



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

April 29, 2016

Mr. Regis T. Repko  
Senior Vice President  
Governance, Projects, & Engineering  
Duke Energy Carolinas, LLC  
P.O. Box 1006/ECO7H  
Charlotte, NC 28201-1006

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2; SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1; CATAWBA NUCLEAR STATION, UNITS 1 AND 2; MCGUIRE NUCLEAR STATION, UNITS 1 AND 2; AND OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3: ISSUANCE OF AMENDMENTS REGARDING ADOPTION OF TSTF-523 (CAC NOS. MF6413 THROUGH MF6422)

Dear Mr. Repko:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment Nos. 270 and 298 to Renewed Facility Operating License (RFOL) Nos. DPR-71 and DPR-62, respectively, for the Brunswick Steam Electric Plant, Unit Nos. 1 and 2; Amendment No. 150 to RFOL No. NPF-63, for the Shearon Harris Nuclear Power Plant, Unit 1; Amendment Nos. 282 and 278 to RFOL Nos. NPF-35 and NPF-52, respectively, for the Catawba Nuclear Station, Units 1 and 2; Amendment Nos. 285 and 264 to RFOL Nos. NPF-9 and NPF-17, respectively, for the McGuire Nuclear Station, Units 1 and 2; and Amendment Nos. 398, 400, and 399 to RFOL Nos. DPR-38, DPR-47, DPR-55, respectively, for the Oconee Nuclear Station, Units 1, 2, and 3.

The amendments are in response to your application dated June 24, 2015, as supplemented by letter dated January 18, 2016. The amendments revise or add Surveillance Requirements to the Technical Specifications, to verify that the system locations susceptible to gas accumulation are sufficiently filled with water and to provide allowances which permit performance of the verification. These changes are requested to address the concerns discussed in NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems."

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

If you have any questions, please contact me by phone at 301-415-4090, or by e-mail at [jeffrey.whited@nrc.gov](mailto:jeffrey.whited@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffrey A. Whited". The signature is fluid and cursive, with the first name "Jeffrey" and last name "Whited" clearly distinguishable.

Jeffrey A. Whited, Project Manager  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-325, 50-324, 50-400,  
50-413, 50-414, 50-369, 50-370  
50-269, 50-270, and 50-287

Enclosures:

1. Amendment No. 270 to RFOL DPR-71
2. Amendment No. 298 to RFOL DPR-62
3. Amendment No. 150 to RFOL NPF-63
4. Amendment No. 282 to RFOL NPF-35
5. Amendment No. 278 to RFOL NPF-52
6. Amendment No. 285 to RFOL NPF-9
7. Amendment No. 264 to RFOL NPF-17
8. Amendment No. 398 to RFOL DPR-38
9. Amendment No. 400 to RFOL DPR-47
10. Amendment No. 399 to RFOL DPR-55
11. Safety Evaluation

cc w/encls: Distribution via Listserv



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

DUKE ENERGY PROGRESS, INC.

DOCKET NO. 50-325

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 270  
Renewed License No. DPR-71

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Brunswick Steam Electric Plant, Unit 1 (the facility), Renewed Facility Operating License No. DPR-71, filed by Duke Energy Progress, Inc., and Duke Energy Carolinas, LLC, dated June 24, 2015, as supplemented by letter dated January 18, 2016, 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.

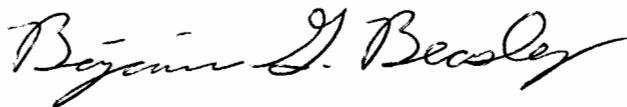
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-71 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 270, are hereby incorporated in the license. Duke Energy Progress, Inc. shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within one year from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Benjamin G. Beasley, Chief  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed License  
and the Technical Specifications

Date of Issuance: April 29, 2016

ATTACHMENT TO LICENSE AMENDMENT NO. 270  
TO RENEWED FACILITY OPERATING LICENSE NO. DPR-71  
DOCKET NO. 50-325

Replace the following page of Renewed Facility Operating License No. DPR-71 with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

REMOVE  
Page 6

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Page 6

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

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(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. 270, are hereby incorporated in the license. Duke Energy Progress, Inc. 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

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	-----NOTE----- Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR shutdown cooling isolation pressure. -----	12 hours
	Verify one required RHR shutdown cooling subsystem or recirculation pump is operating.	
SR 3.4.7.2	-----NOTE----- Not required to be performed until 12 hours after reactor steam dome pressure is less than the RHR shutdown cooling isolation pressure. -----	31 days
	Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation.  <u>AND</u>  No recirculation pump in operation.	B.1 Verify reactor coolant circulating by an alternate method.	1 hour from discovery of no reactor coolant circulation
	<u>AND</u>	<u>AND</u>
	B.2 Monitor reactor coolant temperature.	Once per 12 hours thereafter  Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.8.1 Verify one required RHR shutdown cooling subsystem or recirculation pump is operating.	12 hours
SR 3.4.8.2 Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	31 days



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>J. Two or more low pressure ECCS injection/spray subsystems inoperable for reasons other than Condition A or B.</p> <p><u>OR</u></p> <p>HPCI System and two or more required ADS valves inoperable.</p>	J.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.5.1.1 Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.</p>	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.2	<p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>Low pressure coolant injection (LPCI) subsystems may be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than the Residual Heat Removal (RHR) shutdown cooling isolation pressure in MODE 3, if capable of being manually realigned and not otherwise inoperable.</li> <li>Not required to be met for system vent flow paths opened under administrative control.</li> </ol> <p>-----</p> <p>Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	31 days
SR 3.5.1.3	Verify ADS pneumatic supply header pressure is $\geq 95$ psig.	31 days
SR 3.5.1.4	Verify the RHR System cross tie valve is locked closed.	31 days
SR 3.5.1.5	<p>-----NOTE-----</p> <p>Not required to be performed if performed within the previous 31 days.</p> <p>-----</p> <p>Verify each recirculation pump discharge valve and bypass valve cycles through one complete cycle of full travel or is de-energized in the closed position.</p>	Once each startup prior to exceeding 25% RTP

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.2	<p>Verify, for each required core spray (CS) subsystem, the:</p> <p>a. Suppression pool water level is <math>\geq</math> -31 inches; or</p> <p>b. -----NOTE----- Only one required CS subsystem may take credit for this option during OPDRVs. -----</p> <p>Condensate storage tank water volume is <math>\geq</math> 228,200 gallons.</p>	12 hours
SR 3.5.2.3	Verify, for each required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	31 days
SR 3.5.2.4	<p>-----NOTES-----</p> <p>1. One LPCI subsystem may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable.</p> <p>2. Not required to be met for system vent flow paths opened under administrative control.</p> <p>-----</p> <p>Verify each required ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	31 days

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	Verify the RCIC System locations susceptible to gas accumulation are sufficiently filled with water.	92 days
SR 3.5.3.2	<p>-----NOTE-----</p> <p>Not required to be met for system vent flow paths opened under administrative control.</p> <p>-----</p> <p>Verify each RCIC System manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	31 days
SR 3.5.3.3	<p>-----NOTE-----</p> <ol style="list-style-type: none"> <li>1. Use of auxiliary steam for the performance of the SR is not allowed.</li> <li>2. Not required to be performed until 24 hours after reactor steam pressure is adequate to perform the test.</li> </ol> <p>-----</p> <p>Verify, with reactor pressure <math>\geq 945</math> psig and <math>\leq 1045</math> psig, the RCIC pump can develop a flow rate <math>\geq 400</math> gpm against a system head corresponding to reactor pressure.</p>	92 days

(continued)

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.6.2.3.1	Verify each RHR suppression pool cooling subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position.	31 days
SR 3.6.2.3.2	Verify each RHR pump develops a flow rate $\geq 7700$ gpm through the associated heat exchanger while operating in the suppression pool cooling mode.	92 days
SR 3.6.2.3.3	Verify RHR suppression pool cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	92 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.7.1	Verify one RHR shutdown cooling subsystem is operating.	12 hours
SR 3.9.7.2	Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	31 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.8.1	Verify one RHR shutdown cooling subsystem is operating.	12 hours
SR 3.9.8.2	Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	31 days



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

DUKE ENERGY PROGRESS, INC.

DOCKET NO. 50-324

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 298  
Renewed License No. DPR-62

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Brunswick Steam Electric Plant, Unit 2 (the facility), Renewed Facility Operating License No. DPR-62, by Duke Energy Progress, Inc., and Duke Energy Carolinas, LLC, dated June 24, 2015, as supplemented by letter dated January 18, 2016, 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.

Enclosure 2



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. 298, are hereby incorporated in the license. Duke Energy Progress, Inc. shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within one year from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, reading "Benjamin G. Beasley". The signature is fluid and cursive, with the first name being the most prominent.

Benjamin G. Beasley, Chief  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed License  
and the Technical Specifications

Date of Issuance: April 29, 2016

ATTACHMENT TO LICENSE AMENDMENT NO. 298  
TO RENEWED FACILITY OPERATING LICENSE NO. DPR-62  
DOCKET NO. 50-324

Replace the following page of Renewed Facility Operating License No. DPR-62 with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

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

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3.9-12  
3.9-15

(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.

B. 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. 298, are hereby incorporated in the license. Duke Energy Progress, Inc. 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,

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	<p>-----NOTE-----</p> <p>Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR shutdown cooling isolation pressure.</p> <p>-----</p>	12 hours
	<p>Verify one required RHR shutdown cooling subsystem or recirculation pump is operating.</p>	
SR 3.4.7.2	<p>-----NOTE-----</p> <p>Not required to be performed until 12 hours after reactor steam dome pressure is less than the RHR shutdown cooling isolation pressure.</p> <p>-----</p>	31 days
	<p>Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p>	

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation.  <u>AND</u>  No recirculation pump in operation.	B.1 Verify reactor coolant circulating by an alternate method.	1 hour from discovery of no reactor coolant circulation
	<u>AND</u>	<u>AND</u>
	B.2 Monitor reactor coolant temperature.	Once per 12 hours thereafter  Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one required RHR shutdown cooling subsystem or recirculation pump is operating.	12 hours
SR 3.4.8.2	Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	31 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>J. Two or more low pressure ECCS injection/spray subsystems inoperable for reasons other than Condition A or B.</p> <p><u>OR</u></p> <p>HPCI System and two or more required ADS valves inoperable.</p>	<p>J.1 Enter LCO 3.0.3.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.5.1.1 Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.</p>	<p>92 days</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.2	<p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Low pressure coolant injection (LPCI) subsystems may be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than the Residual Heat Removal (RHR) shutdown cooling isolation pressure in MODE 3, if capable of being manually realigned and not otherwise inoperable.</li> <li>2. Not required to be met for system vent flow paths opened under administrative control.</li> </ol> <p>-----</p> <p>Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	31 days
SR 3.5.1.3	Verify ADS pneumatic supply header pressure is $\geq 95$ psig.	31 days
SR 3.5.1.4	Verify the RHR System cross tie valve is locked closed.	31 days
SR 3.5.1.5	<p>-----NOTE-----</p> <p>Not required to be performed if performed within the previous 31 days.</p> <p>-----</p> <p>Verify each recirculation pump discharge valve and bypass valve cycles through one complete cycle of full travel or is de-energized in the closed position.</p>	Once each startup prior to exceeding 25% RTP

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.2	<p>Verify, for each required core spray (CS) subsystem, the:</p> <p>a. Suppression pool water level is <math>\geq</math> -31 inches; or</p> <p>b. -----NOTE----- Only one required CS subsystem may take credit for this option during OPDRVs. -----</p> <p>Condensate storage tank water volume is <math>\geq</math> 228,200 gallons.</p>	12 hours
SR 3.5.2.3	Verify, for each required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	31 days
SR 3.5.2.4	<p>-----NOTES-----</p> <p>1. One LPCI subsystem may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable.</p> <p>2. Not required to be met for system vent flow paths opened under administrative control.</p> <p>-----</p> <p>Verify each required ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	31 days

(continued)



**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	Verify the RCIC System locations susceptible to gas accumulation are sufficiently filled with water.	92 days
SR 3.5.3.2	<p>-----NOTE-----</p> <p>Not required to be met for system vent flow paths opened under administrative control.</p> <p>-----</p> <p>Verify each RCIC System manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	31 days
SR 3.5.3.3	<p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Use of auxiliary steam for the performance of the SR is not allowed.</li> <li>2. Not required to be performed until 24 hours after reactor steam pressure is adequate to perform the test.</li> </ol> <p>-----</p> <p>Verify, with reactor pressure <math>\geq 945</math> psig and <math>\leq 1045</math> psig, the RCIC pump can develop a flow rate <math>\geq 400</math> gpm against a system head corresponding to reactor pressure.</p>	92 days

(continued)

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.6.2.3.1	Verify each RHR suppression pool cooling subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position.	31 days
SR 3.6.2.3.2	Verify each RHR pump develops a flow rate $\geq 7700$ gpm through the associated heat exchanger while operating in the suppression pool cooling mode.	92 days
SR 3.6.2.3.3	Verify RHR suppression pool cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	92 days

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.9.7.1	Verify one RHR shutdown cooling subsystem is operating.	12 hours
SR 3.9.7.2	Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	31 days

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.9.8.1	Verify one RHR shutdown cooling subsystem is operating.	12 hours
SR 3.9.8.2	Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	31 days



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

DUKE ENERGY PROGRESS, INC.

DOCKET NO. 50-400

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 150  
Renewed License No. NPF-63

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Shearon Harris Nuclear Power Plant, Unit 1 (the facility), Renewed Facility Operating License No. NPF-63, by Duke Energy Progress, Inc., and Duke Energy Carolinas, LLC, dated June 24, 2015, as supplemented by letter dated January 18, 2016, 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. NPF-63 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, as revised through Amendment No. 150, are hereby incorporated into this license. Duke Energy Progress, Inc. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within one year from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Benjamin G. Beasley, Chief  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed License  
and the Technical Specifications

Date of Issuance: April 29, 2016

ATTACHMENT TO LICENSE AMENDMENT NO. 150

RENEWED FACILITY OPERATING LICENSE NO. NPF-63

DOCKET NO. 50-400

Replace the following page of Renewed Facility Operating License No. NPF-63 with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove  
Page 4

Insert  
Page 4

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove  
3/4 4-5  
3/4 4-6  
3/4 4-7  
3/4 5-4  
3/4 6-11  
3/4 9-9  
3/4 9-10

Insert  
3/4 4-5  
3/4 4-6  
3/4 4-7  
3/4 5-4  
3/4 6-11  
3/4 9-9  
3/4 9-10

- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and 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

Duke Energy Progress, Inc. is authorized to operate the facility at reactor core power levels not in excess of 2948 megawatts thermal (100 percent rated core power) in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, as revised through Amendment No. 150, are hereby incorporated into this license. Duke Energy Progress, Inc. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Antitrust Conditions

Duke Energy Progress, Inc. shall comply with the antitrust conditions delineated in Appendix C to this license.

(4) Initial Startup Test Program (Section 14)<sup>1</sup>

Any changes to the Initial Test Program described in Section 14 of the FSAR made in accordance with the provisions of 10 CFR 50.59 shall be reported in accordance with 50.59(b) within one month of such change.

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<sup>1</sup> The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report and/or its supplements wherein the license condition is discussed.



REACTOR COOLANT SYSTEM  
HOT SHUTDOWN

SURVEILLANCE REQUIREMENTS

---

- 4.4.1.3.1 The required reactor coolant pump(s), if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.
- 4.4.1.3.2 The required steam generator(s) shall be determined OPERABLE by verifying wide range (WR) secondary side water level is greater than 74% or narrow range (NR) secondary side water level is greater than 30% at least once per 12 hours.
- 4.4.1.3.3 At least one reactor coolant or RHR loop shall be verified in operation and circulating reactor coolant at least once per 12 hours.
- 4.4.1.3.4 Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water at least once per 31 days.\*

---

\*Not required to be performed until 12 hours after entering MODE 4.

REACTOR COOLANT SYSTEM  
COLD SHUTDOWN - LOOPS FILLED

LIMITING CONDITION FOR OPERATION

---

- 3.4.1.4.1 At least one residual heat removal (RHR) loop shall be OPERABLE and in operation\*, and either:
- a. One additional RHR loop shall be OPERABLE\*\*, or
  - b. The secondary side water level of at least two steam generators shall be greater than 74% wide range (WR) or greater than 30% narrow range (NR).

APPLICABILITY: MODE 5 with reactor coolant loops filled\*\*\*.

ACTION:

- a. With one of the RHR loops inoperable and with less than the required steam generator water level, immediately initiate corrective action to return the inoperable RHR loop to OPERABLE status or restore the required steam generator water level as soon as possible.
- b. With no RHR loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to operation.

SURVEILLANCE REQUIREMENTS

---

- 4.4.1.4.1.1 The secondary side water level of at least two steam generators when required shall be determined to be within limits at least once per 12 hours.
- 4.4.1.4.1.2 At least one RHR loop shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.
- 4.4.1.4.1.3 Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water at least once per 31 days.

---

\* The RHR pump may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

\*\* One RHR loop may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is OPERABLE and in operation.

\*\*\* A reactor coolant pump shall not be started with one or more of the Reactor Coolant System cold leg temperatures less than or equal to 325°F unless the secondary water temperature of each steam generator is less than 50°F above each of the Reactor Coolant System cold leg temperatures.

REACTOR COOLANT SYSTEM  
COLD SHUTDOWN - LOOPS NOT FILLED

LIMITING CONDITION FOR OPERATION

---

3.4.1.4.2 Two residual heat removal (RHR) loops shall be OPERABLE\* and at least one RHR loop shall be in operation.\*\*

APPLICABILITY: MODE 5 with reactor coolant loops not filled.

ACTION:

- a. With less than the above required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status as soon as possible.
- b. With no RHR loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to operation.

SURVEILLANCE REQUIREMENTS

---

- 4.4.1.4.2.1 At least one RHR loop shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.
- 4.4.1.4.2.2 Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water at least once per 31 days.

---

\* One RHR loop may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is OPERABLE and in operation.

\*\* The RHR pump may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

## EMERGENCY CORE COOLING SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

---

<u>CP&amp;L Valve No.</u>	<u>EBASCO Valve No.</u>	<u>Valve Function</u>	<u>Valve Position</u>
1SI-107	2SI-V500SA-1	High Head Safety Injection to Reactor Coolant System Hot Legs	Closed
1SI-86	2SI-V501SB-1	High Head Safety Injection to Reactor Coolant System Hot Legs	Closed
1SI-52	2SI-V502SA-1	High Head Safety Injection to Reactor Coolant System Cold Legs	Closed
1SI-340	2SI-V579SA-1	Low Head Safety Injection to Reactor Coolant System Cold Legs	Open
1SI-341	2SI-V578SB-1	Low Head Safety Injection to Reactor Coolant System Cold Legs	Open
1SI-359	2SI-V587SA-1	Low Head Safety Injection to Reactor Coolant System Hot Legs	Closed

- b. At least once per 31 days by:
  - 1. Verifying that ECCS locations susceptible to gas accumulation are sufficiently filled with water, and
  - 2. Verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.\*
- c. By a visual inspection which verifies that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the pump suction during LOCA conditions. This visual inspection shall be performed:
  - 1. For all accessible areas of the containment prior to establishing CONTAINMENT INTEGRITY, and
  - 2. Of the areas affected within containment at the completion of each containment entry when CONTAINMENT INTEGRITY is established.

---

\* Not required to be met for system vent flow paths opened under administrative control.

## CONTAINMENT SYSTEMS

### 3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

#### CONTAINMENT SPRAY SYSTEM

##### LIMITING CONDITION FOR OPERATION

- 3.6.2.1 Two independent Containment Spray Systems shall be OPERABLE with each Spray System capable of taking suction from the RWST and transferring suction to the containment sump.

APPLICABILITY: MODES 1, 2, 3, and 4.

##### ACTION:

With one Containment Spray System inoperable, restore the inoperable Spray System to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the inoperable Spray System to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours. Refer also to Specification 3.6.2.3 Action.

##### SURVEILLANCE REQUIREMENTS

- 4.6.2.1 Each Containment Spray System shall be demonstrated OPERABLE:
- a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position\*;
  - b. By verifying that, on an indicated recirculation flow of at least 1832 gpm, each pump develops a differential pressure of greater than or equal to 186 psi when tested pursuant to the Inservice Testing Program;
  - c. At least once per 18 months by:
    1. Verifying that each automatic valve in the flow path actuates to its correct position on a containment spray actuation test signal and
    2. Verifying that each spray pump starts automatically on a containment spray actuation test signal.
    3. Verifying that, coincident with an indication of containment spray pump running, each automatic valve from the sump and RWST actuates to its appropriate position following an RWST Lo-Lo test signal.
  - d. At least once per 10 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.
  - e. At least once per 92 days by verifying that containment spray locations susceptible to gas accumulation are sufficiently filled with water.

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\* Not required to be met for system vent flow paths opened under administrative control.

## REFUELING OPERATIONS

### 3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

#### HIGH WATER LEVEL

#### LIMITING CONDITION FOR OPERATION

---

3.9.8.1 At least one residual heat removal (RHR) loop shall be OPERABLE and in operation.\*

APPLICABILITY: MODE 6, with irradiated fuel in the vessel when the water level above the top of the reactor vessel flange is greater than or equal to 23 feet.

#### ACTION:

With no RHR loop OPERABLE and in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

#### SURVEILLANCE REQUIREMENTS

---

4.9.8.1.1 At least one RHR loop shall be verified in operation and circulating reactor coolant at a flow rate of greater than or equal to 2500 gpm at least once per 12 hours.

4.9.8.1.2 Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water at least once per 31 days.

---

\*The RHR loop may be removed from operation for up to 1 hour per 2-hour period during the performance of CORE ALTERATIONS and core loading verification in the vicinity of the reactor vessel hot legs.

## REFUELING OPERATIONS

### LOW WATER LEVEL

#### LIMITING CONDITION FOR OPERATION

---

- 3.9.8.2 Two independent residual heat removal (RHR) loops shall be OPERABLE, and at least one RHR loop shall be in operation.\*

APPLICABILITY: MODE 6, with irradiated fuel in the vessel when the water level above the top of the reactor vessel flange is less than 23 feet.

ACTION:

- a. With less than the required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status or to establish greater than or equal to 23 feet of water above the reactor vessel flange as soon as possible.
- b. With no RHR loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

#### SURVEILLANCE REQUIREMENTS

---

- 4.9.8.2.1 At least one RHR loop shall be verified in operation and circulating reactor coolant at a flow rate of greater than or equal to 2500 gpm at least once per 12 hours whenever the water level is at or above the reactor vessel flange.
- 4.9.8.2.2 At least one RHR loop shall be verified in operation and circulating reactor coolant at a flow rate of greater than or equal to 900 gpm at least once per 12 hours whenever the water level is below the reactor vessel flange.
- 4.9.8.2.3 Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water at least once per 31 days.

---

\*The operating RHR loop may be removed from operation for up to 1 hour per 2-hour period during the performance of CORE ALTERATIONS and core loading verification in the vicinity of the reactor vessel hot legs.



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

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-413

CATAWBA NUCLEAR STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 282  
Renewed License No. NPF-35

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Catawba Nuclear Station, Unit 1 (the facility), Renewed Facility Operating License No. NPF-35, by Duke Energy Progress, Inc., and Duke Energy Carolinas, LLC, dated June 24, 2015, as supplemented by letter dated January 18, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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 set forth in 10 CFR Chapter I;
  - 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.

Enclosure 4



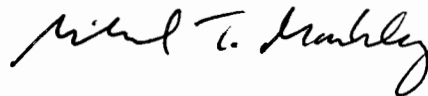
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-35 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 282, which are attached hereto, are hereby incorporated into this renewed operating license. Duke Energy Carolinas, LLC, shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within one year from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed License  
and the Technical Specifications

Date of Issuance: April 29, 2016



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

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-414

CATAWBA NUCLEAR STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 278  
Renewed License No. NPF-52

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Catawba Nuclear Station, Unit 2 (the facility), Renewed Facility Operating License No. NPF-52, by Duke Energy Progress, Inc., and Duke Energy Carolinas, LLC, dated June 24, 2015, as supplemented by letter dated January 18, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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 set forth in 10 CFR Chapter I;
  - 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.

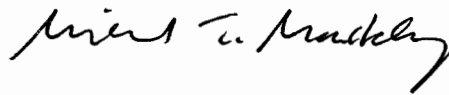
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-52 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 278, which are attached hereto, are hereby incorporated into this renewed operating license. Duke Energy Carolinas, LLC, shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within one year from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed License  
and the Technical Specifications

Date of Issuance: April 29, 2016

ATTACHMENT TO  
LICENSE AMENDMENT NO. 282  
RENEWED FACILITY OPERATING LICENSE NO. NPF-35  
DOCKET NO. 50-413  
AND  
LICENSE AMENDMENT NO. 278  
RENEWED FACILITY OPERATING LICENSE NO. NPF-52  
DOCKET NO. 50-414

Replace the following page of Renewed Facility Operating Licenses with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove  
NPF-35, page 4  
NPF-52, page 4

Insert  
NPF-35, page 4  
NPF-52, page 4

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove  
3.4.6-3  
3.4.7-3  
3.4.8-2  
3.5.2-2  
3.6.6-1  
3.6.6-2  
3.9.4-2  
3.9.5-2

Insert  
3.4.6-3  
3.4.7-3  
3.4.8-2  
3.5.2-2  
3.6.6-1  
3.6.6-2  
3.9.4-2  
3.9.5-2

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 282, which are attached hereto, are hereby incorporated into this renewed operating license. Duke Energy Carolinas, LLC shall operate the facility in accordance with the Technical Specifications.

(3) Updated Final Safety Analysis Report

The Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on December 16, 2002, describes certain future activities to be completed before the period of extended operation. Duke shall complete these activities no later than December 6, 2024, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement as revised on December 16, 2002, described above, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following issuance of this renewed operating license. Until that update is complete, Duke may make changes to the programs described in such supplement without prior Commission approval, provided that Duke evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

(4) Antitrust Conditions

Duke Energy Carolinas, LLC shall comply with the antitrust conditions delineated in Appendix C to this renewed operating license.

(5) Fire Protection Program (Section 9.5.1, SER, SSER #2, SSER #3, SSER #4, SSER #5)\*

Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report, as amended, for the facility and as approved in the SER through Supplement 5, subject to the following provision:

The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

---

\*The parenthetical notation following the title of this renewed operating license condition denotes the section of the Safety Evaluation Report and/or its supplement wherein this renewed license condition is discussed.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 278, which are attached hereto, are hereby incorporated into this renewed operating license. Duke Energy Carolinas, LLC shall operate the facility in accordance with the Technical Specifications.

(3) Updated Final Safety Analysis Report

The Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on December 16, 2002, describes certain future activities to be completed before the period of extended operation. Duke shall complete these activities no later than February 24, 2026, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement as revised on December 16, 2002, described above, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following issuance of this renewed operating license. Until that update is complete, Duke may make changes to the programs described in such supplement without prior Commission approval, provided that Duke evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

(4) Antitrust Conditions

Duke Energy Carolinas, LLC shall comply with the antitrust conditions delineated in Appendix C to this renewed operating license.

(5) Fire Protection Program (Section 9.5.1, SER, SSER #2, SSER #3, SSER #4, SSER #5)\*

Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report, as amended, for the facility and as approved in the SER through Supplement 5, subject to the following provision:

The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

---

\*The parenthetical notation following the title of this renewed operating license condition denotes the section of the Safety Evaluation Report and/or its supplements wherein this renewed license condition is discussed

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.4.6.3    Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.4    -----NOTE----- Not required to be performed until 12 hours after entering MODE 4. ----- Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.7.3	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.4	Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required RHR loops inoperable.  <u>OR</u>  No RHR loop in operation.	B.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	<u>AND</u>  B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.8.1 Verify one RHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.2 Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.3 Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE			FREQUENCY																											
SR 3.5.2.1	Verify the following valves are in the listed position with power to the valve operator removed.		In accordance with the Surveillance Frequency Control Program																											
	<table><tr><td><u>Number</u></td><td><u>Position</u></td><td><u>Function</u></td></tr><tr><td>NI162A</td><td>Open</td><td>SI Cold Leg Injection</td></tr><tr><td>NI121A</td><td>Closed</td><td>SI Hot Leg Injection</td></tr><tr><td>NI152B</td><td>Closed</td><td>SI Hot Leg Injection</td></tr><tr><td>NI183B</td><td>Closed</td><td>RHR Hot Leg Injection</td></tr><tr><td>NI173A</td><td>Open</td><td>RHR Cold Leg Injection</td></tr><tr><td>NI178B</td><td>Open</td><td>RHR Cold Leg Injection</td></tr><tr><td>NI100B</td><td>Open</td><td>SI Pump Suction from RWST</td></tr><tr><td>NI147B</td><td>Open</td><td>SI Pump Mini-Flow</td></tr></table>	<u>Number</u>		<u>Position</u>	<u>Function</u>	NI162A	Open	SI Cold Leg Injection	NI121A	Closed	SI Hot Leg Injection	NI152B	Closed	SI Hot Leg Injection	NI183B	Closed	RHR Hot Leg Injection	NI173A	Open	RHR Cold Leg Injection	NI178B	Open	RHR Cold Leg Injection	NI100B	Open	SI Pump Suction from RWST	NI147B	Open	SI Pump Mini-Flow	
<u>Number</u>	<u>Position</u>	<u>Function</u>																												
NI162A	Open	SI Cold Leg Injection																												
NI121A	Closed	SI Hot Leg Injection																												
NI152B	Closed	SI Hot Leg Injection																												
NI183B	Closed	RHR Hot Leg Injection																												
NI173A	Open	RHR Cold Leg Injection																												
NI178B	Open	RHR Cold Leg Injection																												
NI100B	Open	SI Pump Suction from RWST																												
NI147B	Open	SI Pump Mini-Flow																												
SR 3.5.2.2	<p>-----NOTE-----</p> <p>Not required to be met for system vent flow paths opened under administrative control.</p> <p>Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>		In accordance with the Surveillance Frequency Control Program																											
SR 3.5.2.3	Verify ECCS locations susceptible to gas accumulation are sufficiently filled with water.																													
SR 3.5.2.4	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.		In accordance with the Inservice Testing Program																											

(continued)

### 3.6 CONTAINMENT SYSTEMS

#### 3.6.6 Containment Spray System

LCO 3.6.6 Two containment spray trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One containment spray train inoperable.	A.1 Restore containment spray train to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	84 hours

#### SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.6.1 <u>NOTE</u> Not required to be met for system vent flow paths opened under administrative control.</p> <p>Verify each containment spray manual and power operated valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.</p>	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.6.6.2 Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.6.6.3 Deleted.	
SR 3.6.6.4 Deleted.	
SR 3.6.6.5 Verify that each spray pump is de-energized and prevented from starting upon receipt of a terminate signal and is allowed to manually start upon receipt of a start permissive from the Containment Pressure Control System (CPCS).	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.6 Verify that each spray pump discharge valve closes or is prevented from opening upon receipt of a terminate signal and is allowed to manually open upon receipt of a start permissive from the Containment Pressure Control System (CPCS).	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.7 Verify each spray nozzle is unobstructed.	Following activities which could result in nozzle blockage
SR 3.6.6.8 Verify containment spray locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

RHR and Coolant Circulation - High Water Level  
3.9.4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.4 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.4.1 Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of $\geq 1000$ gpm and RCS temperature is $\leq 140^{\circ}\text{F}$ .	In accordance with the Surveillance Frequency Control Program
SR 3.9.4.2 Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

RHR and Coolant Circulation - Low Water Level  
3.9.5

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Initiate action to restore one RHR loop to operation.	Immediately
	<u>AND</u> B.3 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.5.1 Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of $\geq 1000$ gpm and RCS temperature is $\leq 140^{\circ}\text{F}$ .	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.2 Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.3 Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program



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

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-369

MCGUIRE NUCLEAR STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 285  
Renewed License No. NPF-9

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the McGuire Nuclear Station, Unit 1 (the facility), Renewed Facility Operating License No. NPF-9, by Duke Energy Progress, Inc., and Duke Energy Carolinas, LLC, dated June 24, 2015, as supplemented by letter dated January 18, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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 set forth in 10 CFR Chapter I;
  - 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.

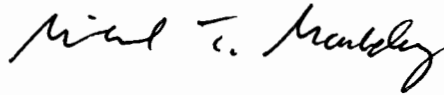
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-9 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 285, are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within one year from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed License  
and the Technical Specifications

Date of Issuance: April 29, 2016





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

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-370

MCGUIRE NUCLEAR STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 264  
Renewed License No. NPF-17

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the McGuire Nuclear Station, Unit 2 (the facility), Renewed Facility Operating License No. NPF-17, by Duke Energy Progress, Inc., and Duke Energy Carolinas, LLC, dated June 24, 2015, as supplemented by letter dated January 18, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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 set forth in 10 CFR Chapter I;
  - 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.

Enclosure 7

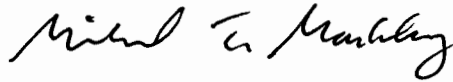
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-17 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 264, are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within one year from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed License  
and the Technical Specifications

Date of Issuance: April 29, 2016

ATTACHMENT TO  
LICENSE AMENDMENT NO. 285  
RENEWED FACILITY OPERATING LICENSE NO. NPF-9  
DOCKET NO. 50-369  
  
AND  
LICENSE AMENDMENT NO. 264  
RENEWED FACILITY OPERATING LICENSE NO. NPF-17  
DOCKET NO. 50-370

Replace the following page of Renewed Facility Operating Licenses with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove  
NPF-9, page 3  
NPF-17, page 3

Insert  
NPF-9, page 3  
NPF-17, page 3

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove  
-----  
3.4.7-3  
3.4.8-2  
3.5.2-2  
3.6.6-1  
3.6.6-2  
3.9.5-2  
3.9.6-2

Insert  
3.4.6-3  
3.4.7-3  
3.4.8-2  
3.5.2-2  
3.6.6-1  
3.6.6-2  
3.9.5-2  
3.9.6-2

- (4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;
  - (5) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproducts and special nuclear materials as may be produced by the operation of McGuire Nuclear Station, Units 1 and 2, and;
  - (6) Pursuant to the Act and 10 CFR Parts 30 and 40, to receive, possess and process for release or transfer such byproduct material as may be produced by the Duke Training and Technology Center.
- C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and 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 a reactor core full steady state power level of 3411 megawatts thermal (100%).
  - (2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 285, are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.
  - (3) Updated Final Safety Analysis Report

The Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on December 16, 2002, describes certain future activities to be completed before the period of extended operation. Duke shall complete these activities no later than June 12, 2021, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement as revised on December 16, 2002, described above, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following issuance of this renewed operating license. Until that update is complete, Duke may make changes to the programs described in such supplement without prior Commission approval, provided that Duke evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

- (4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;
  - (5) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproducts and special nuclear materials as may be produced by the operation of McGuire Nuclear Station, Units 1 and 2; and,
  - (6) Pursuant to the Act and 10 CFR Part 30 and 40, to receive, possess and process for release or transfer such byproduct material as may be produced by the Duke Training and Technology Center.
- C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and 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 a reactor core full steady state power level of 3411 megawatts thermal (100%).
  - (2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 264, are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.
  - (3) Updated Final Safety Analysis Report

The Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on December 16, 2002, describes certain future activities to be completed before the period of extended operation. Duke shall complete these activities no later than March 3, 2023, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement as revised on December 16, 2002, described above, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following issuance of this renewed operating license. Until that update is complete, Duke may make changes to the programs described in such supplement without prior Commission approval, provided that Duke evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59, and otherwise complies with the requirements in that section.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.4.6.4 -----NOTE-----</p> <p>Not required to be performed until 12 hours after entering MODE 4.</p> <p>-----</p> <p>Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

# SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.7.1 Verify one RHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.2 Verify SG secondary side water level is $\geq$ 12% narrow range in required SGs.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.3 Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.4 Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required RHR loops inoperable.  <u>OR</u>  No RHR loop in operation.	B.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	<u>AND</u>  B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.8.1 Verify one RHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.2 Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.3 Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program



## SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY																														
SR 3.5.2.1	Verify the following valves are in the listed position with power to the valve operator removed.		In accordance with the Surveillance Frequency Control Program																														
	<table><tr><td><u>Number</u></td><td><u>Position</u></td><td><u>Function</u></td></tr><tr><td>NI162A</td><td>Open</td><td>SI Cold Leg Injection</td></tr><tr><td>NI121A</td><td>Closed</td><td>SI Hot Leg Injection</td></tr><tr><td>NI152B</td><td>Closed</td><td>SI Hot Leg Injection</td></tr><tr><td>NI183B</td><td>Closed</td><td>RHR Hot Leg Injection</td></tr><tr><td>NI173A</td><td>Open</td><td>RHR Cold Leg Injection</td></tr><tr><td>NI178B</td><td>Open</td><td>RHR Cold Leg Injection</td></tr><tr><td>NI100B</td><td>Open</td><td>SI Pump RWST Suction</td></tr><tr><td>FW27A</td><td>Open</td><td>RHR/RWST Suction</td></tr><tr><td>NI147A</td><td>Open</td><td>SI Pump Mini-Flow</td></tr></table>	<u>Number</u>	<u>Position</u>	<u>Function</u>	NI162A	Open	SI Cold Leg Injection	NI121A	Closed	SI Hot Leg Injection	NI152B	Closed	SI Hot Leg Injection	NI183B	Closed	RHR Hot Leg Injection	NI173A	Open	RHR Cold Leg Injection	NI178B	Open	RHR Cold Leg Injection	NI100B	Open	SI Pump RWST Suction	FW27A	Open	RHR/RWST Suction	NI147A	Open	SI Pump Mini-Flow		
<u>Number</u>	<u>Position</u>	<u>Function</u>																															
NI162A	Open	SI Cold Leg Injection																															
NI121A	Closed	SI Hot Leg Injection																															
NI152B	Closed	SI Hot Leg Injection																															
NI183B	Closed	RHR Hot Leg Injection																															
NI173A	Open	RHR Cold Leg Injection																															
NI178B	Open	RHR Cold Leg Injection																															
NI100B	Open	SI Pump RWST Suction																															
FW27A	Open	RHR/RWST Suction																															
NI147A	Open	SI Pump Mini-Flow																															
SR 3.5.2.2	<p>-----NOTE-----</p> <p>Not required to be met for system vent flow paths opened under administrative control.</p> <p>-----</p> <p>Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>		In accordance with the Surveillance Frequency Control Program																														
SR 3.5.2.3	Verify ECCS locations susceptible to gas accumulation are sufficiently filled with water.		In accordance with the Surveillance Frequency Control Program																														

(continued)

### 3.6 CONTAINMENT SYSTEMS

#### 3.6.6 Containment Spray System

LCO 3.6.6 Two containment spray trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One containment spray train inoperable.	A.1 Restore containment spray train to OPERABLE status.	72 hours*
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	84 hours

-----NOTE-----  
 \* 'A' Train Containment Spray is allowed to be inoperable for a total of 14 days for the correction of a degraded condition on the 'A' Train supply piping from the Standby Nuclear Service Water Pond (SNSWP). The 14 days may be taken consecutively or in parts until completion of the activity, or by March 1, 2017, whichever occurs first. During the period in which the 'A' Train NSWS supply piping from the SNSWP is not available, the 'A' Train NSWS will remain aligned to Lake Norman until the system is ready for post maintenance testing. Any maintenance that is performed on the remaining portions of 'A' Train NSWS during the period in which the 'A' NSWS from the SNSWP supply piping is not available will be limited to a 72 hour completion time. The latter will not count against the 14 day completion time. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Commitments described in MNS LAR submittal correspondence letter MNS-16-005.

#### SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.6.1 -----NOTE----- Not required to be met for system vent flow paths opened under administrative control. ----- Verify each containment spray manual and power operated valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.6.2	Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.6.6.3	Not Used	Not Used
SR 3.6.6.4	Not Used	Not Used
SR 3.6.6.5	Verify that each spray pump is de-energized and prevented from starting upon receipt of a terminate signal and is allowed to manually start upon receipt of a start permissive from the Containment Pressure Control System (CPCS).	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.6	Verify that each spray pump discharge valve closes or is prevented from opening upon receipt of a terminate signal and is allowed to manually open upon receipt of a start permissive from the Containment Pressure Control System (CPCS).	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.7	Verify each spray nozzle is unobstructed.	Following activities which could result in nozzle blockage
SR 3.6.6.8	Verify containment spray locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency control Program

RHR and Coolant Circulation – High Water Level  
3.9.5

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.4 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.9.5.1 Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of $\geq 1000$ gpm and RCS temperature is $\leq 140^{\circ}\text{F}$ .	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.2 Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

RHR and Coolant Circulation – Low Water Level  
3.9.6

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Initiate action to restore one RHR loop to operation.	Immediately
	<u>AND</u> B.3 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.9.6.1 Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of $\geq 1000$ gpm and RCS temperature is $\leq 140^{\circ}\text{F}$ .	In accordance with the Surveillance Frequency Control Program
SR 3.9.6.2 Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.9.6.3 Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program



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

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-269

OCONEE NUCLEAR STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 398  
Renewed License No. DPR-38

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Oconee Nuclear Station, Unit 1 (the facility), Renewed Facility Operating License No. DPR-38, by Duke Energy Progress, Inc., and Duke Energy Carolinas, LLC, dated June 24, 2015, as supplemented by letter dated January 18, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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 set forth in 10 CFR Chapter I;
  - 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.

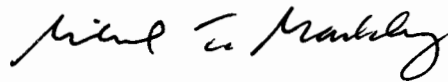
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 3.B of Renewed Facility Operating License No. DPR-38 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 398, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within one year from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed License  
and the Technical Specifications

Date of Issuance: April 29, 2016



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

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-270

OCONEE NUCLEAR STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 400  
Renewed License No. DPR-47

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Oconee Nuclear Station, Unit 2 (the facility), Renewed Facility Operating License No. DPR-47, by Duke Energy Progress, Inc., and Duke Energy Carolinas, LLC, dated June 24, 2015, as supplemented by letter dated January 18, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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 set forth in 10 CFR Chapter I;
  - 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.



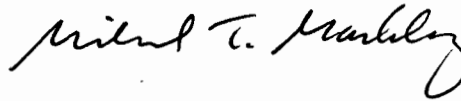
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 3.B of Renewed Facility Operating License No. DPR-47 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 400, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within one year from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed License  
and the Technical Specifications

Date of Issuance: April 29, 2016



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

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-287

OCONEE NUCLEAR STATION, UNIT 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 399  
Renewed License No. DPR-55

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by to the Oconee Nuclear Station, Unit 3 (the facility), Renewed Facility Operating License No. DPR-55, Duke Energy Progress, Inc., and Duke Energy Carolinas, LLC, dated June 24, 2015, as supplemented by letter dated January 18, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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 set forth in 10 CFR Chapter I;
  - 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 hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 3.B of Renewed Facility Operating License No. DPR-55 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 399, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within one year from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed License  
and the Technical Specifications

Date of Issuance: April 29, 2016

ATTACHMENT TO LICENSE AMENDMENT NO. 398  
RENEWED FACILITY OPERATING LICENSE NO. DPR-38  
DOCKET NO. 50-269  
  
AND  
  
LICENSE AMENDMENT NO. 400  
RENEWED FACILITY OPERATING LICENSE NO. DPR-47  
DOCKET NO. 50-270  
  
AND  
  
LICENSE AMENDMENT NO. 399  
RENEWED FACILITY OPERATING LICENSE NO. DPR-55  
DOCKET NO. 50-287

Replace the following page of Renewed Facility Operating Licenses with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove

DPR-38, page 3  
DPR-47, page 3  
DPR-55, page 3

Insert

DPR-38, page 3  
DPR-47, page 3  
DPR-55, page 3

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove

3.4.6-2  
3.4.7-3  
3.4.8-2  
3.5.2-4  
3.5.3-2  
3.5.3-3  
3.6.5-4  
3.6.5-5  
3.9.4-2  
3.9.5-2

Insert

3.4.6-2  
3.4.7-3  
3.4.8-2  
3.5.2-4  
3.5.3-2  
3.5.3-3  
3.6.5-4  
3.6.5-5  
3.9.4-2  
3.9.5-2

A. Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2568 megawatts thermal.

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 398, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. This license is subject to the following antitrust conditions:

Applicant makes the commitments contained herein, recognizing that bulk power supply arrangements between neighboring entities normally tend to serve the public interest. In addition, where there are net benefits to all participants, such arrangements also serve the best interests of each of the participants. Among the benefits of such transactions are increased electric system reliability, a reduction in the cost of electric power, and minimization of the environmental effects of the production and sale of electricity.

Any particular bulk power supply transaction may afford greater benefits to one participant than to another. The benefits realized by a small system may be proportionately greater than those realized by a larger system. The relative benefits to be derived by the parties from a proposed transaction, however, should not be controlling upon a decision with respect to the desirability of participating in the transaction. Accordingly, applicant will enter into proposed bulk power transactions of the types hereinafter described which, on balance, provide net benefits to applicant. There are net benefits in a transaction if applicant recovers the cost of the transaction (as defined in ¶1 (d) hereof) and there is no demonstrable net detriment to applicant arising from that transaction.

1. As used herein:

- (a) "Bulk Power" means electric power and any attendant energy, supplied or made available at transmission or sub-transmission voltage by one electric system to another.
- (b) "Neighboring Entity" means a private or public corporation, a governmental agency or authority, a municipality, a cooperative, or a lawful association of any of the foregoing owning or operating, or proposing to own or operate, facilities for the generation and transmission of electricity which meets each of

A. Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2568 megawatts thermal.

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 400, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. This license is subject to the following antitrust conditions:

Applicant makes the commitments contained herein, recognizing that bulk power supply arrangements between neighboring entities normally tend to serve the public interest. In addition, where there are net benefits to all participants, such arrangements also serve the best interests of each of the participants. Among the benefits of such transactions are increased electric system reliability, a reduction in the cost of electric power, and minimization of the environmental effects of the production and sale of electricity.

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A. Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2568 megawatts thermal.

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 399, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. This license is subject to the following antitrust conditions:

Applicant makes the commitments contained herein, recognizing that bulk power supply arrangements between neighboring entities normally tend to serve the public interest. In addition, where there are net benefits to all participants, such arrangements also serve the best interests of each of the participants. Among the benefits of such transactions are increased electric system reliability, a reduction in the cost of electric power, and minimization of the environmental effects of the production and sale of electricity.

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1. As used herein:

- (a) "Bulk Power" means electric power and any attendant energy, supplied or made available at transmission or sub-transmission voltage by one electric system to another.
- (b) "Neighboring Entity" means a private or public corporation, a governmental agency or authority, a municipality, a cooperative, or a lawful association of any of the foregoing owning or operating, or proposing to own or operate, facilities for the generation and transmission of electricity which meets each of

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Two required loops inoperable.  <u>OR</u>  Required loop not in operation.	B.1 Suspend all operations involving a reduction in RCS boron concentration.	Immediately
	<u>AND</u>  B.2 Initiate action to restore one loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.6.1 Verify required DHR or RCS loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.2 Verify correct breaker alignment and indicated power available to the required pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.3 -----NOTE----- Not required to be performed until 12 hours after entering MODE 4.  ----- Verify required DHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program



**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify required DHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.2	Verify required SG secondary side water levels are $\geq 50\%$ .	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.3	Verify correct breaker alignment and indicated power available to the required DHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.4	Verify required DHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Two DHR loops inoperable.  <u>OR</u>  Required DHR loop not in operation.	B.1 Suspend all operations involving reduction in RCS boron concentration.	Immediately
	<u>AND</u>  B.2 Initiate action to restore one DHR loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify required DHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.2	Verify correct breaker alignment and indicated power available to the required DHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.3	Verify DHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

## ACTIONS (continued)

CONDITION		REQUIRED ACTION		COMPLETION TIME
F.	One LPI-HPI flow path inoperable.	F.1	Restore LPI-HPI flow path to OPERABLE status.	72 hours
G.	Required Action and associated Completion Time of Condition B, C, D, E, or F not met.	G.1	Be in MODE 3.	12 hours
		<u>AND</u>		
		G.2	Reduce RCS temperature to $\leq 350^{\circ}\text{F}$ .	60 hours
H.	Two HPI trains inoperable.  <u>OR</u>  Two LPI-HPI flow paths inoperable.	H.1	Enter LCO 3.0.3.	Immediately

## SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	<p>-----NOTE-----</p> <p>Not required to be met for system vent flow paths opened under administrative control.</p> <p>Verify each HPI manual and non-automatic power operated valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.2	Verify HPI locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3.	12 hours
	<u>AND</u>	
	C.2 Be in MODE 4.	60 hours
D. One required LPI train inoperable in MODE 4.	D.1 Initiate action to restore required LPI train to OPERABLE status.	Immediately
	<u>AND</u>	
	D.2 -----NOTE----- Only required if DHR loop is OPERABLE. ----- Be in MODE 5.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.3.1 -----NOTE----- Not required to be met for system vent flow paths opened under administrative control. ----- Verify each LPI manual and non-automatic power operated valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.3.2	Verify LPI locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.3	Verify each LPI pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.5.3.4	Verify each LPI automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.5	Verify each LPI pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.6	Verify, by visual inspection, each LPI train reactor building sump suction inlet is not restricted by debris and suction inlet strainers show no evidence of structural distress or abnormal corrosion.	In accordance with the Surveillance Frequency Control Program

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.6.5.1	<p>-----NOTE-----</p> <p>Not required to be met for reactor building spray system vent flow paths opened under administrative control.</p> <p>Verify each reactor building spray and cooling manual and non-automatic power operated valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.6.5.2	Operate each required reactor building cooling train fan unit for $\geq 15$ minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.6.5.3	Verify each required reactor building spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.6.5.4	Verify that the containment heat removal capability is sufficient to maintain post accident conditions within design limits.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.5.5	Verify each automatic reactor building spray and cooling valve in each required flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.5.6	Verify each required reactor building spray pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.5.7	Verify each required reactor building cooling train starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.5.8	Verify each spray nozzle is unobstructed.	In accordance with the Surveillance Frequency Control Program
SR 3.6.5.9	Verify reactor building spray locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

DHR and Coolant Circulation – High Water Level  
3.9.4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.4 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.1	Verify one DHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.9.4.2	Verify required DHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program



DHR and Coolant Circulation – Low Water Level  
3.9.5

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.3 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.5.1	Verify one DHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.2	Verify correct breaker alignment and indicated power available to the required DHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.3	Verify DHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NOS. 270 AND 298 TO RENEWED FACILITY OPERATING LICENSE (RFOL)

NOS. DPR-71 AND DPR-62;

AMENDMENT NO. 150 TO RFOL NO. NPF-63;

AMENDMENT NOS. 282 AND 278 TO RFOL NOS. NPF-35 AND NPF-52;

AMENDMENT NOS. 285 AND 264 TO RFOL NOS. NPF-9 AND NPF-17; AND

AMENDMENT NOS. 398, 400, AND 399 TO RFOL NOS. DPR-38 DPR-47 AND DPR-55;

DUKE ENERGY PROGRESS, INC.

DUKE ENERGY CAROLINAS, LLC

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS 1 AND 2

DOCKET NOS. 50-325 AND 50-324

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-413 AND 50-414

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-369 AND 50-370

OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

DOCKET NOS. 50-269, 50-270, AND 50-287

## 1.0 INTRODUCTION

By letter dated June 24, 2015 (Reference 1), as supplemented by letter dated January 18, 2016 (Reference 2), Duke Energy Progress, Inc., and Duke Energy Carolina, LLC (Duke Energy, the licensees), requested changes to the Technical Specifications (TSs) for the Brunswick Steam Electric Plant, Units 1 and 2 (Brunswick), Shearon Harris Nuclear Power Plant, Unit 1 (Harris), Catawba Nuclear Station, Units 1 and 2 (Catawba), McGuire Nuclear Station, Units 1 and 2 (McGuire), and Oconee Nuclear Station, Units 1, 2, and 3 (Oconee). Specifically, the licensees requested to adopt U.S. Nuclear Regulatory Commission (NRC)-approved Technical Specifications Task Force (TSTF) Standard Technical Specifications (STS) Change Traveler TSTF-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation" (Reference 3). The availability of this TS improvement was announced in the *Federal Register* on January 15, 2014 (79 FR 2700) as part of the Consolidated Line Item Improvement Process.

The proposed changes would revise Surveillance Requirements (SRs) related to gas accumulation for the Emergency Core Cooling System (ECCS) and Reactor Core Isolation Cooling (RCIC) system. The proposed changes would also add new SRs related to gas accumulation for the Residual Heat Removal (RHR) and RHR shutdown cooling systems. Attachment 3 to the licensees' applications provided TS Bases, which are summary statements of the bases or reasons for the requested technical specifications, but will not become part of the technical specifications.

The licensees stated that they have reviewed the information contained in the model safety evaluation dated December 23, 2013 (Reference 4) and that the License Amendment Requests (LAR) are consistent with NRC-approved TSTF 523.

The supplemental letter dated January 18, 2016, provided additional information that clarified the applications, did not expand the scope of the application as originally noticed, and did not change the Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determinations as published in the *Federal Register* on August 14, 2015 (80 FR 48923). This *Federal Register* notice was corrected on August 20, 2015 (80 FR 50663).

## 2.0 REGULATORY EVALUATION

### 2.1 Background

Gas accumulation in reactor systems can result in water hammer, pump cavitation, and pumping of non-condensable gas into the reactor vessel. These effects may result in the subject system being unable to perform its specified safety function. The NRC issued Generic Letter (GL) 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (Reference 5), to address the issue of gas accumulation in ECCS, DHR, and CS systems. The industry and NRC staff agreed that a change to the STS and plant-specific TS would be necessary to address some issues discussed in GL 2008-01. TSTF-523 contains changes to the TS SRs and TS Bases to address some of the concerns in GL 2008-01. The licensees proposed amending the Brunswick, Harris, Catawba, McGuire, and Oconee TSs using a plant-specific adoptions of the TSTF-523 changes.

## 2.2 Technical Specification Changes

For Brunswick, changes were proposed for SRs 3.5.1.1, 3.5.1.2, 3.5.2.3, 3.5.2.4, 3.5.3.1, and 3.5.3.2, as well as the addition of new SRs 3.4.7.2, 3.4.8.2, 3.6.2.3.3, 3.9.7.2, and 3.9.8.2 to TS 3.4.7, "RHR Shutdown Cooling System – Hot Shutdown," TS 3.4.8, "RHR Shutdown Cooling System – Cold Shutdown," TS 3.5.1, "ECCS – Operating," TS 3.5.2, "ECCS – Shutdown," TS 3.5.3, "RCIC System," TS 3.6.2.3, "RHR Suppression Pool Cooling," TS 3.9.7, "RHR – High Water Level," and TS 3.9.8, "RHR – Low Water Level," respectively.

For Harris, changes were proposed for SRs 4.5.2.b, 4.6.2.1.a, as well as the addition of new SRs 4.4.1.3.4, 4.4.1.4.1.3, 4.4.1.4.2.2, 4.6.2.1.e, 4.9.8.1.2, and 4.9.8.2.3 to TS 3/4.4.1.3, "Reactor Coolant System (RCS), Hot Shutdown," TS 3/4.4.1.4.1, "Reactor Coolant System, Cold Shutdown – Loops Filled," TS 3/4.4.1.4.2, "Reactor Coolant System, Cold Shutdown – Loops Not Filled," TS 3/4.5.2, "ECCS Subsystems – Tavg Greater Than or Equal to 350°F," TS 3/4.6.2.1, "Containment Spray System," TS 3/4.9.8.1, "Residual Heat Removal and Coolant Circulation, High Water Level," and TS 3/4.9.8.2, "Refueling Operations, Low Water Level," respectively.

For Catawba, changes were proposed for SRs 3.5.2.2, 3.5.2.3, 3.6.6.1, as well as the addition of new SRs 3.4.6.4, 3.4.7.4, 3.4.8.3, 3.6.6.8, 3.9.4.2, and 3.9.5.3 to TS 3.4.6, "RCS Loops - MODE 4," TS 3.4.7, "RCS Loops - MODE 5, Loops Filled," TS 3.4.8, "RCS Loops - MODE 5, Loops Not Filled," TS 3.5.2, "ECCS – Operating," TS 3.6.6, "Containment Spray System," TS 3.9.4, "RHR and Coolant Circulation – High Water Level," and TS 3.9.5, "RHR and Coolant Circulation – Low Water Level," respectively.

For McGuire, changes were proposed for SRs 3.5.2.2, 3.5.2.3, 3.6.6.1, as well as the addition of new SRs 3.4.6.4, 3.4.7.4, 3.4.8.3, 3.6.6.8, 3.9.5.2, and 3.9.6.3 to TS 3.4.6, "Reactor Coolant System (RCS) Loops - MODE 4," TS 3.4.7, "RCS Loops - MODE 5, Loops Filled," TS 3.4.8, "RCS Loops - MODE 5, Loops Not Filled," TS 3.5.2, "ECCS – Operating," TS 3.6.6, "Containment Spray System," TS 3.9.4, "RHR and Coolant Circulation – High Water Level," and TS 3.9.5, "RHR and Coolant Circulation – Low Water Level," respectively.

For Oconee, changes were proposed for SRs 3.5.2.1, 3.5.2.2, 3.5.3.1, 3.5.3.2 and 3.6.5.1 as well as the addition of new SRs 3.4.6.3, 3.4.7.4, 3.4.8.3, 3.6.5.9, 3.9.4.2, and 3.9.5.3 to TS 3.4.6, "Reactor Coolant System (RCS) Loops – MODE 4," TS 3.4.7, "RCS Loops - MODE 5, Loops Filled," TS 3.4.8, "RCS Loops - MODE 5, Loops Not Filled," TS 3.5.2, "High Pressure Injection," TS 3.5.3, "Low Pressure Injection," TS 3.6.5, "Reactor Building Spray and Cooling Systems," TS 3.9.4, "DHR and Coolant Circulation – High Water Level," and TS 3.9.5, "DHR and Coolant Circulation – Low Water Level," respectively.

## 2.3 Regulatory Review

The regulations in Appendix A to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 or similar plant-specific principal design criteria provide design requirements. The regulatory requirements of 10 CFR Part 50, Appendix A, that are applicable to gas management in the subject systems include: General Design Criteria (GDC) 1, 34, 35, 36, 37, 38, 39 and 40. GDC 1 requires that the subject systems be designed, fabricated, erected, and tested to quality standards. GDC 34 requires an RHR system designed to maintain specified acceptable fuel

design limits and to meet design conditions that are not exceeded if a single failure occurs and specified electrical power systems fail. GDC 35, 36, and 37 require an ECCS design that meets performance, inspection, and testing requirements. GDC 38, 39, and 40 require a containment heat removal system design that meets performance, inspection, and testing requirements.

The NRC staff model SE for adoption of TSTF-523 was written for plants licensed to the GDC. Brunswick and Oconee were licensed to design criteria that, for the purposes of TSTF-523 adoption, conform to the GDC. Section 3.1 of the Brunswick and Oconee Updated Final Safety Analysis Reports (UFSARs) discuss Brunswick and Oconee conformance to the GDC.

Additionally, the regulations in 10 CFR 50.46 provide specified ECCS performance criteria.

Quality assurance criteria provided in 10 CFR Part 50, Appendix B, that apply to gas management in the subject systems include: Criteria III, V, XI, XVI, and XVII. Criteria III and V require measures to ensure that applicable regulatory requirements and the design basis, as defined in 10 CFR 50.2, "Definitions," and as specified in the licensees' applications, are correctly translated into controlled specifications, drawings, procedures, and instructions. Criterion XI requires a test program to ensure that the subject systems will perform satisfactorily in service and requires that test results shall be documented and evaluated to ensure that test requirements have been satisfied. Criterion XVI requires measures to ensure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances, are promptly identified and corrected, and that significant conditions adverse to quality are documented and reported to management. Criterion XVII requires maintenance of records of activities affecting quality.

The NRC's regulatory requirements related to the content of the TSs are contained in 10 CFR 50.36(c). The regulations at 10 CFR 50.36 require that the TSs include items in the following categories: (1) safety limits, limiting safety systems settings, and limiting control settings; (2) Limiting Conditions for Operation (LCO); (3) SRs; (4) design features; and (5) administrative controls. SRs are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met. Typically, TS Section 5 requires that licensees establish, implement, and maintain written procedures covering the applicable procedures recommended in Appendix A to Regulatory Guide (RG) 1.33, "Quality Assurance Program Requirements (Operation)." Appendix A to RG 1.33 identifies instructions for filling and venting the ECCS and DHR system, as well as for draining and refilling heat exchangers. Standard TSs and most licensee TSs include SRs to verify that at least some of the subject systems piping is filled with water.

The NRC's guidance for the format and content of licensee TSs can be found in NUREG-1430, Standard Technical Specifications Babcock and Wilcox Plants (Reference 6), NUREG-1431, Standard Technical Specifications Westinghouse Plants (Reference 7), and NUREG-1433, Standard Technical Specifications General Electric Plants Boiling Water Reactor (BWR)/4 (Reference 8). The TS for Brunswick, Catawba, McGuire, and Oconee are in the STS format. The Harris TS are in the format of an earlier version of Westinghouse TS, but the TSTF-523 changes can be applied to Harris TS with minor changes to the format and numbering of the TSTF-523 changes.

The NRC staff recognizes that the Standard Review Plan (SRP) is not the regulatory basis of the proposed TSs changes, and that the licensees are not required to confirm that the SRP guidance is applicable to Brunswick, Harris, Catawba, McGuire, and Oconee.

Regulatory guidance for the NRC staff's review of containment heat removal systems, ECCS, and RHR systems is provided in the following revisions and sections of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" (SRP, Reference 9)) during the review.

- Revision 3 of SRP, Section 6.2.2, "Containment Heat Removal Systems," (Reference 10), provides the procedures concerning the review of containment heat removal under post-accident conditions to help ensure compliance with GDC 38, 39, and 40.
- Revision 3 of SRP, Section 6.3, "Emergency Core Cooling System," (Reference 11), provides the procedures concerning the review of ECCS to help ensure compliance with GDC 35, 36, and 37.
- Revision 5 of SRP, Section 5.4.7, "Residual Heat Removal System," (Reference 12), provides the procedures concerning the review of RHR system as it is used to cool the Reactor Coolant System during and following shutdown to help ensure compliance with GDC 34.

### 3.0 TECHNICAL EVALUATION

#### 3.1 Site Specific TS Changes

##### 3.1.1 Brunswick TS Changes

For Brunswick, the proposed change adopted the TS format and content, to the extent practicable, contained in the changes made to NUREG-1433, Standard Technical Specifications General Electric Plants BWR/4, by TSTF-523.

The NRC staff compared the proposed changes to the existing SRs, as well as the regulatory requirements of 10 CFR 50.36(c).

Specifically, for Brunswick, Duke Energy proposed the following TS changes:

- (1) Add SR 3.4.7.2, which states, "Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water" together with a note that states "Not required to be performed until 12 hours after reactor steam dome pressure is less than the RHR shutdown cooling isolation pressure" and a frequency of 31 days.
- (2) Add SR 3.4.8.2, which states, "Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of 31 days.

- (3) Revise the language for SR 3.5.1.1 from "Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve" to "Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water."
- (4) Revise the Frequency for SR 3.5.1.1 from 31 days to 92 days.
- (5) Annotate the existing note to SR 3.5.1.2 as NOTE 1 and add NOTE 2, which states, "Not required to be met for system vent flow paths opened under administrative control."
- (6) Revise the language for SR 3.5.2.3 from "Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve" to "Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water."
- (7) Annotate the existing note to SR 3.5.2.4 as NOTE 1 and add NOTE 2, which states, "Not required to be met for system vent flow paths opened under administrative control."
- (8) Revise the language for SR 3.5.3.1 from "Verify the RCIC System piping is filled with water from the pump discharge valve to the injection valve" to "Verify the RCIC system locations susceptible to gas accumulation are sufficiently filled with water."
- (9) Revise the Frequency for SR 3.5.3.1 from 31 days to 92 days.
- (10) Add a note to SR 3.5.3.2, which states, "Not required to be met for system vent flow paths opened under administrative control."
- (11) Add SR 3.6.2.3.3, which states, "Verify RHR suppression pool cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of 92 days.
- (12) Add SR 3.9.7.2, which states, "Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of 31 days.
- (13) Add SR 3.9.8.2, which states, "Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of 31 days.

### 3.1.2 Harris TS Changes

For Harris, the proposed change adopted the TS format and content, to the extent practicable, contained in the changes made to NUREG-1431, Standard Technical Specifications Westinghouse Plants, by TSTF-523.

The NRC staff compared the proposed changes to the existing SRs, as well as the regulatory requirements of 10 CFR 50.36(c).

Specifically, for Harris, Duke Energy proposed the following TS changes:

- (1) Add SR 4.4.1.3.4, which states, "Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water at least once per 31 days." with a note that states "Not required to be performed until 12 hours after entering MODE 4" and a frequency of 31 days.
- (2) Add SR 4.4.1.4.1.3, which states, "Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water at least once per 31 days."
- (3) Renumber SR 4.4.1.4.2 to SR 4.4.1.4.2.1 and add SR 4.4.1.4.2.2, which states, "Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water at least once per 31 days."
- (4) Revise the language for SR 4.5.2.b.1 from "Verify ECCS piping is full of water" to "Verify ECCS locations susceptible to gas accumulation are sufficiently filled with water."
- (5) Add a note to SR 4.5.2.b.2, which states, "Not required to be met for system vent flow paths opened under administrative control."
- (6) Add a note to SR 4.6.2.1, which states, "Not required to be met for system vent flow paths opened under administrative control."
- (7) Add SR 4.6.2.1.e, which states, "At least once per 92 days by verifying that CS locations susceptible to gas accumulation are sufficiently filled with water."
- (8) Renumber SR 4.9.8.1 to SR 4.9.8.1.1 and add SR 4.9.8.1.2, which states, "Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water at least once per 31 days."
- (9) Add SR 4.9.8.2.3, which states, "Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water at least once per 31 days."

### 3.1.3 Catawba TS Changes

For Catawba, the proposed change adopted the TS format and content, to the extent practicable, contained in the changes made to NUREG-1431, Standard Technical Specifications Westinghouse Plants, by TSTF-523.

The NRC staff compared the proposed changes to the existing SRs, as well as the regulatory requirements of 10 CFR 50.36(c).

Specifically, for Catawba, Duke Energy proposed the following TS changes:

- (1) Add SR 3.4.6.4, which states, "Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a note that states "Not required to be performed until 12 hours after entering MODE 4" and a frequency of "In accordance with the Surveillance Frequency Control Program."



- (2) Add SR 3.4.7.4, which states, "Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."
- (3) Add SR 3.4.8.3, which states "Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."
- (4) Add a note to SR 3.5.2.2, which states, "Not required to be met for system vent flow paths opened under administrative control."
- (5) Revise the language for SR 3.5.2.3 from "Verify ECCS piping is full of water" to "Verify ECCS locations susceptible to gas accumulation are sufficiently filled with water."
- (6) Add a note to SR 3.6.6.1, which states, "Not required to be met for system vent flow paths opened under administrative control."
- (7) Add SR 3.6.6.8, which states, "Verify containment spray locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."
- (8) Add SR 3.9.4.2, which states, "Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."
- (9) Add SR 3.9.5.3, which states, "Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."

#### 3.1.4 McGuire TS Changes

For McGuire, the proposed change adopted the TS format and content, to the extent practicable, contained in the changes made to NUREG-1431, Standard Technical Specifications Westinghouse Plants, by TSTF-523.

The NRC staff compared the proposed changes to the existing SRs, as well as the regulatory requirements of 10 CFR 50.36(c).

Specifically, for McGuire, Duke Energy proposed the following TS changes:

- (1) Add SR 3.4.6.4, which states, "Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a note that states "Not required to be performed until 12 hours after entering MODE 4" and a frequency of "In accordance with the Surveillance Frequency Control Program."
- (2) Add SR 3.4.7.4, which states, "Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."

- (3) Add SR 3.4.8.3, which states "Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."
- (4) Add a note to SR 3.5.2.2, which states, "Not required to be met for system vent flow paths opened under administrative control."
- (5) Revise the language for SR 3.5.2.3 from "Verify ECCS piping is full of water" to "Verify ECCS locations susceptible to gas accumulation are sufficiently filled with water."
- (6) Add a note to SR 3.6.6.1, which states, "Not required to be met for system vent flow paths opened under administrative control."
- (7) Add SR 3.6.6.8, which states, "Verify containment spray locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."
- (8) Add SR 3.9.5.2, which states, "Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."
- (9) Add SR 3.9.6.3, which states, "Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."

### 3.1.5 Oconee TS Changes

For Oconee, he proposed change adopted the TS format and content, to the extent practicable, contained in the changes made to NUREG-1430, Standard Technical Specifications Babcock and Wilcox Plants, by TSTF-523.

The NRC staff compared the proposed changes to the existing SRs, as well as the regulatory requirements of 10 CFR 50.36(c).

Specifically, for Oconee, Duke Energy proposed the following TS changes:

- (1) Add SR 3.4.6.3, which states, "Verify required DHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a note that states "Not required to be performed until 12 hours after entering MODE 4" and a frequency of "In accordance with the Surveillance Frequency Control Program."
- (2) Add SR 3.4.7.4, which states, "Verify required DHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."
- (3) Add SR 3.4.8.3, which states "Verify DHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."

- (4) Add a note to SR 3.5.2.1, which states, "Not required to be met for system vent flow paths opened under administrative control."
- (5) Delete the Note from SR 3.5.2.2 which states "Not applicable to operating HPI pump(s)." and revise the language for SR 3.5.2.2 from "Vent each HPI pump casing," to "Verify HPI locations susceptible to gas accumulation are sufficiently filled with water."
- (6) Add a note to SR 3.5.3.1, which states, "Not required to be met for system vent flow paths opened under administrative control."
- (7) Delete the Note from SR 3.5.3.2 which states "Not applicable to operating LPI pump(s)." and revise the language for SR 3.5.3.2 from "Vent each LPI pump casing," to "Verify LPI locations susceptible to gas accumulation are sufficiently filled with water."
- (8) Add a note to SR 3.6.5.1, which states, "Not required to be met for system vent flow paths opened under administrative control."
- (9) Add SR 3.6.5.9, which states, "Verify reactor building spray locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."
- (10) Add SR 3.9.4.2, which states, "Verify required DHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."
- (11) Add SR 3.9.5.3, which states, "Verify DHR loop locations susceptible to gas accumulation are sufficiently filled with water" with a frequency of "In accordance with the Surveillance Frequency Control Program."

### 3.2 NRC Staff Review of TS Changes

The new language for the SRs, as stated above, was developed using licensee responses to GL 2008-01 and the NRC discussion contained in Task Interface Agreement (TIA) 2008-03, Emergency Core Cooling System Voiding Relative to Compliance with SRs 3.5.1.1, 3.5.2.3, and 3.5.3.1 (Reference 13). Many of the GL 2008-01 responses stated that licensees identified system locations susceptible to gas accumulation. In the TIA, the NRC stated that the intent of the TS SRs, which state "full of water," may be met if the licensee can establish, through an Operability Determination, that there is a reasonable expectation that the system in question will perform its specified safety function. Therefore the phrase, "sufficiently filled with water" was recommended for the proposed TS changes. In the TS, "sufficiently filled with water" is understood to mean "sufficiently filled with water to support Operability." The regulation at 10 CFR 50.36(c)(3) states that one of the purposes of the SR is to verify that the LCO is met. Therefore, the new SR language, "Verify the [system name] locations susceptible to gas accumulation are sufficiently filled with water," is acceptable since this language will allow the licensees to make a conclusion as to whether or not a system is operable.

The language for the notes that state that the SR does not have to be performed until 12 hours after entering Mode 4 is acceptable because the note provides a limited time to perform the

Surveillance after entering the Applicability of the LCO; however, under the STS usage rules (STS Section 1.4), the requirement to manage gas accumulation is not affected. Licensees must have confidence that the SR can be met or the LCO must be declared not met.

The language for the notes that allow the SRs to not be met for system vent flow paths opened under administrative control is necessary to allow the licensees to credit administratively controlled manual action to close the system vent flow path in order to maintain system Operability during system venting and performance of the proposed gas accumulation SR. Therefore, these notes are acceptable.

In Reference 1, the licensees proposed variations to the surveillance frequency in the following SRs:

- Brunswick SR 3.5.1.1, "ECCS – Operating" (TS 3.5.1)
- Brunswick SR 3.5.3.1, "RCIC System" (TS 3.5.3)
- Brunswick SR 3.6.2.3.3, "RHR Suppression Pool Cooling" (TS 3.6.2.3)
- Harris SR 4.6.2.1.e, "Containment Spray System" (TS 3.6.2.1)
- Catawba SR 3.6.6.8, "Containment Spray System" (TS 3.6.6)
- McGuire SR 3.6.6.8, "Containment Spray System" (TS 3.6.6)
- Oconee SR 3.6.5.9, "Reactor Building Spray" (TS 3.6.5)

Specifically, for the above SRs, the licensees requested a 92-day surveillance frequency as opposed to the 31-day surveillance frequency delineated in TSTF-523. The licensees justified this variation by stating, in part, that:

Gas accumulation for these systems is currently monitored in accordance with each site's response to NRC Generic Letter (GL) 2008-01. Review of plant experience over a three year period ending on April 30, 2015 shows no instances of gas accumulation which would challenge the capability of these systems to perform their safety function.

Therefore, a Surveillance Frequency of 92 days is considered reasonable to provide assurance that these systems are sufficiently filled with water. For plants that have not adopted the [Surveillance Frequency Control Program] SFCP ([Brunswick and Harris]), the TS markups provided in Attachment 1 reflect this variation. For plants that have adopted the SFCP ([Catawba, McGuire, and Oconee]), the initial frequency established under the SFCP will be 92 days, and subsequent changes will be controlled under the provisions of the SFCP.

The licensees also provided a review of trending data for the systems noted above, detailing any instances when gas had been detected in the system. No gas was detected in any of the systems with the exception of two instances at Harris which were described and found to be within the allowable void size.

During its review of the proposed 92-day surveillance frequency, the NRC staff requested that the licensees provide more detailed surveillance history data regarding gas accumulation at Brunswick and Harris. The licensees provided the requested information in Reference 2. After

reviewing the licensees' response, the NRC staff determined that the proposed 92-day surveillance frequency, for the SRs listed above, is supported by the operating history at Brunswick and Harris and, therefore, acceptable.

For Catawba, McGuire, and Oconee, the surveillance frequency for the above listed SRs is controlled in accordance with the SFCP. As stated above, the licensees have established the initial frequency for these SRs at 92 days. The NRC staff has determined that the initial 92-day surveillance frequency is acceptable based on a review of the trending data. The NRC staff has further determined that controlling subsequent changes of these surveillance frequencies under the provisions of the SFCP is consistent with TSTF-523 and, therefore, acceptable.

The NRC staff determined that the proposed SRs meet the regulatory requirements of 10 CFR 50.36 because they provide assurance that the necessary quality of systems and components will be maintained and that the LCO will be met. Therefore, the NRC staff concludes that the proposed amendments are acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the North Carolina and South Carolina State officials were notified of the proposed issuance of the amendments. The State officials had no comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes SRs. 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, and there has been no public comment on such finding (80 FR 48923 and 80 FR 50663). 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 amendment.

#### 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.

## 7.0 REFERENCES

1. Repko, Regis to U.S. Nuclear Regulatory Commission (NRC), Brunswick Steam Electric Plant, Unit Nos. 1 and 2; Shearon Harris Nuclear Power Plant, Unit 1; Catawba Nuclear Station, Units 1 and 2; McGuire Nuclear Station, Units 1 and 2; and Oconee Nuclear Station Units 1, 2, and 3, Application to Revise Technical Specifications to Adopt TSTF-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation," Using The Consolidated Line Item Improvement Process, June 24, 2015 (Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML15175A438).
2. Repko, Regis to NRC, Brunswick Steam Electric Plant, Unit Nos. 1 and 2; Shearon Harris Nuclear Power Plant, Unit 1, Response to Request for Additional Information Regarding, Application to Revise Technical Specifications to Adopt TSTF-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation," January 18, 2016 (ADAMS Accession No. ML16018A001).
3. TSTF-523, Generic Letter 2008-01, Managing Gas Accumulation, Revision 2, February 21, 2013 (ADAMS Accession No. ML13053A075).
4. NRC Letter, Model Safety Evaluation for Plant-Specific Adoption of Technical Specifications Task Force Traveler TSTF-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation," Using the Consolidated Line Item Improvement Process, December 23, 2013 (ADAMS Accession No. ML13255A169).
5. NRC Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems, January 11, 2008 (ADAMS Accession No. ML072910759).
6. NRC NUREG-1430, Standard Technical Specifications, Babcock and Wilcox Plants, Revision 4.0, April 2012 (ADAMS Accession No. ML12100A177).
7. NRC NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Revision 4.0, April 2012 (ADAMS Accession No. ML12100A222).
8. NRC NUREG-1433, Standard Technical Specifications, General Electric Plants Boiling Water Reactor (BWR)/4, Revision 4.0, April 2012 (ADAMS Accession No. ML12104A192).
9. NRC NUREG-0800, Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition, Revision 3, March 2007 (ADAMS Package Accession No. ML070660036).
10. SRP Section 6.2.2, Containment Heat Removal Systems, Revision 3, March 2007 (ADAMS Accession No. ML070160661).
11. SRP Section 6.3, Emergency Core Cooling System, Revision 3, March 2007 (ADAMS Accession No. ML070550068).

12. SRP Section 5.4.7, Residual Heat Removal System, Revision 5, May 2010 (ADAMS Accession No. ML100680577).
13. Task Interface Agreement 2008-03, Emergency Core Cooling System Voiding Relative to Compliance with SRs 3.5.1.1, 3.5.2.3, and 3.5.3.1, October 21, 2008 (ADAMS Accession No. ML082560209).

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Date of issuance: April 29, 2016

R. Repko

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If you have any questions, please contact me by phone at 301-415-4090, or by e-mail at [jeffrey.whited@nrc.gov](mailto:jeffrey.whited@nrc.gov).

Sincerely,

/RA/

Jeffrey A. Whited, Project Manager  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-325, 50-324, 50-400,  
50-413, 50-414, 50-369, 50-370  
50-269, 50-270, and 50-287

Enclosures:

1. Amendment No. 270 to RFOL DPR-71
2. Amendment No. 298 to RFOL DPR-62
3. Amendment No. 150 to RFOL NPF-63
4. Amendment No. 282 to RFOL NPF-35
5. Amendment No. 278 to RFOL NPF-52
6. Amendment No. 285 to RFOL NPF-9
7. Amendment No. 264 to RFOL NPF-17
8. Amendment No. 398 to RFOL DPR-38
9. Amendment No. 400 to RFOL DPR-47
10. Amendment No. 399 to RFOL DPR-55
11. Safety Evaluation

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