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

March 18, 2019

Mr. Mano Nazar
President, Nuclear Division
and Chief Nuclear Officer
Florida Power & Light Company
700 Universe Blvd., Mail Stop EX/JB
Juno Beach, FL 33408

SUBJECT: TURKEY POINT NUCLEAR GENERATING UNIT NOS. 3 AND 4 - ISSUANCE OF AMENDMENTS REGARDING TECHNICAL SPECIFICATION CHANGES TO MODIFY EMERGENCY DIESEL GENERATOR PARTIAL-LOAD REJECTION SURVEILLANCE REQUIREMENT (EPID L-2018-LLA-0135)

Dear Mr. Nazar:

The U.S. Nuclear Regulatory Commission (NRC or the Commission) has issued the enclosed Amendment No. 285 to Renewed Facility Operating License No. DPR-31 and Amendment No. 279 to Renewed Facility Operating License No. DPR-41 for Turkey Point Nuclear Generating Unit Nos. 3 and 4, respectively. The amendments change the Technical Specifications (TSs) in response to the application from Florida Power & Light Company dated May 14, 2018, as supplemented by letter dated November 20, 2018.

The amendments revise the TSs pertaining to the emergency diesel generators (EDGs) to increase the minimum load required for the partial-load rejection surveillance requirement. Additionally, the amendments modify the EDG voltage and frequency limits for the surveillance requirement and establish a recovery period for the EDGs to return to steady-state conditions. The NRC staff's safety evaluation of the amendments is enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

Perry H. Buckberg, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-250 and 50-251

Enclosures:
1. Amendment No. 285 to DPR-31
2. Amendment No. 279 to DPR-41
3. Safety Evaluation

cc: Listserv

FLORIDA POWER & LIGHT COMPANY

DOCKET NO. 50-250

TURKEY POINT NUCLEAR GENERATING UNIT NO. 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 285
Renewed License No. DPR-31

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Florida Power & Light Company (the licensee) dated May 14, 2018, as supplemented by letter dated November 20, 2018, 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 Renewed Facility Operating License and Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B. of Renewed Facility Operating License No. DPR-31 is hereby amended to read as follows:

   B. Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 285, are hereby incorporated into this renewed license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into this renewed license. The licensee 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 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Undine Shoop

Undine Shoop, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed
Facility Operating License
and Technical Specifications

Date of Issuance: March 18, 2019

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

FLORIDA POWER & LIGHT COMPANY

DOCKET NO. 50-251

TURKEY POINT NUCLEAR GENERATING UNIT NO. 4

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 279
Renewed License No. DPR-41

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Florida Power & Light Company (the licensee) dated May 14, 2018, as supplemented by letter date November 20, 2018, 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 Renewed Facility Operating License and Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B. of Renewed Facility Operating License No. DPR-41 is hereby amended to read as follows:

   B. Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 279, are hereby incorporated into this renewed license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into this renewed license. The licensee 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 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Undine Shoop

Undine Shoop, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed
Facility Operating License
and Technical Specifications

Date of Issuance: March 18, 2019

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 285 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-31

AMENDMENT NO. 279 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-41

TURKEY POINT NUCLEAR GENERATING UNIT NOS. 3 AND 4

DOCKET NOS. 50-250 AND 50-251

Replace page 3 of Renewed Facility Operating License No. DPR-31 with the attached page 3. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Replace page 3 of Renewed Facility Operating License No. DPR-41 with the attached page 3. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Replace the following page of the Appendix A Technical Specifications with the attached page. The revised page is identified by amendment number and contains marginal lines indicating the area of change.

Remove	Insert
3/4 8-7	3/4 8-7

E. Pursuant to the Act and 10 CFR Parts 40 and 70 to receive, possess, and use at any time 100 milligrams each of any source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactively contaminated apparatus;

F. 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 Turkey Point Units Nos. 3 and 4.

3. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations: 10 CFR Part 20, Section 30.34 of 10 CFR Part 30, Section 40.41 of 10 CFR Part 40, Sections 50.54 and 50.59 of 10 CFR Part 50, and Section 70.32 of 10 CFR Part 70; 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 below:

A. Maximum Power Level

The applicant is authorized to operate the facility at reactor core power levels not in excess of 2644 megawatts (thermal).

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 285, are hereby incorporated into this renewed license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into this renewed license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

C. Final Safety Analysis Report

The licensee's Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on November 1, 2001, describes certain future inspection activities to be completed before the period of extended operation. The licensee shall complete these activities no later than July 19, 2012.

The Final Safety Analysis Report supplement as revised on November 1, 2001, described above, shall be included in the next scheduled update to the Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following the issuance of this renewed license. Until that update is complete, the licensee may make changes to the programs described in such supplement without prior Commission approval, provided that the licensee evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

SURVEILLANCE REQUIREMENTS (Continued)

b. Demonstrating that a fuel transfer pump starts automatically and transfers fuel from the storage system to the day tank, in accordance with the Surveillance Frequency Control Program;

c. In accordance with the Surveillance Frequency Control Program and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day and skid-mounted fuel tanks (Unit 4-day tank only);

d. In accordance with the Surveillance Frequency Control Program by checking for and removing accumulated water from the fuel oil storage tanks;

e. By verifying fuel oil properties of new fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.

f. By verifying fuel oil properties of stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.

g. In accordance with the Surveillance Frequency Control Program, during shutdown (applicable to only the two diesel generators associated with the unit):

   1) Deleted

   2)* Verifying the generator capability to reject a load of greater than or equal to 392 kW without exceeding a frequency of 66.25 Hz. Within 2 seconds following the load rejection, the generator shall return to within 3950-4350 volts and frequency at 60 ± 0.6 Hz;

   3)* Verifying the generator capability to reject a load of greater than or equal to 2500 kW (Unit 3), 2874 kW (Unit 4) without tripping. The generator voltage shall return to less than or equal to 4784 volts within 2 seconds following the load rejection;

   4) Simulating a loss-of-offsite power by itself, and:

      a) Verifying deenergization of the emergency busses and load shedding from the emergency busses, and

      b. Verifying the diesel starts on the auto-start signal, energizes the emergency busses with any permanently

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* For the purpose of this test, warmup procedures, such as idling, gradual acceleration, and gradual loading as recommended by the manufacturer may be used.

E. Pursuant to the Act and 10 CFR Parts 40 and 70 to receive, possess, and use at any time 100 milligrams each of any source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactively contaminated apparatus;

F. 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 Turkey Point Units Nos. 3 and 4.

3. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations: 10 CFR Part 20, Section 30.34 of 10 CFR Part 30, Section 40.41 of 10 CFR Part 40, Sections 50.54 and 50.59 of 10 CFR Part 50, and Section 70.32 of 10 CFR Part 70; 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 below:

A. <u>Maximum Power Level</u>

The applicant is authorized to operate the facility at reactor core power levels not in excess of 2644 megawatts (thermal).

B. <u>Technical Specifications</u>

The Technical Specifications contained in Appendix A, as revised through Amendment No. 279, are hereby incorporated into this renewed license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into this renewed license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

C. <u>Final Safety Analysis Report</u>

The licensee's Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on November 1, 2001, describes certain future inspection activities to be completed before the period of extended operation. The licensee shall complete these activities no later than April 10, 2013.

The Final Safety Analysis Report supplement as revised on November 1, 2001, described above, shall be included in the next scheduled update to the Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following the issuance of this renewed license. Until that update is complete, the licensee may make changes to the programs described in such supplement without prior Commission approval, provided that the licensee evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

AMENDMENT NO. 285 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-31

AMENDMENT NO. 279 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-41

FLORIDA POWER & LIGHT COMPANY

TURKEY POINT NUCLEAR GENERATING UNIT NOS. 3 AND 4

DOCKET NOS. 50-250 AND 50-251

1.0 INTRODUCTION

By application dated May 14, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18134A264), as supplemented by letter dated November 20, 2018 (ADAMS Accession No. ML18324A634), Florida Power & Light Company (the licensee) requested changes to the Technical Specifications (TSs) for Turkey Point Nuclear Generating Unit Nos. 3 and 4 (Turkey Point 3 and 4), which are contained in Appendix A of Renewed Facility Operating License Nos. DPR-31 and DPR-41. The licensee proposed to increase the minimum load required for the Emergency Diesel Generator (EDG) partial-load rejection Surveillance Requirement (SR) in order to resolve a non-conservative requirement. In addition, the licensee proposed to modify the EDG voltage and frequency limits for the SR and establish a recovery period (in seconds) for the EDG(s) to return to steady-state conditions.

The supplement dated November 20, 2018, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the Nuclear Regulatory Commission (NRC or the Commission) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on July 3, 2018 (83 FR 31185).[1]

2.0 REGULATORY EVALUATION

2.1. Description of the EDGs

Four onsite EDGs provide emergency power for Turkey Point 3 and 4 and are automatically started upon the receipt of a Safety Injection (SI) signal at either Unit, or upon the loss of voltage on its associated 4.16 kilovolt (kV) bus. There are two EDGs per Unit and each EDG is connected to a separate power train: EDGs 3A and 3B provide Unit 3 A-train, and B-train emergency power, respectively, and EDGs 4A and 4B provide Unit 4 A-train and B-train emergency power, respectively.

[1] A corrected notice issued on July 10, 2018 (83 FR 31981), changed the deadline for filing intervention petitions from September 3, 2018, to September 4, 2018, to account for the July 4th Federal holiday.

The 3A and 3B EDGs are General Motors Electro-Motive Division Model 999-20. Each set consists of an Electro-Motive Division design 20-645E4, turbocharged, two-cycle engine, which is coupled to an Electro-Motive Division design Model A-20 generator. The 4A and 4B EDGs each consist of a General Motors Electro-Motive Division Model 20-645F4B design, turbocharged, two-cycle engine, which is coupled to a Model 140 Electric Products generator. The 3A and 3B EDGs have a base continuous rating of 2500 kilowatts (kW). The 4A and 4B EDGs have a base continuous rating of 2874 kW. All required EDG automatic and manual loads are within these continuous ratings.

The EDGs are designed to attain rated speed and voltage within 15 seconds following the receipt of a start signal. All required emergency shutdown loads are sequenced onto the EDG via its load sequencer. The timing contacts of the sequencer close the breakers or energize the contactors of the equipment required for safe shutdown of the Unit in a predetermined sequential order. To continue the shutdown on loss of power, all further operations are done manually. With any credible single failure, the EDGs are capable of assuring a safe shutdown of both Units with a loss of offsite power concurrent with maximum postulated accident conditions in one Unit.

The EDGs are equipped with protective and alarm relays that, with the exception of generator differential, are bypassed under emergency operation in response to a SI signal on either Unit or a loss of voltage on its associated 4.16 kV bus. In addition, each EDG is equipped with an engine overspeed trip in order to prevent engine damage in the event of a large loss-of-load.

2.2 <u>Licensee's Proposed Changes</u>

The licensee proposes to modify SR 4.8.1.1.2.g.2 to increase the minimum load required to be rejected, to modify the EDG voltage and frequency limits, and to establish a recovery period for the EDGs to return to steady-state. Specifically, the licensee proposes to make the following changes to SR 4.8.1.1.2.g.2 (deletions shown in stricken text and additions underlined):

> 2)* Verifying the generator capability to reject a load of greater than or equal to ~~380 kw while maintaining voltage at~~ <u>392 kW without exceeding a frequency of 66.25 Hz. Within 2 seconds following the load rejection, the generator shall return to within</u> 3950-4350 volts and frequency at 60 ± 0.6 Hz;

The licensee stated that the increase in rejection load was needed to resolve a non-conservative TS requirement by accounting for a worst-case EDG over-frequency of 1 percent.

2.3 <u>Regulatory Review</u>

The NRC staff reviewed the licensee's application to determine whether (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 the activities proposed 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 the health and safety of the public. The NRC staff considered the following regulatory requirements, guidance, and licensing and design-basis information during its review of the proposed changes.

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.36(a)(1) states, in part, that each applicant for an operating license shall include in the application proposed TSs in accordance with the requirements of 10 CFR 50.36, "Technical specifications." In addition, it states that the applicant must also include in its application a summary statement of the bases or reasons for such specifications, other than those covering administrative controls, but such bases shall not become part of the technical specifications.

Section 50.36(c) of 10 CFR requires that the TSs include items in the following categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) SRs; (4) design features; and (5) administrative controls. Paragraph 50.36(c)(3) states, in part, that SRs 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 LCOs will be met.

Turkey Point 3 and 4 were licensed (CP issued) prior to the 1971 publication of Appendix A, "General Design Criteria [GDCs] for Nuclear Power Plants," to 10 CFR Part 50. As such, Turkey Point 3 and 4 are not licensed to the GDCs in 10 CFR Part 50, Appendix A. Section 1.3 of the Turkey Point 3 and 4 Updated Final Safety Analysis Report (UFSAR) provides a summary of the 1967 GDCs proposed by the U.S. Atomic Energy Commission (32 FR 10213, July 11, 1967), as amended by the Atomic Industrial Forum (circa October 2, 1967). The NRC staff considered the following proposed General Design Criterion (GDC) as part of its review:

- 1967 Proposed GDC 39 states that alternate power systems shall be provided and designed with adequate independency, redundancy, capacity and testability to permit the functioning required of the engineered safety features. As a minimum, the onsite power system and the offsite power system shall each, independently, provide this capacity assuming a failure of a single active component in each system.

NUREG-0452, draft Revision 5, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors" (ADAMS Legacy Accession No. 8708180296) contains the Standard Technical Specifications guidance for Westinghouse plants. Specifically, SR 4.8.1.1.2.e.2 specifies that EDG operability be demonstrated by "Verifying the generator capability to reject a load of greater than or equal to [largest single emergency load] kW while maintaining voltage at [4160][2] +/- [420] volts and frequency at [60] +/-[1.2] Hz [less than or equal to 75% of the difference between nominal speed and the Overspeed Trip Setpoint, or 15% above nominal whichever is less]."

NUREG-1431, Revision 4, "Standard Technical Specifications [STS] – Westinghouse Plants" (ADAMS Accession No. ML12100A222) contains the STS for Westinghouse plants. The STS present an acceptable method for licensees of Westinghouse plants to meet the NRC's requirements in 10 CFR 50.36. Specifically, SR 3.8.1.9 specifies that licensees follow the procedure below:

Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and:

a. Following load rejection, the frequency is ≤ [63] Hz,

2. Licensee provides all missing information that is denoted in the generic TS by bracketed values in current TSs

b. Within [3] seconds following load rejection, the voltage is ≥ [3740] V and ≤ [4580] V, and

c. Within [3] seconds following load rejection, the frequency is ≥ [58.8] Hz and ≤ [61.2] Hz.

Regulatory Guide (RG) 1.9, Revision 2, "Selection, Design, and Qualification of Diesel Generator Units Used as Standby (Onsite) Electric Power Systems at Nuclear Power Plants" (ADAMS Accession No. ML12305A253) identifies an acceptable approach for licensees to follow to meet the requirements of the principal design criteria and qualification testing of diesel-generator units used as onsite electric power systems for nuclear power plants.

RG 1.9, Revision 3 (ADAMS Accession No. ML003739929) identifies, in part, the acceptable criteria for a single-load rejection test.

3.0 TECHNICAL EVALUATION

The NRC staff evaluated the licensee's application to determine if the proposed changes are consistent with the guidance, regulations, and plant-specific design and licensing basis information discussed in Section 2.3 of this safety evaluation.

3.1 Evaluation of Proposed Changes

The EDG partial-load rejection testing is performed during refueling outages as part of the Engineered Safeguards Integrated Test. The purpose of partial-load rejection testing is to demonstrate EDG capability to reject the single largest accident load without exceeding the allowable voltage and frequency and while maintaining a specified margin to the overspeed trip. The testing ensures that the EDG or any connected equipment will not be adversely impacted because of a partial load rejection. At Turkey Point 3 & 4, the single largest load is a Component Cooling Water (CCW) pump, which is listed in the station's EDG load listing as having an equivalent kW rating of 380 kW. Hence, current SR 4.8.1.1.2.g.2 specifies that the EDG(s) must be capable of withstanding a partial load rejection of greater than or equal to 380 kW. However, to ensure a load rejection of at least 380 kW, Turkey Point 3 & 4 procedures require tripping a CCW pump coincident with a Residual Heat Removal (RHR) pump and other equipment combinations are procedurally allowed. Partial-load rejection testing is routinely performed with the EDG placed in isochronous mode.

In June 2017, the licensee identified that the minimum load [380 kW] specified in current SR 4.8.1.1.2.g.2 does not represent the EDG(s) single largest accident load because it does not compensate for a worst-case EDG over frequency of one percent as stated in licensee's procedure. Compensating for EDG over-frequency, the minimum rejection load specified in SR 4.8.1.1.2.g.2 should be 392 kW. The issue was entered into the Turkey Point 3 & 4 corrective action program where it was determined that the station's existing administrative controls were sufficient to address the non-conservatism. Turkey Point 3 & 4 procedures require tripping a CCW pump coincident with another major pump during partial load rejection testing and as a result, the rejected load has historically been in excess of 400 kW.

The licensee proposed the change to resolve the non-conservative SR requirement by increasing the minimum rejection load from 380 kW to 392 kW. The licensee also proposed to modify SR 4.8.1.1.2.g.2 by eliminating the voltage limit (3950 to 4350 volts), and increasing the allowable frequency from 60 ± 0.6 Hz to 66.25 Hz during the immediate aftermath of the partial-load rejection. In addition, the licensee proposed changes that establish a 2-second recovery period for the EDGs to return to the current SR 4.8.1.1.2.g.2 voltage and frequency limits of 3950 to 4350 volts and 60 ± 0.6 Hz.

The licensee concluded that increasing the minimum allowable rejection load to 392 kW will not adversely impact EDG operation or the capability of the EDG to support equipment required for mitigating the consequences of postulated design basis accidents. The proposed load increase is bounded by the full-load rejection testing currently conducted by the licensee in accordance with SR 4.8.1.1.2.g.3, and is therefore acceptable.

The licensee further stated in the LAR that as part of the implementation of plant changes associated with Extended Power Uprate (EPU) at Turkey Point 3 & 4 (license amendment No. 249 to DPR-31, and No. 245 to DPR-41) (ADAMS Accession No. ML11293A359), the requirements of TS SR 4.8.1.1.2 were modified to ensure that EDG operability is demonstrated by verifying each EDG can start, accelerate and maintain the required generator voltage and frequency following an automatic start, a load rejection, an Engineered Safety Features actuation and during a 24-hour test run. To encompass the worst-case EDG loading conditions, the EPU also changed the EDG voltage and frequency ranges for steady-state operation to the present SR 4.8.1.1.2.g.2 limits of 3950-4350 volts and 60 ± 0.6 Hz. In issuing the EPU amendments, the staff concluded that the revised tolerances ensure that the EDGs will remain loaded within their respective ratings, safety-related equipment powered by the EDGs will operate within their ratings, and sufficient voltages will exist to ensure proper functioning equipment under steady state conditions. The steady state tolerances revised by the EPU represent an approximately five percent (5%) and one percent (1%) deviation from EDG nominal operating voltage and frequency, respectively.

The NRC staff notes that the Turkey Point 3 and 4 UFSAR, Section 8.2.2.1.2, "Analysis" (ADAMS Accession No. ML18117A097), states that the SRs are based on the draft Revision 5 of NUREG-0452, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors" (ADAMS Legacy Accession No. 8708180296). NUREG-0452, draft Revision 5, Section 4.8.1.1.2.d.2 states that EDG operability be demonstrated by: Verifying the generator capability to reject a load of greater than or equal to (largest single emergency load) kw while maintaining voltage at (4160) + (420) volts and frequency at (60) + (1.2) Hz (less than or equal to 75% of the difference between nominal speed and the overspeed trip setpoint, or 15% above nominal whichever is less).

The Turkey Point 3 and 4 UFSAR, Section 8.2.2.1.2.2, "Regulatory Guide Implementation," also states that the SRs for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of RG 1.9, Revision 2. Section C, "Regulatory Position," of RG 1.9, Revision 2, states, in part:

> Conformance with the requirements of IEEE [Institute of Electrical and Electronics Engineers] Std [Standard] 387-1977, 'IEEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations,' dated June 17, 1977, is acceptable for meeting the requirements of the principal design criteria and qualification testing of diesel-generator units used as onsite electric power systems for nuclear power plants subject to the following:
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> ...

4. Section 5.1.2, "Mechanical and Electrical Capabilities," of IEEE Std. 387-1977 pertains, in part, to the starting and load-accepting capabilities of the diesel-generator unit. In conjunction with Section 5.1.2, each diesel-generator unit should be capable of starting and accelerating to rated speed, in the required sequence, all the needed engineered safety feature and emergency shutdown loads. The diesel generator unit design should be such that at no time during the loading sequence should the frequency and voltage decrease to less than 95 percent of nominal and 75 percent of nominal, respectively. (A larger decrease in voltage and frequency may be justified for a diesel-generator unit that carries only one large connected load.) Frequency should be restored to within 2 percent of nominal, and voltage should be restored to within 10 percent of nominal within 60 percent of each load-sequence time interval. (A greater percentage of the time interval may be used if it can be justified by analysis. However, the load-sequence time interval should include sufficient margin to account for the accuracy and repeatability of the load-sequence timer.) During recovery from transients caused by step load increases or resulting from the disconnection of the largest single load, the speed of the diesel-generator unit should not exceed the nominal speed plus 75 percent of the difference between nominal speed and the overspeed trip setpoint or 115 percent of nominal, whichever is lower. Further, the transient following the complete loss of load should not cause the speed of the unit to attain the overspeed trip setpoint.

As described in Section 2.2.7, "Single-Load Rejection Test," of RG 1.9, Revision 3, the purpose of a single-load rejection test is to "[d]emonstrate the emergency diesel generator's capability to reject a loss of the largest single load while operating at power factor between 0.8 and 0.9 and verify that the voltage and frequency requirements are met and that the unit will not trip on overspeed."

Based on the above, the NRC staff concludes that the proposed changes to SR 4.8.1.1.2.g.2 are acceptable for the following reasons:

- The proposed changes to SR 4.8.1.1.2. g.2, partial-load rejection testing requirements, specify frequency and voltage limits (steady state frequency of 60 + 0.6 Hz that is within 2% of nominal and voltage that is within 10 % of nominal) for specified time periods (2 seconds) calculated per the guidance contained in RG 1.9, Revisions 2 and 3, Section C; NUREG-0452, Section 4.8.1.1.2.d.2; and SR 3.8.1.9 of NUREG-1431. Per SR 3.8.1.9 of Westinghouse STS, upon rejection of the partial load, a recovery period equal to 60% of the load sequence interval associated with sequencing the largest load is recommended. The guidance parameters provided in the documents provide reasonable assurance that during steady state operation, the loads supplied by the EDGs will function within the design parameters used by manufactures and licensees for equipment required to operate for an extended duration. Also, the two-second recovery period proposed for the Turkey Point 3 and 4 EDGs in SR 4.8.1.1.2.g.2 provides reasonable assurance that EDG voltage and frequency are restored to an acceptable level prior to further load sequencing such that voltage and frequency are not further depressed by overlapping loading conditions.

- The proposed change resolves a non-conservative SR requirement (largest single load connected to EDG) by increasing the minimum rejection load from 380 kW to 392 kW. Increasing the minimum allowable rejection load to 392 kW will not adversely affect EDG operation or the outcome of any design-basis accident crediting EDG operability. The

EDGs are designed to handle full load rejection. This capability is confirmed by the full-load rejection testing conducted in accordance with SR 4.8.1.1.2.g.3. The largest load rejection test (equivalent to the nominal rating of the EDG) bounds the proposed largest load rejection test.

- The transient frequency (66.25 Hz or 993.75 revolutions per minute (RPM)) for the EDG output following a partial-load rejection is bounded by the transient frequency experienced after a full-load rejection test (68.33 Hz or 1025 RPM) for full load. Using the RG 1.9 guidance, a transient frequency limit of 66.25 Hz is acceptable for the partial-load rejection since the revised limit establishes a 25% margin below the lowest overspeed trip setpoint of 68.33 Hz (1025 rpm). In addition, the previously established EDG steady-state criteria remain unchanged.

- Eliminating the voltage limit applicable during the transient portion of a partial-load rejection test is consistent with SR 3.8.1.9 of the Westinghouse STS (NUREG-1431), which does not specify a voltage limit for this period of the transient.

The NRC staff reviewed the licensee's proposed TS changes and supporting documentation. Based on its evaluation, the NRC staff finds the proposed changes to the Turkey Point 3 & 4 TSs provide reasonable assurance of the continued availability of the required electrical power to shut down the reactor and to maintain the reactor in a safe condition after an anticipated operational occurrence or a postulated design-basis accident. Furthermore, the NRC staff concludes that the proposed changes continue to meet the 1967 Proposed GDC 39 and meet the intent of RG 1.9, Revisions 2 and 3 with respect to partial-load rejection SR test and the changes are consistent with the NRC guidance for SR 3.8.1.9 provided in NUREG-1431, Revision 4 and for SR 4.8.1.1.2.e.2 in NUREG-0452, Draft Revision 5. As such, the NRC staff finds that proposed changes comply with the requirements at 10 CFR 50.36(c)(3) and are, therefore, acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the NRC staff notified the State of Florida official (Ms. Cynthia Becker, M.P.H., Chief of the Bureau of Radiation Control, Florida Department of Health) on December 18, 2018 (ADAMS Accession No. ML19007A007), of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to the use of facility components located within the restricted area as defined in 10 CFR Part 20 and change a SR. 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, which was published in the *Federal Register* on July 3, 2018 (83 FR 31185), that the amendments involve no significant hazards consideration, 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

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

Principal Contributor: Roy Mathew

Date: March 18, 2019

SUBJECT: TURKEY POINT NUCLEAR GENERATING UNIT NOS. 3 AND 4 - ISSUANCE OF AMENDMENTS REGARDING TECHNICAL SPECIFICATION CHANGES TO MODIFY EMERGENCY DIESEL GENERATOR PARTIAL-LOAD REJECTION SURVEILLANCE REQUIREMENT (EPID L-2018-LLA-0135) DATED MARCH 18, 2019

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