



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

June 30, 2010

Mr. Mark B. Bezilla  
Site Vice President  
FirstEnergy Nuclear Operating Company  
Mail Stop A-PY-A290  
P.O. Box 97, 10 Center Road  
Perry, OH 44081-0097

**SUBJECT: PERRY NUCLEAR POWER PLANT, UNIT NO. 1 - ISSUANCE OF  
AMENDMENT RE: TECHNICAL SPECIFICATION CHANGE TO DIVISION 3  
EMERGENCY DIESEL GENERATOR START TIME SURVEILLANCE  
REQUIREMENTS (TAC NO. ME1691)**

Dear Mr. Bezilla:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No.154 to Facility Operating License No. NPF-58 for the Perry Nuclear Power Plant, Unit No. 1. This amendment revises the Technical Specifications in response to your application dated June 30, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML091900387), as supplemented by letter dated May 24, 2010 (ADAMS Accession No. ML101590647).

The amendment approves changes to Technical Specification (TS) 3.8.1 "AC Sources – Operating." The amendment modifies the frequency portion of the start time acceptance criteria of Surveillance Requirement 3.8.1.7 for the Division 3 Emergency Diesel Generator (EDG) to provide consistency with existing similar TSs related to EDG testing.

M. Bezilla

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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,

*Araceli T. Billoch Colón*

Araceli T. Billoch Colón, Project Manager  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-440

Enclosures:

1. Amendment No. 154 to NPF-58
2. Safety Evaluation

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FIRSTENERGY NUCLEAR OPERATING COMPANY

FIRSTENERGY NUCLEAR GENERATION CORP.

OHIO EDISON COMPANY

DOCKET NO. 50-440

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 154  
License No. NPF-58

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for license filed by FirstEnergy Nuclear Operating Company, et al., (the licensee, FENOC) dated June 30, 2009, as supplemented by letter dated May 24, 2010, 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-58 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 154 are hereby incorporated into this license. FENOC 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 its issuance and shall be implemented within 120 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert D. Carlson, Chief  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications and Facility Operating License

Date of Issuance: June 30, 2010

ATTACHMENT TO LICENSE AMENDMENT NO. 154

FACILITY OPERATING LICENSE NO. NPF-58

DOCKET NO. 50-440

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

Insert

License NPF-58

License NPF-58

Page 4

Page 4

TS

TS

3.8.7

3.8.7

renewal. Such sale and leaseback transactions are subject to the representations and conditions set forth in the above mentioned application of January 23, 1987, as supplemented on March 3, 1987, as well as the letter of the Director of the Office of Nuclear Reactor Regulation dated March 16, 1987, consenting to such transactions. Specifically, a lessor and anyone else who may acquire an interest under these transactions are prohibited from exercising directly or indirectly any control over the licenses of PNPP Unit 1. For purposes of this condition the limitations of 10 CFR 50.81, as now in effect and as may be subsequently amended, are fully applicable to the lessor and any successor in interest to that lessor as long as the license for PNPP Unit 1 remains in effect; these financial transactions shall have no effect on the license for the Perry Nuclear facility throughout the term of the license.

- (b) Further, the licensees are also required to notify the NRC in writing prior to any change in: (i) the terms or conditions of any lease agreements executed as part of these transactions; (ii) the PNPP Operating Agreement; (iii) the existing property insurance coverage for PNPP Unit 1; and (iv) any action by a lessor or others that may have an adverse effect on the safe operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now and hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

FENOC is authorized to operate the facility at reactor core power levels not in excess of 3758 megawatts thermal (100% power) in accordance with the conditions specified herein.

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 154, are hereby incorporated into the license. FENOC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Antitrust Conditions

a. FirstEnergy Nuclear Generation Corp. and Ohio Edison Company

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.7 -----NOTE----- All DG starts may be preceded by an engine prelude period. -----</p> <p>Verify each DG starts from standby conditions and achieves:</p> <p>a. In <math>\leq 10</math> seconds for Division 1 and 2, and <math>\leq 13</math> seconds for Division 3, voltage <math>\geq 3900</math> V and frequency <math>\geq 58.8</math> Hz; and</p> <p>b. Steady state voltage <math>\geq 3900</math> V and <math>\leq 4400</math> V and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</p>	<p>184 days</p>
<p>SR 3.8.1.8 -----NOTE----- This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. -----</p> <p>Verify manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit.</p>	<p>24 months</p>

(continued)



UNITED STATES  
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WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 154 TO FACILITY OPERATING LICENSE NO. NPF-58

FIRSTENERGY NUCLEAR OPERATING COMPANY

FIRSTENERGY NUCLEAR GENERATION CORP.

OHIO EDISON COMPANY

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

DOCKET NO. 50-440

1.0 INTRODUCTION

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated June 30, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML091900387), as supplemented by letter dated May 24, 2010 (ADAMS Accession No. ML101590647). The FirstEnergy Nuclear Operating Company (the licensee), submitted a license amendment request (LAR) for the Perry Nuclear Power Plant (PNPP). In the LAR, the licensee proposed modifying Technical Specification (TS) 3.8.1, "AC Sources - Operating." The proposed amendment would modify a Surveillance Requirement (SR) regarding the start-time tests for the Division 3 Emergency Diesel Generator (EDG) to provide consistency with existing similar TS SRs related to EDG testing.

The supplement dated May 24, 2010, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on November 17, 2009 (74 FR 59261).

Specifically, the proposed amendment would modify the frequency portion of the start time acceptance criteria of SR 3.8.1.7 for the Division 3 EDG. The Division 3 EDG is dedicated to support the High-Pressure Core Spray (HPCS) system. The amendment will make the Division 3 frequency start time requirement consistent with the existing 13-second voltage requirement in the same SR, and with the existing 13-second start time requirements in SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.15, SR 3.8.1.19, and SR 3.8.1.20. The 13-second time is consistent with the licensing basis for the emergency core cooling system analyses. The current requirement in SR 3.8.1.7.b for frequency is less than 10 seconds and the voltage requirement is less than 13 seconds.

2.0 REGULATORY EVALUATION

The NRC staff used the following regulatory requirements and guidance documents during its review of the LAR:

The PNPP Updated Safety Analyses Report (USAR) Section 8.1, states that the offsite power system and the onsite power systems conform to Title 10 of *Code of Federal Regulations*, Part 50 (10 CFR Part 50) General Design Criterion (GDC) 17 and 18.

GDC 17, "Electric Power Systems," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, requires, in part, that an onsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The onsite electric power supplies and the onsite electric distribution system shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure. In addition, this criterion requires provisions to minimize the probability of losing electric power from any of the remaining supplies as a result of the loss of power from the unit, the transmission network, or the onsite electric power supplies.

GDC 18, "Inspection and Testing of Electric Power Systems," requires that electric power systems important to safety be designed to permit appropriate periodic inspection and testing to demonstrate operability and functional performance.

Title 10 CFR 50.36, "Technical Specifications," requires a licensee's TS to establish Limiting Conditions for Operation, which include Completion Times for equipment that are required for safe operation of the facility.

According to PNPP Updated Final Safety Analysis Report (UFSAR) Section 8.1 "Electric Power Introduction," the HPCS EDG design and testing requirements comply with following NRC regulatory guidance documents:

Regulatory Guide (RG) 1.6, dated March 1971, "Independence Between Redundant Standby (Onsite) Power Sources and Between Their Distribution Systems (Safety Guide 6)" describes an acceptable degree of independence between redundant standby (onsite) power sources and between their distribution systems.

RG 1.9 (Rev. 0) "Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants," described a method acceptable to the NRC staff for complying with the Commission's regulations with regard to design and testing of diesel generators.

RG 1.108 (withdrawn and incorporated into current revision of RG 1.9) "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants" provides testing requirements for onsite EDGs.

### 3.0 TECHNICAL EVALUATION

#### 3.1 Design Considerations

The PNPP USAR Section 8.1, states that the offsite power system and the onsite power systems have adequate redundancy, independence and testability to perform their safety functions.

The FirstEnergy system supplies the offsite Alternating Current (AC) power for the starting, normal operation and safe shutdown of PNPP. Offsite power is available to the plant onsite

electrical system from the 345 kilo-Volt (kV) switchyard using two independent circuits connected to two startup 345/13.8 kV transformers. This preferred source of power is supplied to Class 1E equipment from the startup transformer through the 13.8 kV startup bus and the 13.8/4.16 kV, transformer.

At PNPP, the Class 1E loads are assigned to three independent load groups designated as Division 1, Division 2, and Division 3. Division 1 and Division 2 are redundant while Division 3 consists of the HPCS system. The continuous rating of Division 1 and Division 2 EDG is 7000 kilo Watts (kW) with a short-time rating of 7,700 kW for 2 hours out of every 24 hours. The continuous rating of the HPCS EDG is 2600 kW with a short time rating of 2860 kW for 2 hours out of every 24 hours.

The HPCS system loads consist of the HPCS pump motor and associated 460Volt AC auxiliaries, such as motor-operated valves, engine cooling water pump and miscellaneous engine auxiliary loads. The HPCS EDG is capable of quickly restoring power to the HPCS pump motor in the event of loss of offsite power and can provide all power for startup and operation of the HPCS system.

### 3.2 Evaluation

The licensee proposed revising the frequency portion of the start time acceptance criteria of SR 3.8.1.7 for the Division 3 EDG. Specifically, the amendment will make the Division 3 frequency start time requirement consistent with the existing 13-second voltage requirement in the same SR, and with the existing 13-second start time requirements in SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.15, SR 3.8.1.19, and SR 3.8.1.20.

Regulatory position 2.9(c) of RG 1.108 states that periodic testing of diesel generator units during normal plant operation should demonstrate proper start up and verify that the required voltage and frequency are automatically attained within acceptable limits and time. RG 1.9, Revision 4, Section 2.2.1, "Test Descriptions," stipulates that the acceptance criteria for frequency and voltage during EDG starts should be equal to or higher than the minimum required voltage and frequency within a specified time allowance for the safety-related loads.

In the LAR, the licensee proposes changing the allowable time for the EDG frequency to attain an acceptable value of greater than or equal to 58.8 Hertz (Hz) within 13 seconds as compared to the existing time of 10 seconds. According to the licensee, the original PNPP TS had a requirement for the HPCS EDG to achieve a speed of 882 revolutions per minute (rpm) in 10 seconds, and a voltage requirement to be satisfied in 13 seconds. During the conversion to improved TSs, the 882 rpm requirement was converted to 58.8 Hz for a machine with synchronous speed of 900 rpm, but the 10 second requirement was not changed.

The latest revision of the PNPP UFSAR (Revision 16 dated November 2009) Section 6.3.3.4, "System Performance During the Accident," states that an overall time of 29 seconds is assumed from the Loss-of-Coolant Accident (LOCA) initiation signal until the high pressure injection from the HPCS system begins. According to the LAR, the licensee's LOCA analysis supports this UFSAR statement for the duration of the HPCS system response.

Table 6.3-2 of the UFSAR titled "Operational Sequence of Emergency Core Cooling Systems for Design Basis Accident" summarizes the expected response of plant equipment required to mitigate the consequences of a design-basis accident. This table indicates that a motor-operated gate valve located outside the primary containment will reach the position required to deliver rated flow within 29 seconds following the initiation of an accident or safety injection signal. The HPCS system is capable of delivering rated flow into the reactor vessel within 27 seconds following receipt of an automatic initiation signal. However, the HPCS injection valve reaches full open position 29 seconds after receiving an accident signal.

Table 6.2-22 of the PNPP UFSAR titled "Drywell Head Flow Path Data," provides a summary of parameters for containment isolation valves. According to this table, HPCS injection valve E22F004 has a stroke time of 16 seconds. Per this LAR, the licensee is requesting that HPCS EDG voltage and frequency (after 13 seconds) be 'at or above' 3900 V and 58.8 Hz. At this voltage and frequency, the stroke time may be longer than 16 seconds resulting in less time available for the EDG to start.

In a letter dated March 23, 2010 (ADAMS Accession No. ML100740652), the staff requested additional information (RAI) regarding the response time of the containment isolation valves at less than the nominal voltage and frequency. In response to the RAI, the licensee evaluated the stroke time of the HPCS valves, and concluded that the stroke time at 3900 V and 58.8 Hz would increase to 16.5 seconds due to the combined effects of the lower voltage and frequency (reference letter dated May 24, 2010, ADAMS Accession No. ML101590647). If the HPCS EDG takes 13 seconds to reach acceptable frequency and voltage, the total time for safety injection will be 29.5 seconds or 0.5 seconds longer than the accident analyses.

In the letter dated May 24, 2010, the licensee stated that there is margin in the actual stroke time of the existing valves. The slowest in-service test program open stroke time since 2001 was measured at 13.5 seconds, taken from control signal initiation to receipt of full open position indication. The surveillance procedure acceptance criterion for valve open stroke time is less than 15.4 seconds. The licensee also stated that the flow rates credited in the emergency core cooling system response time for LOCA can be achieved when gate valves used in the HPCS system are 80-percent open. Assuming a 13-second start time for the HPCS EDG to reach 3900 V and 58.8 Hz and allowing for the slower opening of the HPCS valves, the licensee has concluded that the accident credited flow rates can be achieved in 26.2 seconds from the initiation of an accident signal. Since this is less than the 29 second time delay assumed in the accident analyses, allowing a 13 second time delay to energize the HPCS pump, will not adversely impact the allowable time for the HPCS system to support the accident analysis allotted time of 29 seconds. The proposed change to SR 3.6.1.7 and related SRs identified in this LAR is, therefore, considered acceptable.

#### 4.0 STATE CONSULTATION

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

## 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes surveillance requirements of TSs. 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 (74 FR 59261; November 17, 2009). 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 NRC staff has reviewed the licensee's proposed TS changes and supporting documentation. Based on the evaluation discussed above, the NRC staff determined that the proposed amendment to PNPP TS SR 3.8.1.7 is acceptable. The proposed change is consistent with the recommendations of the NRC guidance provided in RG 1.9 and consistent with the intent of GDC 17. The staff also concludes that the proposed TS change maintains compliance with requirements governing the design and operation of the electrical power systems and provides reasonable assurance of system operability. Therefore, the staff finds the proposed changes acceptable.

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) 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: G. Singh Matharu

Date: June 30, 2010

M. Bezilla

- 2 -

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,

*/RA/*

Araceli T. Billoch Colón, Project Manager  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-440

Enclosures:

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2. Safety Evaluation

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Amendment Accession No. ML101690203

NRR-058

OFFICE	LPL3-2/PM	LPL3-2/LA	EEEB/BC	OGC	LPL3-2/BC
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DATE	6/23/10	6/23/10	6 /14/10	6/30/10	6/30/10

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