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

April 28, 2021

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

SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT – ISSUANCE OF AMENDMENT NO. 341 RE: ADOPTION OF TSTF-478, REVISION 2, "BWR TECHNICAL SPECIFICATION CHANGES THAT IMPLEMENT THE REVISED RULE FOR COMBUSTIBLE GAS CONTROL" (EPID L-2020-LLA-0143)

Dear Mr. Rhoades:

The U.S. Nuclear Regulatory Commission (the Commission, NRC) has issued the enclosed Amendment No. 341 to Renewed Facility Operating License No. DPR-59 for the James A. FitzPatrick Nuclear Power Plant (FitzPatrick). The amendment consists of changes to the technical specifications (TSs) in response to your application dated June 30, 2020.

The amendment revised the FitzPatrick TSs consistent with NRC-approved Industry Technical Specifications Task Force (TSTF) Change Traveler, TSTF-478-A, Revision 2, "BWR [Boiling-Water Reactor] Technical Specification Changes that Implement the Revised Rule for Combustible Gas Control." Specifically, the amendment deletes TS 3.6.3.2, "Containment Atmosphere Dilution (CAD) System," and the associated Bases.

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

Sincerely,

/RA/

Justin C. Poole, Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-333

Enclosures:
1. Amendment No. 341 to DPR-59
2. Safety Evaluation

cc: Listserv

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

EXELON FITZPATRICK, LLC

AND

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-333

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 341
Renewed Facility Operating License No. DPR-59

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

   A. The application for amendment by Exelon FitzPatrick, LLC and Exelon Generation Company, LLC (collectively, the licensees) dated June 30, 2020, 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-59 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 341, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Jennifer C. Tobin

Digitally signed by Jennifer C. Tobin
Date: 2021.04.28 10:22:10 -04'00'

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 and Technical Specifications

Date of Issuance: April 28, 2021

ATTACHMENT TO LICENSE AMENDMENT NO. 341 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-59

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NO. 50-333

Replace the following page of the License with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove Page	Insert Page
Page 3	Page 3

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

Remove Pages	Insert Page
3.6.3.2-1	3.6.3.2-1
3.6.3.2-2	--

(4) Exelon Generation Company 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 without restriction to chemical or physical form, for sample analysis or instrument calibration; or associated with radioactive apparatus, components or tools.

(5) 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 operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: 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 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 steady state reactor core power levels not in excess of 2536 megawatts (thermal).

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 341, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Fire Protection

Exelon Generation Company shall implement and maintain in effect all provisions of the approved fire protections program as described in the Final Safety Analysis Report for the facility and as approved in the SER dated November 20, 1972; the SER Supplement No. 1 dated February 1, 1973; the SER Supplement No. 2 dated October 4, 1974; the SER dated August 1, 1979; the SER Supplement dated October 3, 1980; the SER Supplement dated February 13, 1981; the NRC Letter dated February 24, 1981; Technical Specification Amendments 34 (dated January 31, 1978), 80 (dated May 22, 1984), 134 (dated July 19, 1989), 135 (dated September 5, 1989), 142 (dated October 23, 1989), 164 (dated August 10, 1990), 176 (dated January 16, 1992), 177 (dated February 10, 1992), 186 (dated February 19, 1993), 190 (dated June 29, 1993), 191 (dated July 7, 1993), 206 (dated February 28, 1994), and 214 (dated June 27, 1994); and NRC Exemptions and associated safety evaluations dated April 26, 1983, July 1, 1983, January 11, 1985,

3.6 CONTAINMENT SYSTEMS

3.6.3.2 Deleted

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 341 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-59

EXELON FITZPATRICK, LLC

EXELON GENERATION COMPANY, LLC

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NO. 50-333

1.0 INTRODUCTION

By letter dated June 30, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20182A161), Exelon Generation Company, LLC (Exelon, the licensee) submitted a request for changes to the James A. FitzPatrick Nuclear Power Plant (FitzPatrick) technical specifications (TSs).

The proposed changes would delete TS 3.6.3.2, "Containment Atmosphere Dilution (CAD) System," and the associated Bases. The proposed changes are consistent with the U.S. Nuclear Regulatory Commission (NRC) approved Revision 2 to Technical Specifications Task Force (TSTF) Traveler TSTF-478, "BWR [Boiling-Water Reactor] Technical Specification Changes that Implement the Revised Rule for Combustible Gas Control." This change is intended to modify containment combustible gas control requirements as permitted by Section 50.44, "Combustible gas control for nuclear power reactors," of Title 10 of the *Code of Federal Regulations* (10 CFR). The availability of this TS improvement was announced in the *Federal Register* on November 21, 2007 (72 FR 65610), as part of the consolidated line item improvement process (CLIIP).

The licensee stated that the application is consistent with NRC-approved Revision 2 to TSTF-478. Proposed revisions to the TS Bases are also included in this license amendment request. The licensee stated that adoption of the TS Bases associated with TSTF-478, Revision 2, is an integral part of implementing the TS amendment and that the changes to the affected TS Bases pages will be incorporated in accordance with the TS Bases Control Program.

This application is being made in accordance with the CLIIP. Exelon is proposing two variations from the TS changes described in TSTF-478, Revision 2, and the NRC staff's model safety evaluation (SE) published on November 21, 2007 (72 FR 65610), as part of the CLIIP Notice of Availability. First, the FitzPatrick TS for the CAD System is TS 3.6.3.2 rather than TS 3.6.3.3 as provided in the TSTF mark-ups. This SE will use the FitzPatrick-specific TS number. Second,

TSTF-478, Revision 2, also makes TS and Bases changes to the TS section on Drywell Cooling System Fans. FitzPatrick TS do not include this TS section; therefore, these changes are not needed. These deviations from the model SE do not affect the acceptability of the balance of the amendment.

2.0 REGULATORY EVALUATION

General Design Criterion (GDC) 41, "Containment atmosphere cleanup," of Appendix A to 10 CFR Part 50 requires, in part, that systems to control fission products, hydrogen, oxygen, and other substances that may be released into the reactor containment shall be provided as necessary to reduce the concentration and quality of fission products and control the concentration of hydrogen, oxygen, and other substances in the containment atmosphere following postulated accidents to assure that containment integrity is maintained. The regulations in 10 CFR 50.44, "Combustible gas control for nuclear power reactors," provides, among other things, standards for controlling combustible gas that may accumulate in the containment atmosphere during accidents.

The regulations in 10 CFR 50.44 were revised on September 16, 2003 (68 FR 54123), as a result of studies that led to an improved understanding of combustible gas behavior during severe accidents. The studies confirmed that the hydrogen release postulated from a design-basis loss-of-coolant accident (LOCA) was not risk significant because it was not large enough to lead to early containment failure, and that the risk associated with hydrogen combustion was from beyond design-basis (i.e., severe) accidents. As a result, requirements for maintaining hydrogen control equipment associated with a design-basis LOCA were eliminated from 10 CFR 50.44. Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment," Revision 3, dated March 2007 (ADAMS Accession No. ML070290080), provides detailed guidance that would be acceptable for implementing 10 CFR 50.44.

Section 182a of the Atomic Energy Act, as amended requires applicants for nuclear power plant operating licenses to include TS as part of the license application. The TS, among other things, help to ensure the operational capability of structures, systems, and components that are required to protect the health and safety of the public. The NRC's regulatory requirements related to the content of the TS are contained in 10 CFR 50.36, which requires that the TS include items in the following categories: (1) safety limits, limiting safety systems settings, and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; and (5) administrative controls. The regulations in 10 CFR 50.36(c)(2)(i) state, in part, that "limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met." TSTF-478, Revision 2 contains changes to remedial actions permitted by the TS.

2.1 Containment Atmosphere Dilution System

The design purpose of the CAD system is to maintain combustible gas concentrations within the primary containment at or below the flammability limits following a postulated LOCA by diluting hydrogen and oxygen with the addition of nitrogen. The CAD system, however, is considered ineffective at mitigating hydrogen releases from the more risk significant beyond design-basis accidents that could threaten primary containment integrity. The revised 10 CFR 50.44 rule requires systems and measures be in place to reduce the risks associated with combustible

gases from beyond design-basis accidents and eliminates requirements for maintaining hydrogen and oxygen control equipment associated with a design-basis LOCA. As a result, the CAD system is no longer a mitigating safety system required to be maintained per the revised 10 CFR 50.44 rule. TS 3.6.3.2, "Containment Atmosphere Dilution (CAD) System," can therefore be deleted, and the technical basis for allowing the deletion is found in Section 3.0, Technical Evaluation.

3.0 TECHNICAL EVALUATION

3.1 Containment Atmosphere Dilution System

BWRs with Mark I containment designs have either installed hydrogen recombiners or CAD systems to meet requirements for combustible gas control following a design-basis LOCA. The hydrogen recombiners and the CAD system perform similar functions for post-LOCA gas control by decreasing the hydrogen concentration. Hydrogen recombiners function to reduce the combustible gas concentration in the primary containment by recombining hydrogen and oxygen to form water vapor. The CAD system functions to maintain combustible gas concentrations within the primary containment at or below the flammability limits following a postulated LOCA by diluting hydrogen and oxygen by adding nitrogen to the mixture. In the case of FitzPatrick, a CAD system is installed as part of a containment atmospheric control system. There are no installed hydrogen recombiners.

Studies performed in support of the 10 CFR 50.44 rule change (September 16, 2003; 68 FR 54123) confirmed that the hydrogen release postulated from a design-basis LOCA was not risk significant because it was not large enough to lead to early containment failure, and that the risk associated with hydrogen combustion was from beyond design-basis (i.e., severe) accidents. As a result, the revised 10 CFR 50.44 rule eliminates requirements for maintaining hydrogen control equipment associated with a design-basis LOCA and requires systems and measures be in place to reduce the risks associated with hydrogen combustion from beyond design-basis accidents.

The CAD system maintains combustible gas concentrations within the primary containment at or below the flammability limits following a LOCA; however, this system, as discussed in the 10 CFR 50.44 rule change was shown to be ineffective at mitigating hydrogen releases from the more risk significant beyond design-basis accidents that could threaten primary containment integrity, and is no longer required to address a design-basis LOCA. Therefore, the NRC staff finds that the deletion of TS 3.6.3.2, "Containment Atmosphere Dilution (CAD) System," is 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 February 18, 2021. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. 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 (August 11, 2020; 85 FR 48571). 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: S. Smith

Date: April 28, 2021

SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT – ISSUANCE OF AMENDMENT NO. 341 RE: ADOPTION OF TSTF-478, REVISION 2, "BWR TECHNICAL SPECIFICATION CHANGES THAT IMPLEMENT THE REVISED RULE FOR COMBUSTIBLE GAS CONTROL" (EPID L-2020-LLA-0143) DATED APRIL 28, 2021

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