



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

July 26, 2017

Mr. Tom Simril
Site Vice President
Catawba Nuclear Station, Units 1 and 2
Duke Energy Carolinas, LLC
4800 Concord Road
York, SC 29745

**SUBJECT: CATAWBA NUCLEAR STATION, UNITS 1 AND 2 – ISSUANCE OF
AMENDMENTS ADOPTING TECHNICAL SPECIFICATIONS TASK FORCE
TRAVELER TSTF-315-A, REVISION 0 (CAC NOS. MF8981 AND MF8982)**

Dear Mr. Simril:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 291 to Renewed Facility Operating License No. NPF-35 and Amendment No. 287 to Renewed Facility Operating License No. NPF-52 for the Catawba Nuclear Station, Units 1 and 2, respectively. The amendments are in response to your application dated December 15, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16350A422).

The amendments modify Technical Specification (TS) 3.1.8, "PHYSICS TESTS Exceptions," to allow the numbers of channels required by the Limiting Condition of Operation section of TS 3.3.1, "Reactor Trip System (RTS) Instrumentation," to be reduced from "4" to "3" to allow one nuclear instrumentation channel to be used as an input to the reactivity computer for physics testing without placing the nuclear instrumentation channel in a tripped condition. The changes are consistent with Technical Specifications Task Force (TSTF) Traveler TSTF-315-A, Revision 0, "Reduce plant trips due to spurious signals to the NIS [Nuclear Instrumentation System] during physics testing."

T. Simril

- 2 -

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

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Mahoney", with a long horizontal stroke extending to the right.

Michael Mahoney, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-413 and 50-414

Enclosures:

1. Amendment No. 291 to NPF-35
2. Amendment No. 287 to NPF-52
3. Safety Evaluation

cc w/enclosures: Distribution via Listserv



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. 291
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, filed by Duke Energy Carolinas, LLC (the licensee), dated December 15, 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 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. 291 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 120 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read "Markley", followed by the word "(for)" in parentheses.

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

Attachment:
Changes to License No. NPF-35
and Technical Specifications

Date of Issuance: July 26, 2017



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. 287
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, filed by the Duke Energy Carolinas, LLC (the licensee), dated December 15, 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 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. 287, 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 120 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to be 'M. Markley', followed by the word '(for)' in parentheses.

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

Attachment:
Changes to License No. NPF-52
and Technical Specifications

Date of Issuance: July 26, 2017

ATTACHMENT

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

LICENSE AMENDMENT NO. 291

RENEWED FACILITY OPERATING LICENSE NO. NPF-35

DOCKET NO. 50-413

AND

LICENSE AMENDMENT NO. 287

RENEWED FACILITY OPERATING LICENSE NO. NPF-52

DOCKET NO. 50-414

Replace the following pages of the Renewed Facility Operating Licenses with the attached revised pages. The revised pages are identified by amendment number and contain 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 pages of the Appendix A Technical Specifications (TS) with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

TS 3.1.8-1

Insert

TS 3.1.8-1

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 291 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

Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program that complies with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the licensee amendment request dated September 25, 2013; as supplemented by letters dated January 13, 2015; January 28, 2015; February 27, 2015; March 30, 2015; April 28, 2015; July 15, 2015; August 14, 2015; September 3, 2015; December 11, 2015; January 7, 2016; March 23, 2016; June 15, 2016; August 2, 2016; September 7, 2016; and, January 26, 2017, as approved in the SE dated February 8, 2017. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a) and 10 CFR 50.48(c), the change does not require a change to a technical specification or a license condition, and the criteria listed below are satisfied.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 287, 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.

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Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program that complies with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the licensee amendment request dated September 25, 2013, as supplemented by letters dated January 13, 2015; January 28, 2015; February 27, 2015; March 30, 2015; April 28, 2015; July 15, 2015; August 14, 2015; September 3, 2015; December 11, 2015; January 7, 2016; March 23, 2016; June 15, 2016; August 2, 2016; September 7, 2016; and, January 26, 2017, as approved in the SE dated February 8, 2017. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a) and 10 CFR 50.48(c), the change does not require a change to a technical specification or a license condition, and the criteria listed below are satisfied.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.8 PHYSICS TESTS Exceptions

LCO 3.1.8 During the performance of PHYSICS TESTS, the requirements of

LCO 3.1.3, "Moderator Temperature Coefficient (MTC)";
LCO 3.1.4, "Rod Group Alignment Limits";
LCO 3.1.5, "Shutdown Bank Insertion Limits";
LCO 3.1.6, "Control Bank Insertion Limits"; and
LCO 3.4.2, "RCS Minimum Temperature for Criticality"

may be suspended, and the number of required channels for LCO 3.3.1, "RTS Instrumentation," Functions 2, 3, 6, and 16.e, may be reduced to "3" required channels, provided:

- a. RCS lowest loop average temperature is $\geq 541^{\circ}\text{F}$; and
- b. SDM is within the limit specified in the COLR.

APPLICABILITY: MODE 2 during PHYSICS TESTS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limit.	A.1 Initiate boration to restore SDM to within limit.	15 minutes
	<u>AND</u> A.2 Suspend PHYSICS TESTS exceptions.	1 hour
B. THERMAL POWER not within limit.	B.1 Open reactor trip breakers.	Immediately
C. RCS lowest loop average temperature not within limit.	C.1 Restore RCS lowest loop average temperature to within limit.	15 minutes

(continued)



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 291 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-35

AND

AMENDMENT NO. 287 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-52

DUKE ENERGY CAROLINAS, LLC

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-413 AND 50-414

1.0 INTRODUCTION

By letter to the U. S. Nuclear Regulatory Commission (NRC, Commission) dated December 15, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16350A422), Duke Energy Carolinas, LLC (Duke Energy, the licensee) submitted an application to seek approval to change the Technical Specification (TSs) for Catawba Nuclear Station, Units 1 and 2 (Catawba).

The amendments modify TS 3.1.8, 'PHYSICS TESTS Exceptions,' to allow the numbers of channels required to be operable by the Limiting Condition of Operation (LCO) section of TS 3.3.1, 'Reactor Trip System (RTS) Instrumentation,' to be reduced from "4" to "3" to allow one nuclear instrumentation channel to be used as an input to the reactivity computer for physics testing without placing the nuclear instrumentation channel in a tripped condition. The changes are consistent with Technical Specifications Task Force (TSTF) Traveler TSTF-315-A, Revision 0, 'Reduce plant trips due to spurious signals to the NIS [Nuclear Instrumentation System] during physics testing.'

The amendments adopt previously NRC-approved TSTF-315-A, Revision 0 (ADAMS Legacy Accession No. 99070603995), in order to bring the Catawba TSs into closer alignment with NUREG-1431, 'Standard Technical Specifications – Westinghouse Plants' (Westinghouse Owners Group (WOG) Standard Technical Specifications (STS) – hereafter "WOG STS" or "STS").

2.0 REGULATORY EVALUATION

In Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36, the Commission established its regulatory requirements related to the content of TS. Pursuant to 10 CFR 50.36, TSs are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings;

(2) LCOs; (3) surveillance requirements; (4) design features; and (5) administrative controls. The regulation does not specify the particular requirements to be included in a plant's TS.

On July 22, 1993, the Commission published the 'Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors' (58 FR 39132). This Final Policy Statement discussed criteria for determining which items must be included in the TSs as LCOs. These criteria were subsequently incorporated into 10 CFR 50.36 (60 FR 36953; July 19, 1995). Specifically, 10 CFR 50.36(c)(2)(ii) requires that an LCO be established for each item meeting one or more of the following criteria:

Criterion 1: Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

Criterion 2: A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 3: A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 4: A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

The NRC staff used Revision 3 of WOG STS in its review of the TS changes proposed by Catawba. The NRC staff also referred to the TSTF Traveler associated with the STS changes proposed for adoption by Catawba.

10 CFR 50, Appendix A defines single failure as:

A single failure means an occurrence which results in the loss of capability of a component to perform its intended safety functions. Multiple failures resulting from a single occurrence are considered to be a single failure. Fluid and electric systems are considered to be designed against an assumed single failure if neither (1) a single failure of any active component (assuming passive components function properly) nor (2) a single failure of a passive component (assuming active components function properly), results in a loss of the capability of the system to perform its safety functions.

2.1 Licensee's Proposed Changes

Current TS LCO 3.1.8, states:

During the performance of PHYSICS TESTS, the requirements of

LCO 3.1.3, 'Moderator Temperature Coefficient (MTC)';

LCO 3.1.4, 'Rod Group Alignment Limits';

LCO 3.1.5, 'Shutdown Bank Insertion Limits';

LCO 3.1.6, 'Control Bank Insertion Limits'; and
LCO 3.4.2, 'RCS [Reactor Coolant System] Minimum Temperature for Criticality'

may be suspended, provided:

- a. RCS lowest loop average temperature is $\geq 541^{\circ}\text{F}$ [degrees Fahrenheit]; and
- b. SDM [Shutdown Margin] is within the limits provided in the COLR [Core Operating Limits Report].

Revised TS LCO 3.1.8, would state:

During the performance of PHYSICS TESTS, the requirements of

LCO 3.1.3, 'Moderator Temperature Coefficient (MTC)';
LCO 3.1.4, 'Rod Group Alignment Limits';
LCO 3.1.5, 'Shutdown Bank Insertion Limits';
LCO 3.1.6, 'Control Bank Insertion Limits'; and
LCO 3.4.2, 'RCS Minimum Temperature for Criticality'

may be suspended, and the number of required channels for LCO 3.3.1, "RTS [Reactor Trip System] Instrumentation," Functions 2, 3, 6, and 16.e, may be reduced to "3" required channels, provided:

- a. RCS lowest loop average temperature is $\geq 541^{\circ}\text{F}$; and
- b. SDM is within the limits provided in the COLR.

3.0 TECHNICAL EVALUATION

3.1 NRC Staff's Technical Evaluation of Licensee's Proposed Changes

TSTF-315-A, Revision 0 revised WOG STS 3.1.10, 'PHYSICS TESTS Exceptions - MODE 2,' to allow the number of channels to be operable of Functions 2, 3, 6, and 18.e required by LCO 3.3.1, 'Reactor Trip System (RTS) Instrumentation,' to be reduced from "4" to "3" to allow one nuclear instrumentation channel to be used as an input to the reactivity computer for physics testing without placing the affected nuclear instrumentation channel in a tripped condition.

The following provides a description for the associated functions:

STS LCO 3.3.1 RTS Function No.	Equivalent Catawba LCO 3.3.1 RTS Function No.	STS RTS Function Title
2	2	Power Range Neutron Flux - High, and - Low
3	3	Power Range Neutron Flux High Positive Rate
6	6	Overtemperature ΔT
18.e	16.e	RTS Interlocks Power Range Neutron Flux, P-10

Catawba TS 3.1.8, 'PHYSICS TESTS Exceptions,' is equivalent to TS 3.1.10 from the STS markup included in TSTF-315-A, Revision 0. TSTF-315-A, Revision 0, which is based on NUREG-1431 Rev. 1, identifies that a physics test exception is applicable to LCO 3.3.1 Functions 2, 3, 6, and 18.e. In NUREG-1431, Function 18.e of TS 3.3.1 Table 3.3.1-1, 'Reactor Trip System Instrumentation,' pertains to 'Power Range Neutron Flux, P-10.' Function 16.e is the corresponding function in TS Table 3.3.1-1 of the Catawba TSs. Therefore, the Catawba TSs are modified to apply to LCO 3.3.1 Functions 2, 3, 6, and 16.e.

Reducing the required number of operable channels from "4" channels to "3" channels creates a two-out-of-three logic (from a one-out-of-three) for trip Functions 2, 3, 6, and 16.e. The resulting two-out-of-three logic for trip Functions 2, 3, 6, and 16.e from the TS LCO 3.1.8 changes continues to satisfy the single failure criterion. The "3" required channels of Functions 2, 3, 6, and 16.e will provide adequate reactor protection in case of an unexpected increase of power that exceeds an associated low power reactor trip setpoint. The change in TS LCO 3.1.8 does not change the TS LCO 3.3.1 requirement for "4" operable channels for Functions 2, 3, 6, and 16.e in MODE 2 when not conducting physics tests.

The NRC staff has reviewed the licensee's proposed changes to TS 3.1.8 and concludes that reducing the number of required channels to be operable for LCO 3.3.1 Functions 2, 3, 6, and 16.e from "4" to "3" is adequate because placing the nuclear instrumentation system in a two-out-of-three logic versus a one-out-of-three logic precludes unnecessary plant trips during the performance of physics tests.

The NRC staff concludes that the licensee's proposed TS changes, consistent with TSTF 315-A, Revision 0, are acceptable because the proposed changes provide reasonable assurance of plant safety and the requirements of 10 CFR 50.36 continue to be met.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, staff notified the South Carolina State official of the proposed issuance of the amendments on June 14, 2017. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20. The NRC staff has

determined that the amendments involve no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on this finding (82 FR 19098: April 25, 2017). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

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

Principal Contributor: A. Smith, NRR

Date: July 26, 2017

SUBJECT: CATAWBA NUCLEAR STATION, UNITS 1 AND 2 – ISSUANCE OF AMENDMENTS ADOPTING TECHNICAL SPECIFICATION TASK FORCE TRAVELER TSTF-315-A, REVISION 0 (CAC NOS. MF8981 AND MF8982) DATED JULY 26, 2017

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ADAMS Accession No.: ML17172A428

*by memorandum

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DATE	07/03/17	06/30/17	05/16/17	07/06/17
OFFICE	OGC (NLO)	DORL/LPL2-1/BC	DORL/LPL2-1/PM	
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DATE	07/13/17	07/26/17	07/26/17	

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