated that while recent core designs have shown a reduction in SLC shutdown margin, reloads beginning in 2022 will require greater than 720 ppm to achieve the required design margin.

2.3. Applicable Regulatory Requirements

The NRC staff based the evaluation on the following NRC regulations and guidance:

- Title 10 of the *Code of Federal Regulations* (CFR) Section 50.62, "Requirements for reduction of risk from anticipated transients without scram (ATWS) events for light-water-cooled nuclear power plants," which requires licensees to provide the means to address an ATWS event, an Anticipated Operational Occurrence defined in Appendix A of 10 CFR Part 50, followed by the failure of the reactor trip portion of the protection system specified in General Design Criterion[1] (GDC) 20[2] of Appendix A. In particular, 10 CFR 50.62(c)(4), requires in parts, that each boiling water reactor must have a SLC system with the capability of injecting into the reactor pressure vessel a borated water solution at such a flow rate, level of boron concentration and boron-10 isotope enrichment, and accounting for reactor pressure vessel volume, that the resulting reactivity control is at least equivalent to that resulting from injection of 86 gallons per minute of 13 weight percent sodium pentaborate decahydrate solution at the natural boron-10 isotope abundance into a 251-inch inside diameter reactor pressure vessel for a given core design.

- GDC 27, "Combined reactivity control systems capability," requires that the reactivity control systems be designed to have a combined capability, in conjunction with poison addition by the emergency core cooling system, of reliably controlling reactivity changes to assure that, under postulated accident conditions and with appropriate margin for stuck rods, the capability to cool the core is maintained.

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[1] The Brunswick design was reviewed for construction under the *General Design Criteria for Nuclear Power Plant Construction (GDC)*, issued for comment by the Atomic Energy Commission in July 1967. The GDC listed in 10 CFR Part 50, Appendix A, as amended July 7, 1971, were used as the basis for an audit of the design features of Brunswick and are included in Section 3.1 of the Brunswick Updated Final Safety Analysis Report (ADAMS Accession No. ML20260H127). While Section 3.1.1 of the Brunswick UFSAR indicates that the GDC as amended July 7, 1971, were used as the basis for an audit of the design features of Brunswick, the criteria identified in the Section 3.1.2 of the Brunswick UFSAR are based on the GDC published in the *Federal Register* on February 20, 1971. The July 7, 1971 amendments did not change the GDC considered in this SE, and thus, the identified inconsistency has no impact on the NRC staff's analysis for this LAR.

[2] *Criterion 20—Protection system functions*. The protection system shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

- In part, 10 CFR 50.67, “Accident Source Term,” sets limits for the radiological consequences of a design basis accident using an accident source term. As part of meeting the dose limits defined in 10 CFR 50.67, Brunswick credits the SLC for retaining iodine by maintaining the post-LOCA suppression pool potential hydrogen (pH) at seven or greater.

- NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants, LWR [Light Water Reactor] Edition,” Section 9.3.5, “Standby Liquid Control System (BWR),” Revision 3, dated March 2007 (ADAMS Accession No. ML070680186), provides the acceptance criteria to guide the review.

- Regulatory Guide 1.183, “Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors,” July 2000 (ADAMS Accession No.ML003716792).

- The regulation in 10 CFR 50.36(c)(2)(i) states, in part that:

  > Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met.

3.0 TECHNICAL EVALUATION

3.1. System Description

Although insertion of control rods is always expected to assure prompt shutdown of the reactor should it be required, Section 9.3.4.2, “System Description,” of the Brunswick Updated Final Safety Analysis Report (UFSAR), states that the SLC system can be manually initiated from the control room to pump a boron neutron absorber solution into the reactor if the operator believes the reactor cannot be shut down or kept shut down with the control rods. The SLC system is required only to shut the reactor down at a steady rate within the capacity of the shutdown cooling systems and keep the reactor from going critical again as it cools. In other words, the SLC system is needed only in the improbable event that not enough control rods can be inserted in the reactor core to accomplish shutdown and cooldown in the normal manner.

Brunswick’s SLC system consists of a boron solution storage tank, a test water tank, two positive-displacement pumps, two explosive valves, and associated local valves and controls. They are mounted in the reactor building outside the primary containment. The boron solution is pumped into the reactor vessel and discharged near the bottom of the core shroud so that it mixes with the cooling water rising through the core. The boron absorbs thermal neutrons and thereby terminates the nuclear fission chain reaction. The specified neutron absorber solution is sodium pentaborate.

The current requirement for Brunswick to comply with 10 CFR 50.62(c)(4) is based on satisfying a boron equivalency requirement (known as, “boron equivalency equation,”) provided in Section 9.3.4.6 of the Brunswick UFSAR as follows:

$$(Q/86) \times (M251/M) \times (C/13) \times (E/19.8) \text{ must be } \geq 1.0$$

Where,

Q (Design flow rate) = 43 gpm

M251 (Reference plant of 251-inch diameter vessel mass of dilution water) = 628,300 (pounds) lbs

M (Mass of Brunswick dilution water at reference conditions) = 485,500 lbs

C (Sodium pentaborate chemical concentration) = 8.5 weight percent

E (Minimum boron-10 enrichment) = 92 atom-percent

The TS Figure 3.1.7-1 provides the limits of SPB solution concentration, C (weight percent), versus solution volume (gallons) in the tank, and it is required for the plant to operate within the acceptable domain shown in the figure.

Inserting the above values into the boron equivalency equation will achieve a value of 1.966, which is $\geq$ 1.0. This satisfies the boron equivalency requirements for Brunswick; and therefore, meets the 10 CFR 50.62(c)(4) requirements.

3.2. Evaluation

3.2.1. Adequate Reactivity Control Maintained

TS LCO 3.1.7 requires two SLC subsystems to be OPERABLE. The OPERABILITY of the SLC System is based on the conditions of the borated solution in the storage tank, as well as the conditions of associated pumps, valves, and flow paths. The current TS Figure 3.1.7-1 was developed when implementing the NRC-approved MELLLA+ for Brunswick, on September 18, 2018 (ADAMS Accession No. ML18172A258). This TS figure provides net volume (in gallons) of solution in tank versus concentration (in weight percent SPB in solution) limits to ensure that the SLC system injects a quantity of boron which produces a concentration of 720 parts per million (ppm) equivalent of natural boron in the reactor coolant at 70°F with normal reactor vessel water level. Surveillance Requirements (SRs) 3.1.7.1 and 3.1.7.5 require the licensee to verify the available volume of SPB in solution and concentration of boron in solution is within limits of Figure 3.1.7-1, and thereby provide assurance that LCO 3.1.7 is met with respect to borated solution conditions. In order to increase the concentration of equivalent of natural boron from 720 ppm to 925 ppm, the licensee shows in Attachments 1 and 2 that the left boundary of the “Acceptable” region of TS Figure 3.1.7-1 is shifted to the right proportionately. As depicted in the modified Figure 3.1.7-1, the licensee states that this results in the existing minimum volume at a concentration of 10.5 weight percent SPB in solution to increase from 1084 gallons to 1393 gallons. The existing minimum volume at a concentration of 8.5 weight percent SPB in solution is increased from 1353 gallons to 1738 gallons. No other TS change is required to support the increase in boron concentration of equivalent natural boron from 720 ppm to 925 ppm.

The NRC staff determined that the proposed TS Figure 3.1.7-1 would increase the required minimum volume of SPB solution in the tank compared to the existing TS Figure 3.1.7-1. As shown in the figure, shifting the left boundary to the right is acceptable because the revised SLC

parameters (i.e., volume of solution in tank and concentration in weight percent of SPB) remain within the existing acceptable region, as established when implementing MELLLA+ (ADAMS Accession No. ML18172A258). In other words, the proposed change is more restrictive because it reduces the acceptable region to operate, and as before, will not allow SLC operation outside of the acceptable region of TS Figure 3.1.7-1. Furthermore, because the proposed amendment to increase the minimum volume of SPB solution in the tank does not change any of the variables in the boron equivalency equation (i.e., flow rate, vessel water mass, weight percent SPB in solution and B-10 enrichment), the requirements of 10 CFR 50.62(c)(4) continue to be met with the same margin that is currently approved by the NRC.

3.2.2. Adequate pH of Post-LOCA Reactor Coolant Maintained

The NRC staff also evaluated the licensee's statement that the increased SPB addition would not adversely impact the ability to maintain the post-LOCA pH at or above 7.0. The NRC staff concluded that because the licensee is proposing a small increase in the amount of mildly alkaline pH buffer, there would be no adverse impact on the ability to maintain the post-LOCA pH at or above 7.0. Thus, the staff finds the requirements of 10 CFR 50.67, as they relate to post-LOCA pH control, will continue to be met. In addition, the staff concluded the proposed change would not affect equipment qualification because the SPB concentration and volume would remain in the analyzed and approved region.

The licensee calculated the increased amount of stored sodium SPB solution according to the ratio of the increased equivalent natural boron concentration (925 ppm) to the current requirement (720 ppm). The staff notes that increasing the SPB according to the concentration ratio alone does not account for the increased volume and corresponding mass that would be added from the SLC system to reach the higher equivalent natural boron concentration. Using this method, the actual boron concentration would be slightly lower than 925 ppm. However, the staff considers the difference negligible given the small amount of neglected mass relative to the total, the added margin of 25 percent in the SPB quantity, and other conservatisms in the calculation.

Furthermore, the staff reviewed the NRC safety evaluation report for Brunswick MELLLA+ and confirmed that there are no limitations or conditions in the MELLLA+ safety evaluation that would prohibit the proposed change. The staff, therefore, concludes that the proposed amendment request is acceptable.

3.3. Technical Evaluation Summary

The NRC staff reviewed the licensee's proposed amendment to increase the minimum volume requirement of SPB solution in the SLC tank in order to increase boron concentration of equivalent natural boron from 720 ppm to 925 ppm. As discussed in Section 3.2 of this safety evaluation, the staff concludes that the proposed minimum volume of SPB solution in the tank would be increased compared to the existing TS Figure 3.1.7-1. The NRC staff further concludes that the proposed change does not affect the currently approved Brunswick boron equivalency equation provided in Brunswick UFSAR Section 9.3.4.6, and continues to satisfy the requirements with the same margin; and therefore, meets the requirements of (1) 10 CFR 50.62(c)(4), insofar as it requires that the SLCS be capable of reliably injecting a borated water solution into the RPV at a boron concentration, boron enrichment, and flow rate that provides the required reactivity control, and continues to meet (2) GDC 27, insofar as it requires that the reactivity control systems have the capability to reliably control reactivity changes under

postulated accident conditions. In addition, the staff concludes that the proposed increase in the amount of SPB, an alkaline pH buffer, will not adversely affect the ability to maintain the pH of the post-LOCA reactor coolant at or above 7.0, as part of meeting the requirements of 10 CFR 50.67. The staff also conclude that the TS, as amended by the proposed change, will continue to meet the requirements of 10 CFR 50.36(c)(2) and 10 CFR 50.36(c)(3) because the current SRs 3.1.7.1 and 3.1.7.5 to verify available volume and concentration of the SPB solution are within the limits of Figure 3.1.7-1 remain in effect to assure that the LCO are met. Therefore, the proposed LAR is acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the NRC staff notified the North Carolina State official on October 8, 2021, of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, published in the *Federal Register* on April 20, 2021, (86 FR 20529), and there has been no public comment on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: M. Razzaque
G. Makar
M. Hamm

Date: December 14, 2021

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 – ISSUANCE OF AMENDMENT NOS. 306 AND 334 TO REVISE STANDBY LIQUID CONTROL SYSTEM BORON SOLUTION STORAGE TANK VOLUME TECHNICAL SPECIFICATIONS (EPID L-2021-LLA-0022) DATED: DECEMBER 14, 2021

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NAME	DWrona	AHon	
DATE	12/09/2021	12/14/2021	

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