



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

February 22, 2017

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO)
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT NO. 1 - ISSUANCE OF AMENDMENT
REGARDING INSERVICE LEAK AND HYDROSTATIC TESTING OPERATIONS
(CAC NO. MF7559)

Dear Mr. Hanson:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 211 to Facility Operating License No. NPF-62 for the Clinton Power Station, Unit No. 1. The amendment consists of changes to the technical specifications (TSs) in response to your application dated April 4, 2016.

The amendment revises TS limiting condition for operation 3.10.1, "Inservice Leak and Hydrostatic Testing Operation," to allow for more efficient testing during a refueling outage. The change is based on U.S. Nuclear Regulatory Commission-approved Technical Specification Task Force (TSTF) Improved Standard Technical Specification Change Traveler, TSTF-484, Revision 0, "Use of TS 3.10.1 for Scram Time Testing Activities."

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

Sincerely,

A handwritten signature in black ink that reads "Jennivine Rankin".

Jennivine Rankin, Project Manager
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosures:

1. Amendment No. 211 to NPF-62
2. Safety Evaluation

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
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EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-461

CLINTON POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 211
License No. NPF-62

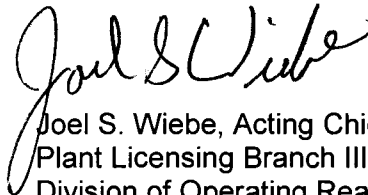
1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Exelon Generation Company, LLC (the licensee), dated April 4, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of 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. 211, are hereby incorporated into this license. Exelon Generation Company 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



Joel S. Wiebe, Acting Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications and Facility Operating License

Date of Issuance: February 22, 2017

ATTACHMENT TO LICENSE AMENDMENT NO. 211

CLINTON POWER STATION, UNIT NO. 1

FACILITY OPERATING LICENSE NO. NPF-62

DOCKET NO. 50-461

Replace the following pages of the Facility Operating License and 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

License NPF-62
Page 3

TSs
Page 3.10-1

Insert

License NPF-62
Page 3

TSs
Page 3.10-1

- (4) Exelon Generation Company, 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) Exelon Generation Company, 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) Exelon Generation Company, 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) Exelon Generation Company, 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

Exelon Generation Company 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. 211, are hereby incorporated into this license. Exelon Generation Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3.10 SPECIAL OPERATIONS

3.10.1 Inservice Leak and Hydrostatic Testing Operation

LCO 3.10.1 The average reactor coolant temperature specified in Table 1.1-1 for MODE 4 may be changed to "NA," and operation considered not to be in MODE 3; and the requirements of LCO 3.4.10, "Residual Heat Removal (RHR) Shutdown Cooling System—Cold Shutdown," may be suspended to allow reactor coolant temperature > 200°F:

- For performance of an inservice leak or hydrostatic test,
- As a consequence of maintaining adequate pressure for an inservice leak or hydrostatic test, or
- As a consequence of maintaining adequate pressure for control rod scram time testing initiated in conjunction with an inservice leak or hydrostatic test,

provided the following MODE 3 LCOs are met:

- a. LCO 3.6.1.2, "Primary Containment Air Locks," for the upper containment personnel air lock;
- b. LCO 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)," and LCO 3.3.6.1, "Primary Containment and Drywell Isolation Instrumentation," for those valves and Functions which isolate secondary containment bypass leakage paths;
- c. LCO 3.3.6.2, "Secondary Containment Isolation Instrumentation," Functions 1, 2, 3, 4, 5, and 7 of Table 3.3.6.2-1;
- d. LCO 3.6.4.1, "Secondary Containment";
- e. LCO 3.6.4.2, "Secondary Containment Isolation Dampers (SCIDs)"; and
- f. LCO 3.6.4.3, "Standby Gas Treatment (SGT) System."

APPLICABILITY: MODE 4 with average reactor coolant temperature > 200°F.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 211 TO FACILITY OPERATING LICENSE NO. NPF-62

EXELON GENERATION COMPANY, LLC

CLINTON POWER STATION, UNIT NO. 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By application dated April 4, 2016 (Reference 1), Exelon Generation Company, LLC (Exelon, the licensee) submitted a license amendment request (LAR) regarding the inservice leak and hydrostatic testing operation technical specification (TS) at Clinton Power Station, Unit 1 (CPS). The amendment modifies TS limiting condition for operation (LCO) 3.10.1, "Inservice Leak and Hydrostatic Testing Operation," to allow more efficient testing during a refueling outage. The specific changes are described below.

CPS TS Table 1.1-1, "MODES," defines Mode 4, "Cold Shutdown," as pertaining to plant conditions when the average reactor coolant temperature is less than or equal to 200 degrees Fahrenheit (°F). Table 1.1-1 defines Mode, "Hot Shutdown," as pertaining to plant conditions when the average reactor coolant temperature is greater than 200 °F. Currently, LCO 3.10.1 allows performance of an inservice leak or hydrostatic test with the average reactor coolant temperature greater than 200 °F, while considering operational conditions to still be in Mode 4, provided certain secondary containment LCOs are met. The amendment will revise LCO 3.10.1 to expand the scope to include operations where temperature exceeds 200 °F: (1) as a consequence of maintaining adequate reactor pressure for an inservice leak or hydrostatic test, or (2) as a consequence of maintaining adequate reactor pressure for control rod scram time testing initiated in conjunction with an inservice leak or hydrostatic test.

The LAR is based on Technical Specification Task Force (TSTF) Improved Standard Technical Specifications Change Traveler, TSTF-484, Revision 0, "Use of TS 3.10.1 for Scram Time Testing Activities" (Reference 2), which has been approved generically for the Standard Technical Specifications (STS) by the U.S. Nuclear Regulatory Commission (NRC, or the Commission). A notice announcing the availability of a model application for TSTF-484 using the consolidated line item improvement process (CLIIP) was published by the NRC staff in the *Federal Register* on November 27, 2006 (71 FR 68642). A model safety evaluation (SE) and no significant hazards determination for TSTF-484 was published by the NRC staff in the *Federal Register* on October 27, 2006 (71 FR 63050). Section 3.0 of this SE is based on the TSTF-484 model SE with changes to reflect differences in the emergency core cooling system (ECCS) at CPS.

2.0 REGULATORY EVALUATION

2.1 Inservice Leak and Hydrostatic Testing

The reactor coolant system (RCS) serves as a pressure boundary and also serves to provide a flow path for the circulation of coolant past the fuel. In order to maintain RCS integrity, Section XI of the American Society of Mechanical Engineers (ASME) Pressure Vessel Code requires periodic hydrostatic and leakage testing. Hydrostatic tests are required to be performed once every 10 years and leakage tests are required to be performed each refueling outage. Appendix G to *Code of Federal Regulations* (10 CFR) Part 50 states that pressure tests and leak tests of the reactor vessel that are required by Section XI of the ASME Pressure Vessel Code must be completed before the core is critical.

NUREG-1434, General Electric Plants, BWR [boiling-water reactor]/6, Revision 4.0 (Reference 3), STS currently contain LCO 3.10.1, "Inservice Leak and Hydrostatic Testing Operation." LCO 3.10.1 was created to allow for hydrostatic and leakage testing to be conducted while in Mode 4 with average reactor coolant temperature greater than 200 °F (normally corresponding to MODE 3) provided certain secondary containment LCOs are met.

TSTF-484, modifies LCO 3.10.1 to allow a licensee to implement LCO 3.10.1, while hydrostatic and leakage testing is being conducted, should average reactor coolant temperature exceed the Mode 3 Hot Shutdown threshold (200 °F for CPS) during testing. This modification does not alter current requirements for hydrostatic and leakage testing as required by Appendix G to 10 CFR Part 50.

2.2 Control Rod Scram Time Testing

Control rods function to control reactor power level and to provide adequate excess negative reactivity to shut down the reactor from any normal operating or accident condition at any time during core life. The control rods are scrammed by using hydraulic pressure exerted by the control rod drive (CRD) system. Criterion 10 of Appendix A to 10 CFR Part 50 states that the reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences. The scram reactivity used in design basis accidents and transient analyses is based on an assumed control rod scram time.

NUREG-1434, currently contain surveillance requirements (SRs) to conduct scram time testing when certain conditions are met in order to ensure that Criterion 10 of Appendix A to 10 CFR Part 50 is satisfied. CPS TS SR 3.1.4.1 requires scram time testing to be conducted following a shutdown greater than 120 days and after fuel movement in the reactor pressure vessel. CPS TS SR 3.1.4.4 requires scram time testing to be conducted following work on control rod or CRD system that could affect scram time. Both SRs must be performed at reactor steam dome pressure greater than or equal to CPS TS's 950 pound per square inch gauge (psig) and prior to exceeding 40 percent rated thermal power (RTP).

TSTF-484, Revision 0, "Use of TS 3.10.1 for Scram Time Testing Activities," would modify LCO 3.10.1 to allow SRs 3.1.4.1 and 3.1.4.4 to be conducted in Mode 4 with average reactor

coolant temperature greater than the Hot Shutdown threshold (200 °F for CPS). Scram time testing would be performed in accordance with LCO 3.10.4, "Single Control Rod Withdrawal - Cold Shutdown." This modification to LCO 3.10.1 does not alter the means of compliance with Criterion 10 of Appendix A to 10 CFR Part 50.

3.0 TECHNICAL EVALUATION

The existing provisions of LCO 3.10.1 allow for hydrostatic and leakage testing to be conducted while in Mode 4 with average reactor coolant temperature greater than 200 °F, while imposing Mode 3 secondary containment requirements. Under the existing provision, LCO 3.10.1 would have to be implemented prior to hydrostatic and leakage testing. As a result, if LCO 3.10.1 was not implemented prior to hydrostatic and leakage testing, hydrostatic and leakage testing would have to be terminated if average reactor coolant temperature exceeded 200°F during the testing. TSTF-484, Revision 0, modifies LCO 3.10.1 to allow a licensee to implement LCO 3.10.1, while hydrostatic and leakage testing is being conducted, should average reactor coolant temperature exceed 200 °F during testing. This modification will allow completion of testing without the potential for interrupting the test in order to reduce reactor vessel pressure, cool the RCS, and restart the test below 200 °F. Since the current LCO 3.10.1 allows testing to be conducted while in Mode 4 with average reactor coolant temperature greater than 200°F, the proposed change does not introduce any new operational conditions beyond those currently allowed.

CPS SRs 3.1.4.1 and 3.1.4.4 require that control rod scram time be tested at reactor steam dome pressure greater than or equal to 950 psig and before exceeding 40 percent RTP. Performance of control rod scram time testing is typically scheduled concurrent with inservice leak or hydrostatic testing while the RCS is pressurized. Because of the number of control rods that must be tested, it is possible for the inservice leak or hydrostatic test to be completed prior to completing the scram time test. Under existing provisions, if scram time testing can not be completed during the LCO 3.10.1 inservice leak or hydrostatic test, scram time testing must be suspended. Additionally, if LCO 3.10.1 is not implemented and average reactor coolant temperature exceeds 200 °F while performing the scram time test, scram time testing must also be suspended. In both situations, scram time testing is resumed during startup and is completed prior to exceeding 40 percent RTP. TSTF-484, Revision 0, modifies LCO 3.10.1 to allow a licensee to complete scram time testing initiated during inservice leak or hydrostatic testing. As stated earlier, since the current LCO 3.10.1 allows testing to be conducted while in Mode 4 with average reactor coolant temperature greater than 200°F, the proposed change does not introduce any new operational conditions beyond those currently allowed. Completion of scram time testing prior to reactor criticality and power operations results in a more conservative operating philosophy with attendant potential safety benefits.

It is acceptable to perform other testing concurrent with the inservice leak or hydrostatic test provided that this testing can be performed safely and does not interfere with the leak or hydrostatic test. However, it is not permissible to remain in TS 3.10.1 solely to complete such testing following the completion of inservice leak or hydrostatic testing and scram time testing.

Since the tests are performed with the reactor pressure vessel nearly water solid, at low decay heat values, and near Mode 4 conditions, the stored energy in the reactor core will be very low.

Small leaks from the RCS would be detected by inspections before a significant loss of inventory occurred.

The licensee noted a difference in ECCS operability in Mode 4 at CPS to that specified in the model SE published in the *Federal Register* on October 27, 2006 (71 FR 63050). The model SE specifies that two low pressure ECCS injection/spray subsystems are required to be operable in Mode 4 by TS 3.5.2, "ECCS-Shutdown." The licensee describes the CPS differences as follows:

CPS is a BWR/6 and, as such, takes credit for the High Pressure Core Spray (HPCS) System as an ECCS subsystem in Mode 4. Therefore, CPS TS 3.5.2 states that "Two ECCS injection/spray subsystems shall be OPERABLE." As described in the TS Bases for TS 3.5.2, the ECCS injection/spray subsystems are defined as three Low Pressure Coolant Injection (LPCI) subsystems, the Low Pressure Core Spray System, and the HPCS System. While the ECCS available at CPS differs from those described in the model SE, CPS TS 3.5.2 will ensure that adequate ECCS is available to provide core cooling in the event of a large RCS leak in Mode 4 while implementing the requirements of TS 3.10.1.

The NRC staff reviewed the licensee's explanation for its ECCS injection/spray subsystems and finds it acceptable since it serves functions similar to those specified in the model SE published on October 26, 2006. Hence, the capability of the low pressure ECCS would be adequate to maintain the fuel covered under the low decay heat conditions during these tests. Also, CPS TS LCO 3.10.1 requires that secondary containment and standby gas treatment system be operable and capable of handling any airborne radioactivity or steam leaks that may occur during performance of testing.

The protection provided by the normally required Mode 4 applicable LCOs, in addition to the secondary containment requirements required to be met by CPS TS LCO 3.10.1, minimizes potential consequences in the event of any postulated abnormal event during testing. In addition, the requested modification to LCO 3.10.1 does not create any new modes of operation or operating conditions that are not currently allowed. Therefore, the NRC staff finds the proposed changes to CPS LCO 3.10.1 acceptable.

Attachment 4 to the licensee's application dated April 4, 2016, provided TS Bases pages to be implemented with the associated TS changes. These pages were provided for information only and will be revised in accordance with the TS Bases Control Program discussed in CPS TS 5.5.11.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has

determined that the amendment involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (81 FR 36620, dated June 7, 2016). 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

7.0 REFERENCES

1. Exelon letter to the NRC, "License Amendment Request for Adoption of Technical Specification Task Force Traveler TSTF-484, Revision 0, 'Use of TS 3.10.1 for Scram Time Testing Activities,'" dated April 4, 2016 (ADAMS Accession No. ML16095A285).
2. TSTF-484, "Use of TS 3.10.1 for Scram Time Testing Activities," dated May 5, 2005 (ADAMS Accession no. ML052930102).
3. NUREG-1434, Revision 4.0, "Standard Technical Specifications General Electric BWR/6 Plants," dated April 2012 (ADAMS Accession No. ML12104A195).

Principal Contributor: Ravinder P. Grover

Date of issuance: February 22, 2017.

CLINTON POWER STATION, UNIT NO. 1 - ISSUANCE OF AMENDMENT REGARDING
 INSERVICE LEAK AND HYDROSTATIC TESTING OPERATIONS (NO. 211 (CAC NO.
 MF7559)

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Amendment: ML17027A038; Bi Weekly Notice: ML17027A039

(OGC concurrence not required per ML072980209) *via memo

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