



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

December 6, 2023

Mr. Ken J. Peters
Senior Vice President and
Chief Nuclear Officer
Attention: Regulatory Affairs
Vistra Operations Company LLC
Comanche Peak Nuclear Power Plant
6322 N FM 56
P.O. Box 1002
Glen Rose, TX 76043

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2 -
ISSUANCE OF AMENDMENT NOS. 184 AND 184 REGARDING REVISION TO
TECHNICAL SPECIFICATIONS TO IMPLEMENT WCAP-17661PA,
REVISION 1, "IMPROVED RAOC AND CAOC F_Q SURVEILLANCE TECHNICAL
SPECIFICATIONS" (EPID L-2022-LLA-0170)

Dear Mr. Peters:

The U.S. Nuclear Regulatory Commission (NRC, the Commission) has issued the enclosed Amendment No. 184 to Facility Operating License No. NPF-87 and Amendment No. 184 to Facility Operating License No. NPF-89 for Comanche Peak Nuclear Power Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated November 21, 2022.

The amendments revise the TSs to implement new surveillance methods for the heat flux hot channel factor ($F_Q(Z)$). The new surveillance methods are applicable to plants using either relaxed axial offset control (RAOC) or constant axial offset control (CAOC) surveillance formulations and are documented in the NRC-approved licensing topical reports WCAP-17661-PA/WCAP-17661-NP-A, "Improved RAOC and CAOC F_Q Surveillance Technical Specifications." Moreover, the amendments modify TS 5.6.5 to include WCAP-17661-PA in the list of the NRC approved methodologies used to develop the cycle specific Core Operating Limits Report.

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

Sincerely,

/RA/

Dennis J. Galvin, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-445 and 50-446

Enclosures:

1. Amendment No. 184 to NPF-87
2. Amendment No. 184 to NPF-89
3. Safety Evaluation

cc: Listserv



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

COMANCHE PEAK POWER COMPANY LLC
AND VISTRA OPERATIONS COMPANY LLC
COMANCHE PEAK NUCLEAR POWER PLANT, UNIT NO. 1
DOCKET NO. 50-445
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 184
License No. NPF-87

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Vistra Operations Company LLC (Vistra OpCo) dated November 21, 2022, 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 license 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 Facility Operating License No. NPF-87 is hereby amended to read as follows:

- (2) Technical Specifications and Environmental Protection Plan

- The Technical Specifications contained in Appendix A as revised through Amendment No. 184 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. Vistra OpCo shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. The license amendment is effective as of its date of issuance and shall be implemented prior to the Mode 4 entry for the Comanche Peak Unit 2 Cycle 22 (fall 2024) refueling outage and to the Mode 4 entry for the Comanche Peak Unit 1 Cycle 25 (spring 2025) refueling outage.

FOR THE NUCLEAR REGULATORY COMMISSION

Jennivine K. Rankin, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility
Operating License and
Technical Specifications

Date of Issuance: December 6, 2023



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

COMANCHE PEAK POWER COMPANY LLC
AND VISTRA OPERATIONS COMPANY LLC
COMANCHE PEAK NUCLEAR POWER PLANT, UNIT NO. 2
DOCKET NO. 50-446
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 184
License No. NPF-89

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Vistra Operations Company LLC (Vistra OpCo) dated November 21, 2022, 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 license 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 Facility Operating License No. NPF-89 is hereby amended to read as follows:

- (2) Technical Specifications and Environmental Protection Plan

- The Technical Specifications contained in Appendix A as revised through Amendment No. 184 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. Vistra OpCo shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. The license amendment is effective as of its date of issuance and shall be implemented prior to the Mode 4 entry for the Comanche Peak Unit 2 Cycle 22 (fall 2024) refueling outage and to the Mode 4 entry for the Comanche Peak Unit 1 Cycle 25 (spring 2025) refueling outage.

FOR THE NUCLEAR REGULATORY COMMISSION

Jennivine K. Rankin, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility
Operating License and
Technical Specifications

Date of Issuance: December 6, 2023

ATTACHMENT TO LICENSE AMENDMENT NO. 184
TO FACILITY OPERATING LICENSE NO. NPF-87
AND AMENDMENT NO. 184
TO FACILITY OPERATING LICENSE NO. NPF-89
COMANCHE PEAK NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-445 AND 50-446

Replace the following pages of Facility Operating License Nos. NPF-87 and NPF-89, and the Appendix A, Technical Specifications, with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Facility Operating License No. NPF-87

REMOVE
3

INSERT
3

Facility Operating License No. NPF-89

REMOVE
3

INSERT
3

Technical Specifications

REMOVE
3.2-1
3.2-2
3.2-3
3.2-4
3.2-5
3.2-6

5.6-4

INSERT
3.2-1A
3.2-2A
3.2-3A
3.2-4A
3.2-5A
3.2-6A
3.2-1B
3.2-2B
3.2-3B
3.2-4B
3.2-5B
3.2-6B
5.6-4

- (3) Vistra OpCo, pursuant to the Act and 10 CFR Part 70, to receive, possess, and use at any time, special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, and described in the Final Safety Analysis Report, as supplemented and amended;
- (4) Vistra OpCo, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use, at any time, any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (5) Vistra OpCo, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required, any byproduct, source, and special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (6) Vistra OpCo, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

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

Vistra OpCo is authorized to operate the facility at reactor core power levels not in excess of 3458 megawatts thermal through Cycle 13 and 3612 megawatts thermal starting with Cycle 14 in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A as revised through Amendment No. 184 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. Vistra OpCo shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

- (3) Vistra OpCo, pursuant to the Act and 10 CFR Part 70, to receive, possess, and use at any time, special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, and described in the Final Safety Analysis Report, as supplemented and amended;
- (4) Vistra OpCo, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use, at any time, any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (5) Vistra OpCo, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required, any byproduct, source, and special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (6) Vistra OpCo, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

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

Vistra OpCo is authorized to operate the facility at reactor core power levels not in excess of 3458 megawatts thermal through Cycle 11 and 3612 megawatts thermal starting with Cycle 12 in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A as revised through Amendment No. 184 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. Vistra OpCo shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Antitrust Conditions

DELETED

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<p>A.3 Reduce Overpower N-16 trip setpoints $\geq 1\%$ for each 1% F_Q^C(Z) exceeds limit.</p> <p><u>AND</u></p> <p>A.4 Perform SR 3.2.1.1 and SR 3.2.1.2.</p>	<p>72 hours after each F_Q^C(Z) determination</p> <p>Prior to increasing THERMAL POWER above the limit of Required Action A.1</p>

SURVEILLANCE REQUIREMENTS

-----NOTE-----

During power escalation following shutdown, THERMAL POWER may be increased until an equilibrium power level has been achieved at which a power distribution measurement is obtained.

SURVEILLANCE	FREQUENCY
SR 3.2.1.1 Verify F _Q ^C (Z) is within limit.	Once after each refueling prior to THERMAL POWER exceeding 75% RTP <u>AND</u> Once within 24 hours after achieving equilibrium conditions after exceeding, by ≥ 20% RTP, the THERMAL POWER at which F _Q ^C (Z) was last verified <u>AND</u> In accordance with the Surveillance Frequency Control Program.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.2.1.2 -----NOTE-----</p> <p>If $F_Q^C(Z)$ measurements indicate maximum over $z \left[\frac{F_Q^C(Z)}{K(Z)} \right]$ has increased since the previous evaluation of $F_Q^C(Z)$:</p> <ul style="list-style-type: none"> a. Increase $F_Q^W(Z)$ by an appropriate factor specified in the COLR and reverify $F_Q^W(Z)$ is within limits; or b. Repeat SR 3.2.1.2 once per 7 EFPD until either a. above is met or two successive power distribution measurements indicate maximum over $z \left[\frac{F_Q^C(Z)}{K(Z)} \right]$ has not increased. <p>-----</p> <p>Verify $F_Q^W(Z)$ is within limit.</p>	<p>Once after each refueling prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.1.2 (continued)	<p>Once within 24 hours after achieving equilibrium conditions after exceeding, by $\geq 20\%$ RTP, the THERMAL POWER at which $F_Q^C(Z)$ was last verified</p> <p><u>AND</u></p> <p>In accordance with the Surveillance Frequency Control Program.</p>

3.2 POWER DISTRIBUTION LIMITS

3.2.1B Heat Flux Hot Channel (F_Q(Z)) (RAOC-T(Z) Methodology)

LCO 3.2.1B F_Q(Z) , as approximated by F_Q^C(Z) and F_Q^W(Z) , shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1

-----NOTE-----
This LCO is NOT applicable to Unit 1 Cycle 24

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Required Action A.4 shall be completed whenever this Condition is entered prior to increasing THERMAL POWER above the limit of Required Action A.1. SR 3.2.1.2 is not required to be performed if this Condition is entered prior to THERMAL POWER exceeding 75% RTP after a refueling. ----- F_Q^C(Z) not within limit.</p>	<p>A.1 Reduce THERMAL POWER ≥ 1% RTP for each 1% F_Q^C(Z) exceeds limit. <u>AND</u> A.2 Reduce Power Range Neutron Flux-- High trip setpoints ≥ 1% for each 1% that THERMAL POWER is limited below RATED THERMAL POWER by Required Action A.1. <u>AND</u></p>	<p>15 minutes after each F_Q^C(Z) determination</p> <p>72 hours after each F_Q^C(Z) determination</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<p>A.3 Reduce Overpower N-16 trip setpoints $\geq 1\%$ for each 1% that THERMAL POWER is limited below RATED THERMAL POWER by Required Action A.1.</p> <p><u>AND</u></p> <p>A.4 Perform SR 3.2.1.1 and SR 3.2.1.2.</p>	<p>72 hours after each F_Q^C(Z) determination</p> <p>Prior to increasing THERMAL POWER above the limit of Required Action A.1</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. F_Q^W(Z) not within limits.</p>	<p>B.1.1 Implement a RAOC operating space specified in the COLR that restores F_Q^W(Z) to within its limits.</p> <p><u>AND</u></p>	<p>4 hours</p>
	<p>B.1.2 Perform SR 3.2.1.1 and SR 3.2.1.2 if control rod motion is required to comply with the new operating space.</p> <p><u>OR</u></p>	<p>72 hours</p>
	<p>B.2.1 -----NOTE----- Required Action B.2.4 shall be completed whenever Required Action B.2.1 is performed prior to increasing THERMAL POWER above the limit of Required Action B.2.1.</p> <p>-----</p>	
	<p>Limit THERMAL POWER to less than RATED THERMAL POWER and reduce AFD limits as specified in the COLR.</p> <p><u>AND</u></p>	<p>4 hours after each F_Q^W(Z) determination</p>
	<p>B.2.2 Reduce Power Range Neutron Flux-High trip setpoints ≥ 1% for each 1% that THERMAL POWER is limited below RATED THERMAL POWER by Required Action B.2.1.</p> <p><u>AND</u></p>	<p>72 hours after each F_Q^W(Z) determination</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	<p>B.2.3 Reduce Overpower N-16 trip setpoints $\geq 1\%$ for each 1% that THERMAL POWER is limited below RATED THERMAL POWER by Required Action B.2.1.</p> <p><u>AND</u></p> <p>B.2.4 Perform SR 3.2.1.1 and SR 3.2.1.2.</p>	<p>72 hours after each F_Q^W(Z) determination</p> <p>Prior to increasing THERMAL POWER above the limit of Required Action B.2.1.</p>
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.2.1.1 Verify $F_Q^C(Z)$ is within limit.</p>	<p>Once after each refueling prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p> <p>Once within 24 hours after achieving equilibrium conditions after exceeding, by $\geq 20\%$ RTP, the THERMAL POWER at which $F_Q^C(Z)$ was last verified</p> <p><u>AND</u></p> <p>In accordance with the Surveillance Frequency Control Program.</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.2.1.2 Verify $F_Q^W(Z)$ is within limit.</p>	<p>Once after each refueling within 24 hours after THERMAL POWER exceeds 75% RTP.</p> <p><u>AND</u></p> <p>Once within 24 hours after achieving equilibrium conditions after exceeding, by $\geq 20\%$ RTP, the THERMAL POWER at which $F_Q^W(Z)$ was last verified</p> <p><u>AND</u></p> <p>In accordance with the Surveillance Frequency Control Program.</p>

5.6 Reporting Requirements

5.6.5 Core Operating Limits Report (COLR) (continued)

11. WCAP-10054-P-A, "Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code," August 1985.
 12. WCAP-10054-P-A, Addendum 2, Revision 1, "Addendum to the Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code: Safety Injection into the Broken Loop and COSI Condensation Model," July 1997.
 13. WCAP-10079-P-A, "NOTRUMP, A Nodal Transient Small Break and General Network Code," August 1985.
 14. WCAP-16009-P-A, "Realistic Large-Break LOCA Evaluation Methodology Using the Automated Statistical Treatment of Uncertainty Method (ASTRUM)," January 2005.
 15. WCAP-12472-P-A, "BEACON Core Monitoring and Operations Support System," August 1994.
 16. WCAP-17661-P-A, Revision 1, "Improved RAOC and CAOC F_Q Surveillance Technical Specifications," February 2019.
- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.
 - d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.6 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)

- a. RCS pressure and temperature limits for heat up, cooldown, low temperature operation, criticality, and hydrostatic testing, and PORV lift settings as well as heatup and cooldown rates shall be established and documented in the PTLR for the following:
 1. Specification 3.4.3, "RCS Pressure and Temperature (P/T) Limits," and
 2. Specification 3.4.12, "Low Temperature Overpressure Protection (LTOP) System."
- b. The analytical methods used to determine the RCS pressure and temperature limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 184 TO

FACILITY OPERATING LICENSE NO. NPF-87

AND AMENDMENT NO. 184 TO

FACILITY OPERATING LICENSE NO. NPF-89

COMANCHE PEAK POWER COMPANY LLC

AND VISTRA OPERATIONS COMPANY LLC

COMANCHE PEAK NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-445 AND 50-446

1.0 INTRODUCTION

By letter dated November 21, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22325A258), Vistra Operations Company LLC (Vistra OpCo, the licensee), submitted a license amendment request (LAR) requesting changes to the Technical Specifications (TSs) for Comanche Peak Nuclear Power Plant, Unit Nos. 1 and 2 (Comanche Peak, Units 1 and 2).

The amendments would amend the TSs to implement improved surveillance methods for the heat flux hot channel factor ($F_Q(Z)$). The new surveillance methods are applicable to plants using either relaxed axial offset control (RAOC) or constant axial offset control (CAOC) surveillance formulations and are documented in the U.S. Nuclear Regulatory Commission (NRC, the Commission)-approved licensing topical reports WCAP-17661-P-A/WCAP-17661-NP-A, "Improved RAOC and CAOC F_Q Surveillance Technical Specifications" (Package ML19225C138). Moreover, the request modifies TS 5.6.5, "Core Operating Limits Report (COLR)," to include WCAP-17661-P-A in the list of the NRC-approved methodologies used to develop the cycle specific COLR.

Along with several improvements to the RAOC and CAOC surveillance methodologies, WCAP-17661-P-A addresses issues previously communicated in Westinghouse Nuclear Safety Advisory Letters (NSALs) 09-05, Revision 1, "Relaxed Axial Offset Control F_Q Technical Specification Actions," and 15-01, "Heat Flux Hot Channel Factor Technical Specification

Surveillance.”¹ These NSALs noted that there are non-conservatisms in the methodology in Westinghouse Standard TS (STS) 3.2.1B, “Heat Flux Hot Channel Factor ($F_Q(Z)$ (RAOC-W(Z) Methodology),” contained in NUREG-1431, Revision 4, “Standard Technical Specifications – Westinghouse Plants: Specifications” (Westinghouse STS) (ML12100A222), for plants that have implemented the RAOC methodology. In accordance with the guidance in NRC Administrative Letter 98-10, “Dispositioning of Technical Specifications that are Insufficient to Assure Plant Safety,” dated December 29, 1998 (ML031110108), NSALs 09-05 and 15-01 contained recommended administrative actions that ensured a very conservative set of compensatory measures to address the non-conservatisms.

These measures were implemented administratively at Comanche Peak.

2.0 REGULATORY EVALUATION²

The specification of and adherence to limits on F_Q ensures that the value of the initial total peaking factor assumed in the accident and transient analyses remains valid. As noted in the Westinghouse STS, the F_Q limits assumed in the emergency core cooling system (ECCS) performance evaluation are typically limiting relative to the F_Q limits assumed in safety analyses for other postulated accidents and anticipated operational occurrences. Even if the ECCS limits are less limiting than those determined by another safety analysis, specification of and adherence to the F_Q limits still ensures that facility operation remains bounded by the safety analyses.

The regulatory evaluation thus identified performance requirements and design criteria contained within Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, “Domestic Licensing of Production and Utilization Facilities.” The applicable requirements related to the specific content of TSs, relative to the facility safety analyses, are also included. Finally, section 2.3 of this safety evaluation (SE) summarizes the way in which the regulatory requirements apply specifically to the new TS for F_Q , as described in WCAP-17661-P-A.

2.1 Performance Requirements and Design Criteria

The performance requirements and design criteria applicable to the power distribution assumed in the safety analysis are those that pertain to accident and transient analysis. Primarily these include the requirements contained in 10 CFR 50.46, “Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors,” and General Design Criterion (GDC) 10, contained in Appendix A, “General Design Criteria for Nuclear Power Plants.”³ to 10 CFR Part 50. Since the TSs also prescribe appropriate remedial action to follow if TS limitations are not met, some additional GDCs relative to the reactor protection and reactivity control systems apply, as listed below.

¹ Westinghouse Electric Company issues NSALs to its customers to communicate a potential safety issue so that the customers can conduct a review of the issue and determine whether any action is required. The NRC does not have official record copies of NSALs 09-5 and 15-1.

² This regulatory evaluation is adapted from the NRC staff SE approving WCAP-17661-P-A for use.

³ Section 4.1 of the enclosure to the LAR states that the Comanche Peak construction permit was issued in January 1973. The Comanche Peak construction permit application was submitted on June 5, 1973, and the Comanche Peak construction permit was issued on December 19, 1974. The NRC General Design Criteria (GDC) published as Appendix A to 10 CFR Part 50 in July 1971, are applicable to Comanche Peak and are referred to in the LAR and this SE.

The requirements in 10 CFR 50.46 state, in part, that ECCS shall be designed such that an evaluation performed using an acceptable evaluation model demonstrates that acceptance criteria, set forth in 10 CFR 50.46(b), including peak cladding temperature, cladding oxidation, hydrogen generation, maintenance of coolable core geometry, and long-term core cooling are met for a variety of hypothetical loss-of-coolant accidents (LOCAs), including the most severe hypothetical LOCA.

GDC 10, "Reactor design," states as follows:

The reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences.

GDC 20, "Protection system functions," states as follows:

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

GDC 26, "Reactivity control system redundancy and capability," states as follows:

Two independent reactivity control systems of different design principles shall be provided. One of the systems shall use control rods, preferably including a positive means for inserting the rods, and shall be capable of reliably controlling reactivity changes to assure that under conditions of normal operation, including anticipated operational occurrences, and with appropriate margin for malfunctions such as stuck rods, specified acceptable fuel design limits are not exceeded. The second reactivity control system shall be capable of reliably controlling the rate of reactivity changes resulting from planned, normal power changed (including xenon burnout) to assure acceptable fuel design limits are not exceeded. One of the systems shall be capable of holding the reactor core subcritical under cold conditions.

2.2 Technical Specifications

The requirements for TSs are set forth in 10 CFR 50.36 "Technical specifications." Specific categories of TSs are provided in 10 CFR 50.36(c). These include limiting conditions for operation (LCOs) and surveillance requirements (SRs). If an LCO is not met, the facility must be shut down, or other acceptable remedial action must be taken. SRs are intended to ensure that facility operation remains within the LCOs. NRC Generic Letter (GL) 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specifications," dated October 4, 1988 (ML031200485), established the NRC position that licensees could remove the cycle-specific values of certain operating limits from the TS and maintain them in a COLR, provided that certain requirements were met.

Paragraph (c)(2) of 10 CFR 50.36 discusses LCOs, stating that such TSs "are the lowest functional capability or performance levels of equipment required for safe operation of the facility." The requirements indicate that LCOs must be established for each item that meets one

or more of four criteria. One of the criteria is a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident (DBA) or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Paragraph (c)(3) of 10 CFR 50.36 states:

Surveillance requirements 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 limiting conditions for operation will be met.

Paragraph (c)(5) of 10 CFR 50.36 states, in part:

Administrative controls are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner.

The guidance contained in GL 88-16 provides a means by which the values of certain parameters could be determined and modified on a cycle-specific basis without prior NRC review and approval. In order to implement this guidance, licensees are required to do the following: (1) use NRC-approved methodology to determine the operating limits; (2) include a list, in the TS Administrative Controls section, of the references used to determine the operating limits; and (3) maintain the limits in a COLR, which must be submitted to the NRC for information.

2.3 Discussion

The safety analyses required to establish that a facility will comply with the requirements of 10 CFR 50.46, and with GDC 10, require as input the peak fuel power and the power distribution. Since the peak power and the power distribution are initial conditions of DBAs and transient analyses, facility operation must be controlled by LCOs that are established based on these parameters. Hence, Westinghouse pressurized water reactors (PWRs) have LCOs relative to F_Q . In accordance with 10 CFR 50.36(c)(2), the LCO is accompanied by SRs to ensure that the LCO is satisfied. At plants that have implemented GL 88-16, specific parameter values may be administratively controlled, and in such cases these parameters must be determined in accordance with an NRC-approved methodology and contained in the facility COLR.

If, during performance of an SR, F_Q is determined not to be within the limit then the LCO is not met, and the TS remedial actions must be followed to ensure that facility operation remains safe. These remedial actions are based on (1) restoring compliance with the LCO, and (2) adjusting the reactor protection system settings so that the functionality required by GDCs 20 and 26 is maintained.

2.4 Summary of Proposed Changes

The following tables provide a summary of the TS changes that the licensee proposed for Comanche Peak. As Comanche Peak is a dual unit plant, each unit will implement the proposed change during a refueling outage. The Comanche Peak Unit 1 and Unit 2 TS 3.2.1 will differ due to implementing the proposed change during a refueling outage on each unit. The Comanche Peak Unit 1 TS 3.2.1 (TS 3.2.1A) reflects the original RAOC methodology contained in

WCAP-10216-P-A, Revision 1A, "Relaxation of Constant Axial Offset Control – F_Q Surveillance Technical Specification." Comanche Peak Unit 2 TS 3.2.1 (TS 3.2.1B) will reflect the improved RAOC F_Q Surveillance TSs contained in WCAP-17661-P-A, Revision 1 and will be implemented prior to Unit 1. Therefore, the current LCO 3.2.1 will be labeled as LCO 3.2.1A and the improved LCO to be implemented will be labeled as LCO 3.2.1B. Once the changes are completed on both units an LAR will be submitted to delete LCO 3.2.1A and re-label LCO 3.2.1B as LCO 3.2.1.

Section 2.4.1.1 of this SE describes the proposed changes for TS 3.2.1A while section 2.4.1.2 describes the proposed changes for TS 3.2.1B. Table 1 in section 2.4.1.2 summarizes the changes made in TS 3.2.1B Condition A Required Actions and table 2 summarizes the changes for TS 3.2.1B Condition B Required Actions. The proposed changes to Units 1 and 2 TS 3.2.1 SRs are discussed in section 2.4.2. Moreover, section 2.4.3 discusses the changes to TS 5.6.5.

2.4.1 Proposed Changes to TS 3.2.1

2.4.1.1 Proposed Changes from TS 3.2.1 to TS 3.2.1A

The TS 3.2.1 title and LCO are changed to the following for TS 3.2.1A.

3.2.1A Heat Flux Hot Channel ($F_Q(Z)$) (RAOC-W(Z) Methodology)

LCO 3.2.1A $F_Q(Z)$ as approximated by $F_Q^C(Z)$ and $F_Q^W(Z)$, shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1

-----NOTE-----
This LCO is only applicable to Unit 1 Cycle 24

2.4.1.2 Proposed Changes from TS 3.2.1 to TS 3.2.1B

The TS 3.2.1 title and LCO are changed to the following for TS 3.2.1B.

3.2.1B Heat Flux Hot Channel ($F_Q(Z)$) (RAOC-T(Z) Methodology)

LCO 3.2.1B $F_Q(Z)$ as approximated by $F_Q^C(Z)$ and $F_Q^W(Z)$, shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1

-----NOTE-----
This LCO is NOT applicable to Unit 1 Cycle 24

Table 1: Required Actions and Completion Times, Condition A, NOT Applicable to Unit 1 Cycle 24		
TS Requirements	Current Specification	Revised Specification
NOTE in Condition A	Required Action A.4 shall be completed whenever this Condition is entered.	Required Action A.4 shall be completed whenever this Condition is entered prior to increasing THERMAL POWER above the limit of Required Action A.1. SR 3.2.1.2 is not required to be performed if this Condition is entered prior to THERMAL POWER exceeding 75% RTP after a refueling.
Required Actions A.2 and A.3	<p>“... 1% for each 1% $F_Q^C(Z)$ exceeds limit”</p> <p>[Completion Time Unchanged]</p>	<p>“... 1% for each 1% that THERMAL POWER is limited below RATED THERMAL POWER by Required Action A.1.”</p> <p>[Completion Time Unchanged]</p>
Logical Structure	All four required actions must be performed upon entry into Condition A.	[Logical Structure Unchanged] All four required actions must be performed upon entry into Condition A.

RTP – rated thermal power

Table 2: Required Actions and Completion Times, Condition B, NOT Applicable to Unit 1 Cycle 24		
TS Requirements	Current Specification	Revised Specifications
NOTE in Condition B	Required Action B.4 shall be completed whenever this Condition is entered.	Deleted
Required Action B.1	<p>Reduce AFD limits $\geq 1\%$ for each 1% $F_Q^W(Z)$ exceeds limit.</p> <p>Completion Time: 4 hours</p>	Replace with Required Actions B.1.1 and B.1.2 (see below)
Required Action B.1.1	New for Comanche Peak	<p>Implement a RAOC operating space specified in the COLR that restores $F_Q^W(Z)$ to within limits.</p> <p>Completion Time: 4 hours</p>

Table 2: Required Actions and Completion Times, Condition B, NOT Applicable to Unit 1 Cycle 24

Required Action B.1.2	New for Comanche Peak	Perform SR 3.2.1.1 and SR 3.2.1.2 if control rod motion is required to comply with the new operating space. Completion Time: 72 hours
NOTE, Required Action B.2.1	New for Comanche Peak	Required Action B.2.4 shall be completed whenever Required Action B.2.1 is performed prior to increasing THERMAL POWER above the limit of Required Action B.2.1.
Required Action B.2.1	New for Comanche Peak	Limit THERMAL POWER to less than RATED THERMAL POWER and reduce AFD limits as specified in the COLR. Completion Time: 4 hours after each $F_Q^W(Z)$ determination
Required Action B.2.2	New for Comanche Peak	Reduce Power Range Neutron Flux-High trip setpoints $\geq 1\%$ for each 1% that THERMAL POWER is limited below RATED THERMAL POWER by Required Action B.2.1. Completion Time: 72 hours after each $F_Q^W(Z)$ determination
Required Action B.2.3	New for Comanche Peak	Reduce Overpower N-16 trip setpoints $\geq 1\%$ for each 1% that THERMAL POWER is limited below RATED THERMAL POWER by Required Action B.2.1. Completion Time: 72 hours after each $F_Q^W(Z)$ determination
Required Action B.2.4	New for Comanche Peak	Perform SR 3.2.1.1 and SR 3.2.1.2. Completion Time: Prior to increasing THERMAL POWER above the limit of Required Action B.2.1.
Required Action B.2	Reduce Power Range Neutron Flux-High trip setpoints $\geq 1\%$ for each 1% that the maximum allowable power of the AFD limits is reduced. Completion Time: 72 hours	Deleted

Table 2: Required Actions and Completion Times, Condition B, NOT Applicable to Unit 1 Cycle 24		
Required Action B.3	Reduce Overpower N-16 trip setpoints $\geq 1\%$ for each 1% that the maximum allowable power of the AFD limits is reduced. Completion Time: 72 hours	Deleted
Required Action B.4	Perform SR 3.2.1.1 and SR 3.2.1.2. Completion Time: Prior to increasing THERMAL POWER above the maximum allowable power of the AFD limits.	Deleted
Logical Structure	B.1 <u>AND</u> B.2 <u>AND</u> B.3 <u>AND</u> B.4	B.1.1 <u>AND</u> B.1.2 <u>OR</u> B.2.1 <u>AND</u> B.2.2 <u>AND</u> B.2.3 <u>AND</u> B.2.4

AFD – axial flux difference

2.4.2 Proposed Changes to TS 3.2.1 SRs

2.4.2.1 Proposed Changes to TS 3.2.1 SRs for Unit 1 Cycle 24

The existing SRs for Comanche Peak Unit 1 Cycle 24 (i.e. TS 3.2.1A), remains the same with no changes to the surveillance itself or its frequency.

2.4.2.2 Proposed Changes to TS 3.2.1 SRs not applicable to Unit 1 Cycle 24

The NOTE above the TS 3.2.1 SRs states, “During power escalation following shutdown, THERMAL POWER may be increased until an equilibrium power level has been achieved at which a power distribution map is obtained.” The licensee proposes to delete this note for TS 3.2.1B.

SR 3.2.1.2 presently includes a NOTE that states:

If $F_{Q(Z)}^C$ measurements indicate

maximum over z $\left[\frac{F_{Q(Z)}^C}{K(Z)} \right]$

has increased since the previous evaluation of $F_{Q(Z)}^C$:

- a. Increase $F_{Q(Z)}^W$ by an appropriate factor specified in the COLR and reverify $F_{Q(Z)}^W$ is within limits; or

- b. Repeat SR 3.2.1.2 once per 7 EFPD [effective full power days] until either
 - a. above is met or two successive power distribution measurements indicate

maximum over z $\left[\frac{F_Q^C(Z)}{K(Z)} \right]$ has not increased.

The licensee proposes to delete this NOTE.

The first Frequency requirement for SR 3.2.1.2 is presently, "Once after each refueling prior to THERMAL POWER exceeding 75% RTP." For the new TS 3.2.1B, the first Frequency requirement for SR 3.2.1.2 will be revised to state, "Once after each refueling within 24 hours after THERMAL POWER exceeds 75% RTP."

The second Frequency requirement for SR 3.2.1.2 presently requires performance of SR 3.2.1.2, "Once within 24 hours after achieving equilibrium conditions after exceeding, by \geq 20% RTP, the THERMAL POWER at which $F_Q(Z)$ was last verified." The licensee proposes to change $F_Q(Z)$ to $F_Q^W(Z)$.

2.4.3 Proposed Changes to TS 5.6.5, "Core Operating Limits Report (COLR)"

For both units, the licensee proposes to modify TS 5.6.5 to include WCAP-17661-P-A, Revision 1, as Reference 16 to the list, as follows:

- 16. WCAP-17661-P-A, Revision 1, "Improved RAO and CAOC F_Q Surveillance Technical Specifications," February 2019.

3.0 TECHNICAL EVALUATION

The NRC staff evaluation of the modified TSs proposed by the licensee for Comanche Peak Units 1 and 2 considered whether the modified TSs are consistent with the regulatory requirements identified in section 2, above. In a generic sense, the F_Q limits, surveillance methods, and remedial actions have been found to satisfy these requirements as documented in the NRC staff SE approving WCAP-17661-P-A for use. Therefore, this SE establishes that the licensee has proposed to implement revised RAO F_Q TSs that are consistent with WCAP-17661-P-A and that Vistra OpCo has acceptably addressed two limitations that are identified in the associated NRC staff SE for WCAP-17661-P-A.

3.1 Consistency with WCAP-17661-P-A and Changes to TS 3.2.1

The NRC staff reviewed the TS 3.2.1 changes that the licensee proposed for Comanche Peak Units 1 and 2 and determined that the changes are consistent with those provided in appendix A of WCAP-17661-P-A except for a deviation in the Completion Times for Required Actions B.2.1, B.2.2, and B.2.3 of TS 3.2.1B. The phrase "after each $F_Q^W(Z)$ determination" is added to each of the aforementioned Completion Times similar to the phrase "after each $F_Q^C(Z)$ determination" that is contained in the Completion Times for Required Actions A.1, A.2, and A.3 associated with $F_Q^C(Z)$ in WCAP-17661-P-A. The additional phrase is included in the Completion Times since the THERMAL POWER initially determined by Required Action B.2.1 may be affected by subsequent determinations of $F_Q^W(Z)$ that are not within limit when Required Action B.2.4 is performed and could require additional power reductions within 4 hours of the subsequent

$F_Q^W(Z)$ determination, if necessary to comply with the decreased THERMAL POWER limit. NRC staff determined that the proposed changes to the Completion Times for Required Actions B.2.1, B.2.2, and B.2.3 of TS 3.2.1B are acceptable as they provide means to comply with the THERMAL POWER limit.

The overall F_Q surveillance formulation, the associated TS requirements, and an example application using the RAOC methodology in use at Comanche Peak Units 1 and 2 are provided in WCAP-17661-P-A. Meanwhile, Chapter 4 of the NRC staff's SE approving WCAP-17661-P-A for use provides a detailed technical basis explaining why the new surveillance methodology and associated TS requirements proposed for use at Comanche Peak are acceptable. Since the licensee proposed to implement the new RAOC surveillance methodology in a manner that is consistent with WCAP-17661-P-A, which is an NRC-approved topical report, the NRC staff determined that the proposed changes to TS 3.2.1 are acceptable.

3.2 Approval Limitations for WCAP-17661-P-A

Chapter 5 of the NRC staff's SE approving WCAP-17661-P-A for use provides two limitations, adherence to which is necessary to ensure acceptable implementation of WCAP-17661-P-A. Relevant to the RAOC methodology, Limitation 1 on WCAP-17661-P-A stipulates requirements on the use of the A_{XY} factor within the power distribution surveillance methodology. Limitation 2 requires that the final power level reduction following a failed F_Q surveillance must be to 50-percent RTP. The licensee's submittal addresses these limitations.

Limitation 1 requires that the licensee apply approved nuclear methods to calculate surveillance condition-specific A_{XY} factors in a manner consistent with the way the original cycle design calculations were performed. The licensee addressed this limitation by stating that Vistra OpCo will use the Best-Estimate Analyzer for Core Operations – Nuclear (BEACON) core monitoring system described in NRC-approved licensing topical report WCAP-12472-P-A, "BEACON Core Monitoring and Operation Support System" (ML003678347), or the Advanced Nodal Code (ANC) nuclear models described in NRC-approved licensing topical report WCAP-10965, "ANC: A Westinghouse Advanced Nodal Code" (ADAMS Legacy Library Package 8610310286), and that Vistra OpCo will calculate the A_{XY} factor using similar assumptions as those employed in the cycle depletion calculations. The NRC staff reviewed the information provided by the licensee and determined that it addresses this limitation.

Limitation 2 requires that the final reduction in thermal power following a failed F_Q surveillance is to 50-percent RTP. The licensee provided sample COLR input indicating Vistra OpCo's adherence to this limitation and stated that all COLR input for Comanche Peak Units 1 and 2 fuel cycles will continue to specify 50-percent rated thermal power as the final power level reduction in the event of a failed F_Q surveillance. The NRC staff reviewed the information provided by the licensee and determined that it addresses this limitation.

Based on its review of the information provided by the licensee, the NRC staff determined that the licensee has acceptably addressed the two limitations included in the NRC staff SE approving WCAP-17661-P-A for use. Therefore, the NRC staff determined the TS, as revised by the proposed changes, will continue to require the licensee to shut down the reactor or follow any remedial action permitted by the TS until the LCO can be met. The NRC staff's independent evaluation of the proposed changes also determined that 10 CFR 50.36(c)(3) requirements will continue to be met, because the SRs, as revised by the proposed changes, will continue 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.

3.3 Proposed Changes to TS COLR References

The NRC staff reviewed the proposed changes to the TS COLR references for both units. The NRC staff determined that the proposed inclusion of the new Reference 16, which refers to WCAP-17661-P-A, is acceptable because this methodology will now be used to determine the operating limits and perform associated surveillances for LCO 3.2.1. The NRC staff finds that the regulatory requirements of 10 CFR 50.36(c)(5) will continue to be met, because the TS, as revised by the proposed changes, will continue to contain provisions relating to organization and management, procedures, recordkeeping, review, and audit, and reporting necessary to assure operation of the facility in a safe manner.

3.4 Technical Evaluation Conclusion

Based on the following considerations:

1. The licensee proposes to implement methods described in WCAP-17661-P-A that has been approved for use by the NRC staff for formulating and performing the F_Q surveillance,
2. The NRC staff confirmed that the licensee's proposed implementation is consistent with the TS described in the WCAP-17661-P-A, and
3. The licensee has acceptably addressed the Conditions and Limitations included in the NRC staff SE approving WCAP-17661-P-A,

The NRC staff has determined that it is acceptable for the licensee to implement WCAP-17661-P-A at Comanche Peak Units 1 and 2.

Since WCAP-17661-P-A provides an acceptable way to determine operating limits and perform core surveillance in a way that demonstrates compliance with the requirements identified in section 2 of this SE, and since the NRC staff determined that the licensee may acceptably implement WCAP-17661-P-A at Comanche Peak Units 1 and 2, and the TS, as amended by the proposed changes will continue to meet 10 CFR 50.36 requirements, the NRC staff determined that the proposed amendments are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Texas State official was notified of the proposed issuance of the amendments on November 8, 2023. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration published in the *Federal Register* on

February 21, 2023 (88 FR 10559), and there has been no public comment on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

Based on the considerations discussed above, the NRC staff concludes 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.

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Date: December 6, 2023

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2 -
 ISSUANCE OF AMENDMENT NOS. 184 AND 184 REGARDING REVISION TO
 TECHNICAL SPECIFICATIONS TO IMPLEMENT WCAP-17661-PA,
 REVISION 1, "IMPROVED RAOC AND CAOC F₀ SURVEILLANCE TECHNICAL
 SPECIFICATIONS" (EPID L-2022-LLA-0170) DATED DECEMBER 6, 2023

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