



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

August 31, 2018

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

SUBJECT: R. E. GINNA NUCLEAR POWER PLANT – ISSUANCE OF AMENDMENT TO
REVISE TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENT
3.8.4.3, "DC [DIRECT CURRENT] SOURCES – MODES 1, 2, 3, AND 4" (EPID
L-2017-LLA-0368)

Dear Mr. Hanson:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 130 to Renewed Facility Operating License No. DPR-18 for the R. E. Ginna Nuclear Power Plant in response to your application dated October 31, 2017.

The amendment revises the Technical Specification (TS) Surveillance Requirement 3.8.4.3, "DC [Direct Current] Sources – MODES 1, 2, 3, and 4," to allow for a modified performance discharge test. A copy of our safety evaluation is also enclosed.

A notice of issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "V. Sreenivas", followed by a horizontal line and a small flourish.

V. Sreenivas, Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-244

Enclosures:

1. Amendment No. 130 to Renewed DPR-18
2. Safety Evaluation

cc: Listserv



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

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-244

R.E. GINNA NUCLEAR POWER PLANT

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 130
Renewed License No. DPR-18

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Exelon Generation Company, LLC (the licensee), dated October 31, 2017, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-18 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 130, are hereby incorporated in the renewed license. Exelon Generation shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



James G. Danna, Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Facility
Operating License No. DPR-18
and Technical Specifications

Date of Issuance: August 31, 2018

ATTACHMENT TO LICENSE AMENDMENT NO. 130

R. E. GINNA NUCLEAR POWER PLANT

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE NO. DPR-18

DOCKET NO. 50-244

Replace the following pages of the Renewed Facility Operating License No. DPR-18 and Appendix A, Technical Specifications, with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the area of change.

Renewed Facility Operating License No. DPR-18

Remove

Insert

-3-

-3-

Technical Specifications

Remove

Insert

3.8.4-2

3.8.4-2

- (b) Exelon Generation pursuant to the Act and 10 CFR Part 70, to possess and use four (4) mixed oxide fuel assemblies in accordance with the RG&E's application dated December 14, 1979 (transmitted by letter dated December 20, 1979), as supplemented February 20, 1980, and March 5, 1980;
 - (3) Exelon Generation 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;
 - (4) Exelon Generation 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; and
 - (5) Exelon Generation pursuant to the Act and 10 CFR Parts 30 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 renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Part 20. Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and rules, regulations and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:
- (1) Maximum Power Level

Exelon Generation is authorized to operate the facility at steady-state power levels up to a maximum of 1775 megawatts (thermal).
 - (2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 130, are hereby incorporated in the renewed license. Exelon Generation shall operate the facility in accordance with the Technical Specifications.
 - (3) Fire Protection

Exelon Generation shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the licensee's amendment request dated March 28, 2013, supplemented by letters dated December 17, 2013; January 29, 2014; February 28, 2014; September 5, 2014; September 24, 2014; December 4, 2014; March 18, 2015; June 11, 2015; August 7, 2015; June 30, 2017; October 25, 2017; and June 5, 2018, and as approved in the safety evaluation reports dated November 23, 2015, and June 25, 2018. Except where NRC approval for changes or deviations is required

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is ≥ 129 V on float charge.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.2	<p>----- - NOTE - -----</p> <p>1. SR 3.8.4.3 may be performed in lieu of SR 3.8.4.2.</p> <p>2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4.</p> <p>-----</p> <p>Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.3	<p>----- - NOTE - -----</p> <p>This Surveillance shall not be performed in MODE 1, 2, 3, or 4.</p> <p>-----</p> <p>Verify battery capacity is $\geq 80\%$ of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.</p>	<p>In accordance with the Surveillance Frequency Control Program</p> <p><u>AND</u></p> <p>12 months when battery shows degradation, or has reached 85% of expected life with capacity $< 100\%$ of manufacturer's rating</p> <p><u>AND</u></p> <p>24 months when battery has reached 85% of the expected life with capacity $\geq 100\%$ of manufacturer's rating</p>



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 130

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-18

EXELON GENERATION COMPANY, LLC

R. E. GINNA NUCLEAR POWER PLANT

DOCKET NO. 50-244

1.0 INTRODUCTION

By letter dated October 31, 2017 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML17304A984), Exelon Generation Company, LLC (the licensee) submitted a license amendment request (LAR) to the Technical Specifications (TSs) for R.E. Ginna Nuclear Power Plant (Ginna). The proposed amendment would revise TS Surveillance Requirement (SR) 3.8.4.3, "DC [Direct Current] Sources – Modes 1, 2, 3, and 4," to allow Ginna to perform a modified performance discharge test.

The proposed change would allow the use of a consistent battery testing technique in order to provide consistent data for trending battery performance. This proposed change is based on guidance provided in the Institute of Electrical and Electronics Engineers (IEEE) Standard (Std) 450-2010, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," which is endorsed by the U.S. Nuclear Regulatory Commission (NRC) in Regulatory Guide (RG) 1.129, Revision 3, "Maintenance, Testing, and Replacement of Vented Lead-Acid Storage Batteries for Nuclear Power Plants," September 2013 (ADAMS Accession No. ML13170A112).

2.0 REGULATORY REQUIREMENTS

The regulation under 10 CFR 50.36(c)(3) requires a licensee's TSs to have SRs relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operations are within safety limits, and that the limiting conditions for operation will be met.

The General Design Criteria (GDC) used during the licensing of Ginna were the proposed Atomic Industrial Forum (AIF) versions of the criteria issued for comment by the Atomic Energy Commission on July 10, 1967. The current versions of the GDC are provided in Appendix A of 10 CFR Part 50. The following AIF GDC and Appendix A GDC are applicable to this LAR:

- AIF-GDC 39, "Emergency Power," which states, in part: "An emergency power source shall be provided and designed with adequate independency, redundancy, capacity, and

testability to permit the functioning of the engineered safety features and protection systems required to avoid undue risk to the health and safety of the public. This power source shall provide this capacity assuming a failure of a single active component." AIF-GDC 39 also states, in part, that "[i]ndependent, redundant, alternate power systems are provided with adequate capacity and testability to supply the required engineered safety features."

- AIF-GDC 38, "Reliability and Testability of Engineered Safety Features," which states, in part: "[a]ll engineered safety features shall be designed to provide such functional reliability and ready testability as is necessary to avoid undue risk to the health and safety of the public."
- Appendix A GDC 17, "Electric Power Systems," which states that:

An onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents.

The onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.

Electric power from the transmission network to the onsite electric distribution system shall be supplied by two physically independent circuits (not necessarily on separate rights of way) designed and located so as to minimize to the extent practical the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. A switchyard common to both circuits is acceptable. Each of these circuits shall be designed to be available in sufficient time following a loss of all onsite alternating current power supplies and the other offsite electric power circuit, to assure that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded. One of these circuits shall be designed to be available within a few seconds following a loss-of-coolant accident to assure that core cooling, containment integrity, and other vital safety functions are maintained.

Provisions shall be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies.

- Appendix A GDC 18, "Inspection and Testing of Electrical Power Systems," which states that:

Electric power systems important to safety shall be designed to permit appropriate periodic inspection and testing of important areas and features, such as wiring, insulation, connections, and switchboards, to assess the continuity of the systems and the condition of their components. The systems shall be designed with a capability to test periodically (1) the operability and functional performance of the components of the systems, such as onsite power sources, relays, switches, and buses, and (2) the operability of the systems as a whole and, under conditions as close to design as practical, the full operation sequence that brings the systems into operation, including operation of applicable portions of the protection system, and the transfer of power among the nuclear power unit, the offsite power system, and the onsite power system.

The NRC staff also reviewed the LAR based on the following regulatory guidance documents:

- NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" (SRP), cites RG 1.129 as an acceptable guidance for meeting the requirements of GDC 18 criterion.
- NUREG-1431, Revision 4, Volume 1, "Standard Technical Specifications, Westinghouse Plants: Specifications," April 2012 (STS) (ADAMS Accession No. ML12100A222), states, in part, that, "[l]icensees are encouraged to upgrade their technical specifications consistent with those criteria and conforming, to the practical extent, to Revision 4 to the improved STS."

Surveillance Requirement 3.8.6.6 in the NUREG-1431 STS recommends performance of a modified performance discharge test in lieu of a performance discharge test.

- Regulatory Guide (RG) 1.32, Revision 2, "Criteria for Safety Related Electric Power System for Nuclear Power Plants," February 1977 (ADAMS Accession No. ML003739990),
- RG 1.129, Revision 3, "Maintenance, Testing, and Replacement of Vented Lead-Acid Storage Batteries for Nuclear Power Plants," September 2013 (ADAMS Accession No. ML13170A112),

3.0 TECHNICAL EVALUATION

3.1 Ginna Direct Current Power System

Section 8.3.2, "Direct Current Power System," of the Updated Final Safety Analysis Report (UFSAR) states that Ginna has two independent and redundant 60-cell, 125-Volt (V) DC safety-related station batteries consisting of two battery banks (Battery 1A and Battery 1B). These safety-related batteries are type GNB NCN-21 that are rated for 1495 ampere-hours at an 8-hour discharge rate to 1.81 V per cell. Each of the two safety-related station batteries is sized to carry its expected shutdown loads following a plant trip and a loss of all alternating

current power for a period of 1 hour without battery terminal voltage falling below minimum allowable voltage.

For each safety-related station battery, there are two safety-related battery chargers. Each battery charger has the capacity to supply all normal DC loads and maintain the battery fully charged. One battery charger supplies the normal DC loads while the other provides 100 percent back-up capability. Only one safety-related battery charger per station battery is on-line at any given time. Each of the two safety-related battery chargers has been sized to charge its partially discharged battery within 24 hours while carrying its normal load. The safety-related batteries and equipment are separated physically in the plant.

3.2 Proposed Change

Current TS SR 3.8.4.3 states:

SR 3.8.4.3 -----
- NOTE -
This Surveillance shall not be performed in MODE 1, 2, 3, or 4.

Verify battery capacity is $\geq 80\%$ of the manufacturer's rating when subjected to a performance discharge test.

Proposed TS SR 3.8.4.3 would state:

SR 3.8.4.3 -----
- NOTE -
This Surveillance shall not be performed in MODE 1, 2, 3, or 4.

Verify battery capacity is $\geq 80\%$ of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.

3.3 NRC Staff Evaluation

A battery performance discharge test is a test of the constant current capacity of a battery, normally done in an as-found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

A battery service test is a special test of the battery capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length should correspond to the design duty cycle requirements.

A modified discharge test is a test to confirm the safety-related battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. The battery terminal voltage for the modified performance discharge test must remain above the minimum battery terminal voltage specified in the battery service test for the duration of time equal to that of the service test.

Current TS 3.8.4.3 requires the DC system Class 1E station batteries to undergo performance discharge tests to verify the batteries capability and to satisfy the minimum batteries capacity percentages. The proposed change would allow the licensee to add the phrase "or a modified performance discharge test" to SR 3.8.4.3 to allow either the battery performance discharge test or the modified performance discharge test to satisfy SR 3.8.4.3.

Section 1.8.2.12, "Regulatory Guide 1.32 - Use of IEEE Standard 308-1971, Criteria for Class IEEE Electric Systems for Nuclear Power Generating Stations," of the Ginna UFSAR reflects that Ginna adopted RG 1.32, Revision 2, "Criteria for Safety Related Electric Power System for Nuclear Power Plant," February 1977 (ADAMS Accession No. ML003739990), to address requirements to perform battery tests including a performance discharge test. Regulatory Position Section C.1.c of RG 1.32, Revision 2, discusses guidance to perform a performance discharge test and references IEEE Std. 450-1975, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations." Revision 2 of RG 1.32 and the 1975 version of IEEE Std. 450 did not include any guidance for substitution of the performance discharge test with a modified performance discharge test until year 1995.

In the LAR, the licensee adopted RG 1.129, Revision 3, as its methodology to implement the proposed changes. In the section entitled "Purpose," RG 1.129, Revision 3, states following:

This regulatory guide describes methods and procedures that the staff of the U.S. Nuclear Regulatory Commission (NRC) considers acceptable for use in complying with the agency's regulations with regard to the maintenance, testing, and replacement of vented lead-acid storage batteries in nuclear power plants. This revision of Regulatory Guide 1.129 endorses (with certain clarifying regulatory positions described in Section C of this guide) the Institute of Electrical and Electronics Engineers (IEEE) Standard (Std.) 450-2010, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Application."

Further, IEEE Std. 450-2010 included guidance for a modified performance discharge test.

Since the licensee adopted RG 1.129, Revision 3, and IEEE Std. 450-2010 to allow for a modified performance test in TS SR 3.8.4.3, the NRC staff finds that the proposed changes are acceptable.

Regulatory Position C.5 of RG 1.129 states, in part, that "[f]or nuclear power generating station Class 1E batteries, a modified performance test can be used in lieu of a service test or a performance test at any time. The modified performance test should follow the 'Rules for Modified Performance Tests' in Annex I, 'Modified Performance Testing Methods and Examples,' to IEEE Std. 450 2010." Based on above discussion, the NRC staff finds that the proposed change to TS 3.8.4.3 to allow a modified performance discharge test meets RG 1.129, Revision 3, and is, therefore, acceptable.

The NRC staff also reviewed NUREG-1431 STS SR 3.8.6.6 to confirm acceptability of the modified performance discharge test. The NRC staff verified that NUREG-1431 STS SR 3.8.6.6 shows performance of a modified performance discharge test in lieu of a performance discharge test. Based on above discussion, the NRC staff concludes that the proposed change to

SR 3.8.4.3 to allow a modified performance discharge test meets the recommendation in NUREG-1431 STS and is, therefore, acceptable.

In the LAR, the licensee proposed to add an option to perform modified performance discharge test to the current TS SR 3.8.4.3. Proposed change will allow the licensee to perform a current performance discharge test or a proposed modified performance discharge test to verify that the safety-related batteries to have $\geq 80\%$ of the manufacturer's rating. The NRC staff review of the proposed change in the LAR concludes that verification of the required battery capacity and capability using either performance discharge test or modified performance discharge test in TS SR 3.8.4.3 will be maintained to ensure that the safety-related batteries will continue to perform their safety functions and do not adversely impact the criterion for onsite power source as discussed in the Ginna UFSAR Sections 3.1.2.2.8 and 3.1.2.2.9 and is therefore acceptable.

3.4 Technical Conclusion

Upon review, the NRC staff concludes that the proposed TS 3.8.4.3 change conforms to AIF-GDC 38 and AIF-GDC 39, and meets the applicable requirements in 10 CFR 50.36(c)(3) and 10 CFR 50 Appendix A GDCs 17 and 18. Therefore, the NRC staff finds that the proposed changes to TS 3.8.4.3 are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New York State official was notified of the proposed issuance of the amendment on August 6, 2018. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes SRs. The NRC staff has determined that the 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 published in the *Federal Register* on January 2, 2018 (83 FR 168). 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: Prem Sahay, NRR

Date: August 31, 2018

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REVISE TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENT
3.8.4.3, “DC [DIRECT CURRENT] SOURCES – MODES 1, 2, 3, AND 4” (EPID
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***via email**

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