



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

November 10, 2022

Mr. David P. Rhoades
Senior Vice President
Constellation Energy Generation, LLC
President and Chief Nuclear Officer
Constellation Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT NO. 1 - ISSUANCE OF AMENDMENT
NO. 247 RE: ADOPTION OF TSTF-230, REVISION 1 (EPID L-2022-LLA-0076)

Dear Mr. Rhoades:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 247 to Facility Operating License No. NPF-62 for the Clinton Power Station, Unit No. 1. The amendment is in response to your application dated May 24, 2022.

The amendment modified Technical Specifications (TS) 3.6.2.3, "Residual Heat Removal (RHR) Suppression Pool Cooling," to allow two RHR suppression pool cooling subsystems to be inoperable for 8 hours. The amendment is consistent with NRC-approved Technical Specification Task Force (TSTF) Traveler 230-A, Revision 1, "Add New Condition B to LCO [Limiting Conditions of Operation] 3.6.2.3, RHR Suppression Pool Cooling."

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

Sincerely,

/RA/

Joel S. Wiebe, Senior Project Manager
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosures:

1. Amendment No. 247 to NPF-62
2. Safety Evaluation

cc: Listserv



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

CONSTELLATION ENERGY GENERATION, LLC

DOCKET NO. 50-461

CLINTON POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 247
License No. NPF-62

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Constellation Energy Generation, LLC (the licensee), dated May 24, 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 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-62 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, as revised through Amendment No. 247, are hereby incorporated into this license. Constellation Energy Generation, LLC 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 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Nancy L. Salgado, Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility Operating
License and Technical
Specifications

Date of Issuance: November 10, 2022

ATTACHMENT TO LICENSE AMENDMENT NO. 247

FACILITY OPERATING LICENSE NO. NPF-62

CLINTON POWER STATION, UNIT NO. 1

DOCKET NO. 50-461

Replace the following pages of the Facility Operating License No. NPF-62 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.

REMOVE

INSERT

Page 3

Page 3

Technical Specifications

REMOVE

INSERT

3.6-32

3.6-32

- (4) Constellation Energy Generation, LLC, pursuant to the Act and to 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) Constellation Energy Generation, LLC, 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;
 - (6) Constellation Energy Generation, LLC, 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. Mechanical disassembly of the GE14i isotope test assemblies containing Cobalt-60 is not considered separation; and
 - (7) Constellation Energy Generation, LLC, pursuant to the Act and 10 CFR Parts 30, to intentionally produce, possess, receive, transfer, and use Cobalt-60.
- 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
Constellation Energy Generation, LLC is authorized to operate the facility at reactor core power levels not in excess of 3473 megawatts thermal (100 percent rated 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, as revised through Amendment No. 247, are hereby incorporated into this license. Constellation Energy Generation, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3.6 CONTAINMENT SYSTEMS

3.6.2.3 Residual Heat Removal (RHR) Suppression Pool Cooling

LCO 3.6.2.3 Two RHR suppression pool cooling subsystems shall be OPERABLE.

-----NOTE-----
One RHR suppression pool cooling subsystem may be inoperable during alignment and operation for decay heat removal with reactor steam dome pressure less than the residual heat removal cut in permissive pressure.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR suppression pool cooling subsystem inoperable.	A.1 Restore RHR suppression pool cooling subsystem to OPERABLE status.	7 days <u>OR</u> In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time of Condition A not met.	-----NOTE----- LCO 3.0.4.a is not applicable when entering MODE 3. ----- B.1 Be in MODE 3.	12 hours
C. Two RHR suppression pool cooling subsystems inoperable.	C.1 Restore one RHR suppression pool cooling subsystem to OPERABLE status.	8 hours
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. <u>AND</u> D.2 Be in MODE 4.	12 hours 36 hours



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 247 TO

FACILITY OPERATING LICENSE NO. NPF-62

CONSTELLATION ENERGY GENERATION, LLC

CLINTON POWER STATION, UNIT NO. 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By letter to the U.S. Nuclear Regulatory Commission (NRC, the Commission) dated May 24, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22144A224), Constellation Energy Generation, LLC (Constellation, the licensee) requested changes to the technical specifications (TSs) and facility operating license for Clinton Power Station, Unit No. 1 (Clinton).

The proposed amendment would revise TS 3.6.2.3, "Residual Heat Removal (RHR) Suppression Pool Cooling," to allow two RHR suppression pool cooling subsystems to be inoperable for 8 hours. The proposed amendment is consistent with NRC-approved Technical Specification Task Force (TSTF) Traveler-230, Revision 1, "Add New Condition B to LCO [limiting conditions for operations] 3.6.2.3, RHR Suppression Pool Cooling" (ML040570110, ML19067A141) and the Standard Technical Specifications (STS), NUREG-1434, "Standard Technical Specifications General Electric Plants, BWR/6," Revision 5 (ML21271A582). There are no variations from TSTF-230 or NUREG-1434 in the proposed Clinton TS changes.

In the application, the licensee refers to TSTF-230-A as a basis for the requested amendment. The NRC staff notes that the "-A" designation added to TSTF-230 is an industry convention used to indicate that the traveler has been approved by the NRC. TSTF-230 and TSTF-230-A are the same document. However, since TSTF-230-A is not an NRC designation, this Safety Evaluation (SE) refers to the TS change traveler as TSTF-230.

2.0 REGULATORY EVALUATION

2.1 Description of RHR Suppression Pool Cooling

The Clinton RHR system is composed of three independent loops. Each loop contains its own motor-driven pump, piping, valves, instrumentation, and controls. Each loop has a suction source from the suppression pool and is capable of discharging water to the reactor vessel via a

separate nozzle, or back to the suppression pool via a full flow test line. In addition, the A and B loops have heat exchangers which are cooled by shutdown service water.

Following a Design-Basis Accident (DBA), the RHR suppression pool cooling system removes heat from the suppression pool. The suppression pool is designed to absorb the sudden input of heat from the primary system. In the long term, the pool continues to absorb residual heat generated by fuel in the reactor core. Some means must be provided to remove heat from the suppression pool so that the temperature inside the primary containment remains within design limits. This function is provided by two redundant RHR suppression pool cooling subsystems.

Each RHR subsystem contains a pump and one heat exchanger, and the RHR subsystem is manually initiated and independently controlled. The RHR subsystems perform the suppression pool cooling function by circulating water from the suppression pool through the RHR heat exchangers and returning it to the suppression pool. Shutdown service water, circulating through the tube side of the heat exchangers, exchanges heat with the suppression pool water, and discharges this heat to the external heat sink.

The heat removal capability of one RHR subsystem is sufficient to meet the overall DBA pool cooling requirement to limit peak temperature to 185°F for loss-of-coolant accidents and transient events such as a turbine trip without bypass or a stuck open safety/relief valve (S/RV).

S/RV leakage and reactor core isolation cooling system testing increase suppression pool temperature more slowly. The RHR suppression pool cooling system is also used to lower the suppression pool water bulk temperature following such events.

2.2 Proposed TS Changes to Adopt TSTF-230

Consistent with NRC-approved TSTF-230, Revision 1, the licensee proposed changes that would revise the TS related to RHR suppression pool cooling to allow two RHR suppression pool cooling subsystems to be inoperable for 8 hours. Specifically, the licensee proposed the following changes to TS 3.6.2.3 Actions:

- Revise Required Action for Condition C to remove requirements for Mode changes and add requirements to restore one RHR suppression pool cooling subsystem to operable status (Required Action C.1) with a Completion Time of 8 hours.
- Add new Condition D that applies when the Required Action and associated Completion Time of Condition C is not met. The Required Action and associated Completion Time for Condition D require the unit to be in Mode 3 within 12 hours (i.e., Required Action D.1) and in Mode 4 within 36 hours (i.e., Required Action D.2).

TSTF-230, Revision 1, was submitted to the NRC on June 16, 1999, and was made available for plant-specific adoption via incorporation into Revision 2 of the Standard Technical Specifications (STS) (NUREG-1434) on June 30, 2001 (ML011780537).

2.3 Applicable Regulatory Requirements

Title 10 of the *Code of Federal Regulations* (10 CFR) 50.36(c)(2), requires that TSs include LCOs (limiting conditions for operations). Per 10 CFR 50.36(c)(2)(i), LCOs “are the lowest functional capability or performance levels of equipment required for safe operation of the facility.” The regulation also requires that when an LCO of a nuclear reactor is not met, the

licensee shall shut down the reactor or follow any remedial action permitted by the TS until the condition can be met.

2.4 Applicable Guidance

The NRC staff's guidance for the review of TSs is in Chapter 16.0, "Technical Specifications," of NUREG-0800, Revision 3, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition" (SRP), dated March 2010 (ML100351425). As described therein, as part of the regulatory standardization effort, the NRC staff has prepared STSs for each of the LWR nuclear designs. Accordingly, the NRC staff's review includes consideration of whether the proposed changes are consistent with NUREG-1434, Revision 5, as modified by NRC-approved travelers. Traveler TSTF-230, Revision 1, revised the STSs related to Completion Times when two RHR suppression pool cooling subsystems are inoperable. The NRC staff approved TSTF-230 on July 26, 1999 (ML19067A141) and it was incorporated into NUREG-1434, Revision 2 (ML011780537).

3.0 TECHNICAL EVALUATION

3.1 Proposed TS Changes to Adopt TSTF-230

The Clinton TS 3.6.2.3 currently requires two RHR suppression pool cooling subsystems be operable in Modes 1, 2, and 3. When two RHR suppression pool cooling subsystems are inoperable, the current Required Action and Completion Time require the plant to "be in Mode 3 in 12 hours and be in Mode 4 in 36 hours." The licensee proposed that when two RHR suppression pool cooling subsystems are inoperable, 8 hours be given to restore one RHR suppression pool cooling subsystem to operable status. If this proposed Required Action cannot be completed within the proposed 8-hour Completion Time, then the licensee will be required to be in Mode 3 in 12 hours and be in Mode 4 in 36 hours. As noted in its application, the licensee's basis for the proposed change was NRC staff-approved traveler TSTF-230, Revision 1, which was developed to allow this change for all boiling-water reactor (BWR) plants (i.e., BWR/4 and BWR/6).

The licensee states that allowing the proposed 8-hour Completion Time for two RHR suppression pool cooling subsystems inoperable is appropriate because an immediate plant shutdown, which is currently required, has the potential to result in a unit scram that could result in steam being discharged to the suppression pool. In such a case, with both loops of RHR suppression pool cooling inoperable, there would be no available means to remove heat from the suppression pool. The licensee stated that the 8-hour Completion Time would provide some time to restore one of the RHR suppression pool cooling subsystems prior to requiring a unit shutdown. The licensee also noted that the 8-hour Completion Time is consistent with Clinton TS 3.6.1.7, "Residual Heat Removal (RHR) Containment Spray System," Required Action B.1, which allows 8 hours to restore one RHR containment spray subsystem to operable status when in a condition where two RHR containment spray subsystems are inoperable.

3.2 Technical Evaluation

The NRC staff reviewed the licensee's submittal and plant design described above and in Section 2.0 of this SE. The NRC staff determined that the STS changes approved in TSTF-230, Revision 1, are applicable to Clinton TSs because Clinton is a BWR/6 design, and the NRC staff approved the TSTF-230 changes for BWR/6 designs. Moreover, the RHR suppression pool cooling system meets Criterion 3 of the Commission Policy (58 FR 39132) on technical

specification improvements because it is needed to remove heat from the suppression pool following a DBA and is therefore required to be in TS as a primary success path to remove heat. The staff compared the licensee's proposed TS changes to the NRC-approved changes contained in TSTF-230, Revision 1, and NUREG-1434, Revision 5. Based on this review, the staff determined that the licensee's proposed changes conform to TSTF-230 and NUREG-1434 by allowing a Completion Time of 8 hours to return one RHR suppression pool cooling subsystem to operable status in the event that two RHR suppression pool cooling subsystems are inoperable and requiring entry into Mode 3 and Mode 4 in the event the 8-hour Completion Time is not met. Under the current TSs, the unit must immediately shut down when both RHR subsystems are inoperable. During an immediate shutdown, there is the possibility that the unit could scram, and discharge steam to the suppression pool. The proposed 8-hour Completion Time allows the licensee time to restore one of the subsystems prior to requiring a unit shutdown, which avoids the potential scenario where steam could be discharged to the suppression pool during a time when both suppression pool cooling subsystems are inoperable and incapable of removing heat from the suppression pool. The 8-hour Completion Time is considered acceptable due to the low probability of a DBA occurring within this short period. In addition, RHR suppression pool cooling is not needed immediately following a DBA. It is needed for long term cooling following a DBA. As a result, the NRC staff finds that the proposed changes to Clinton TS 3.6.2.3 provide adequate remedial actions to be taken until the conditions can be met, thereby satisfying 10 CFR 50.36(c)(2)(i). Therefore, the NRC staff concludes that the licensee's proposed changes to the Clinton TSs are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendment on September 20, 2022. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to installation or use of a facility's components located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (87 FR 42508). Accordingly, the amendment meets 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

amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Clinton Ashley, NRR

Date of Issuance: November 10, 2022

SUBJECT: CLINTON POWER STATION, UNIT NO. 1 - ISSUANCE OF AMENDMENT
NO. 247 RE: ADOPTION OF TSTF-230, REVISION 1 (EPID L-2022-LLA-0076)
DATED NOVEMBER 10, 2022

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