

NUCLEAR REGULATORY COMMISSION

Docket No. 50-333

Exelon Generation Company, LLC

James A. FitzPatrick Nuclear Power Plant

Exemption

I. Background.

Exelon Generation Company, LLC (Exelon or the licensee) is the holder of Renewed Facility Operating License No. DPR-59, which authorizes operation of the James A. FitzPatrick Nuclear Power Plant (FitzPatrick). The facility consists of a boiling-water reactor located in Oswego County, New York. The license provides, among other things, that the facility is subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (NRC or the Commission) now or hereafter in effect.

II. Request/Action.

By letter dated August 8, 2019 (Agencywide Documents Access and Management System Accession No. ML19220A043), the licensee requested an exemption from (1) the requirements of Appendix J, Option B, paragraph III.A to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 to allow exclusion of the main steam isolation valve (MSIV) leakage from the overall integrated leakage rate measured when performing a Type A Test, and (2) the requirements of Appendix J, Option B, paragraph III.B to 10 CFR Part 50 to allow exclusion of the MSIV leakage rate of the penetration valves subject to Type B and C tests. This exemption is in conjunction with a license amendment request.

Appendix J to 10 CFR Part 50 specifies the leakage test requirements, schedules, and acceptance criteria for tests of the leaktight integrity of the primary reactor containment and systems and components that penetrate the containment.

Appendix J, Option B, paragraph III.A to 10 CFR Part 50 requires, in part, that the overall integrated leakage rate must not exceed the allowable leakage rate with margin as specified in the facility's TSs. The overall integrated leakage rate is defined in Appendix J to 10 CFR Part 50 as "the total leakage rate through all tested leakage paths, including containment welds, valves, fittings, and components that penetrate the containment system." This includes the contribution from MSIV leakage.

Appendix J, Option B, paragraph III.B to 10 CFR Part 50 requires, in part, that the sum of the leakage rates at accident pressure of Type B tests and pathway leakage rates from Type C tests be less than the performance criterion with margin, as specified in the facility's TSs. The licensee requests an exemption from this requirement to allow exclusion of the MSIV leakage rate of the penetration valves subject to Type B and C tests.

Appendix J to 10 CFR Part 50 testing ensures primary containment leakage following a design-basis loss-of-coolant accident (LOCA) will be within the allowable leakage limits. The licensee requests this exemption because the radiological dose consequences of MSIV leakage for FitzPatrick are modeled as a separate primary containment release path to the environment that bypasses secondary containment. The LOCA dose calculation assumes all MSIV leakage migrates to the turbine building. However, if MSIV leakage were also included as part of the primary-to-secondary containment modeling, it would be "double-counted."

III. Discussion.

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health and safety, and are consistent with the common defense and security; and (2) when special circumstances are present. Special circumstances are present whenever, according to 10 CFR 50.12(a)(2)(ii), "Application of the regulation in the particular circumstances would not

serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule; or”

A. The Exemption is Authorized by Law.

The exemption would permit exclusion of the MSIV contributions from the overall integrated leakage rate (Type A) test measurement and from the sum of the leakage rates from local leakage rate (Type B and C) tests.

As stated above, 10 CFR 50.12 allows the NRC to grant exemptions from the requirements of Appendix J to 10 CFR Part 50. The NRC staff has determined that granting of the licensee’s proposed exemption will not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission’s regulations. Therefore, the exemption is authorized by law.

B. The Exemption Presents No Undue Risk to Public Health and Safety.

The underlying purposes of Appendix J to 10 CFR Part 50 are to assure that containment leaktight integrity is maintained (a) as tight as reasonably achievable, and (b) sufficiently tight so as to limit effluent release to values bounded by the analyses of radiological dose consequences of design-basis accidents.

The licensee’s exemption request was submitted in conjunction with an application for a TS amendment to increase the allowable leak rate for the MSIVs in adopting the alternative source term (AST) in accordance with 10 CFR 50.67. The amendment will be issued concurrently with this exemption as License Amendment No. 338. In the amendment, the NRC approves the use of the AST in the calculations of the radiological dose consequences of design-basis accidents for FitzPatrick. The MSIV leakage for the design-basis accident analysis has been accounted for separately from the overall leakage associated with the primary containment boundary (Type A) and local leakage rate (Type B and C). The radiological dose consequence analysis evaluates the MSIV leakage separately as migration to the turbine building that bypasses the secondary containment. The inclusion of MSIV leakage as part of Type A and as part of Type B and C test results is not necessary to ensure the actual

radiological dose consequences of design-basis accidents remain below the regulatory limit. With the exemption, the FitzPatrick primary containment leakage test program would more closely align with the assumptions used in associated accident consequence analyses. The exemption would not remove the MSIVs from the requirements of leakage testing. The MSIVs would continue to be tested under the FitzPatrick TS for primary containment leakage rate testing with an allowable leakage rate that is within the licensee's radiological dose analysis. Because the staff finds the licensee's radiological dose consequences meet the criteria in 10 CFR 50.67, the exemption presents no undue risk in public health and safety.

C. The Exemption is Consistent with the Common Defense and Security.

The exemption would permit exclusion of the MSIV leakage contributions from the overall integrated leakage rate (Type A) test measurement and from the sum of the leakage rates from local leakage rate (Type B and C) tests. This change to accounting for leakage rate measurement has no relation to security issues. Therefore, the common defense and security is not impacted by this exemption.

D. Special Circumstances.

Special circumstances in accordance with 10 CFR 50.12(a)(2) are present whenever application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule. The underlying purpose of 10 CFR Part 50, Appendix J, Option B, paragraphs III.A and III.B is to ensure the radiological consequences of design-basis accidents remain below those previously evaluated and accepted, as demonstrated by the actual, periodic measurement of containment leakage (Type A) and local leakage rate measurement (Type B and C).

Although Type A and Type B and C leakage tests measure the associated leakages, inclusion of the MSIV leakage results in double-counting at FitzPatrick, once as a part of the actual containment leakage and again as part of MSIV leakage used in dose calculations. This is because FitzPatrick's radiological dose consequence analysis addresses MSIV leakage

separately as migration to the turbine building that bypasses the secondary containment. The MSIV leakages are periodically measured as part of the Appendix J to the 10 CFR Part 50 program to ensure the leakage rates will not exceed the TS limit, which is the maximum rate assumed in the safety analysis for radiological dose consequences. Since the MSIV leakage is considered a separate leakage path and its effects are specifically accounted for in the dose analysis, it is appropriate to exclude MSIV leakage from Type A and Type B and C test result totals. Therefore, requiring inclusion of MSIV leakage in the Type A and Type B and C leakage is not necessary to achieve the underlying purpose of the rule.

Because compliance with 10 CFR Part 50, Appendix J, Option B, paragraphs III.A and III.B, is not necessary to achieve the underlying purpose of the requirements, the special circumstances required by 10 CFR 50.12(a)(2) for the granting of an exemption from 10 CFR Part 50, Appendix J, Option B, paragraphs III.A and III.B exist.

IV. Environmental Considerations.

The NRC staff determined that the issuance of the requested exemption meets the provisions for a categorical exclusion from the preparation of an environmental impact statement or environmental assessment, pursuant to 10 CFR 51.22(c)(9), because the exemption is from a requirement with respect to the installation or use of a facility component located within the restricted area, as defined in 10 CFR Part 20, and the issuance of the exemption involves: (i) no significant hazards consideration, (ii) no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, and (iii) no significant increase in individual or cumulative occupational radiation exposure. Therefore, in accordance with 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the NRC's issuance of this exemption. The basis for the NRC staff's determination is provided in the following evaluation of the requirements in 10 CFR 51.22(c)(9)(i) through (iii).

Requirements in 10 CFR 51.22(c)(9)(i)

The NRC staff evaluated whether the exemption involves no significant hazards consideration by using the standards in 10 CFR 50.92(c), as presented below:

1. Does the requested exemption involve a significant increase in the probability or consequences of an accident previously evaluated?

No. The proposed exemption would allow FitzPatrick to exclude the MSIV leakage contributions from the overall integrated leakage rate (Type A) test measurement and from the sum of the leakage rates from local leakage rate (Type B and C) tests as required by 10 CFR Part 50, Appendix J. The licensee's evaluation of the allowable leakage rate for the MSIVs is based on adopting the AST in accordance with 10 CFR 50.67. The MSIV leakage is treated separately from the remainder of the assumed leakage from primary containment in the LOCA analysis. The Appendix J to 10 CFR Part 50 testing ensures primary containment leakage following a design-basis LOCA will be within the allowable leakage limits specified in the facility's TSs and assumed in the safety analysis for determining radiological dose consequences. The MSIV leakage effluent would be treated as a different pathway to the environment when compared to a typical containment penetration. The MSIV leakage would bypass secondary containment and instead would migrate to the turbine building. The proposed exemption from Appendix J to 10 CFR Part 50 would separate MSIV leakage from other containment leakage and is consistent with the radiological dose consequence analysis. Otherwise, the MSIV leakage would be "double-counted" because of the different pathways. Since design-basis accident initiators are not being altered by the proposed exemption, the probability of an accident previously evaluated is not affected. Also, the consequences of previously evaluated accidents remain within the regulatory limits.

Therefore, the proposed exemption does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the requested exemption create the possibility of a new or different kind of accident from any accident previously evaluated?

No. The underlying purpose of Appendix J to 10 CFR Part 50 is to ensure that the radiological dose consequences of design-basis accidents remain below the applicable regulatory limits and are supported by the actual periodic measurement of containment leakage. The proposed exemption would treat the MSIV leakage separately from the remainder of the assumed leakage from primary containment based on the radiological dose consequence analysis in accordance with 10 CFR 50.67. No plant configuration changes are required. Measuring the MSIV leakage separately to ensure it is within limits of the radiological dose consequence analysis does not create initiators or precursors of a new or different kind of accident.

Therefore, the proposed exemption does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the requested exemption involve a significant reduction in a margin of safety?

No. The proposed exemption from Appendix J to 10 CFR Part 50 would separate MSIV leakage from other containment leakage based on the radiological dose consequence analysis for the design-basis LOCA through application of the AST (10 CFR 50.67). Safety margins have been evaluated and analytical conservatisms have been utilized to ensure that the radiological dose consequence analysis adequately bounds the postulated limiting event scenario. Approval of the proposed exemption request would align the FitzPatrick TS limits with the LOCA dose consequence analysis.

Therefore, the proposed exemption does not involve a significant reduction in a margin of safety.

Based on the evaluation above, the NRC staff has determined that the proposed exemption involves no significant hazards consideration. Therefore, the requirements of 10 CFR 51.22(c)(9)(i) are met.

Requirements in 10 CFR 51.22(c)(9)(ii) and (iii)

The proposed exemption would allow FitzPatrick to treat MSIV leakage separately from other containment leakage. The MSIV leakage for the FitzPatrick design-basis accident analysis has been accounted for separately in the AST analysis. Approval of the proposed exemption request would align the TS limits with the radiological dose consequence calculation. The exemption does not modify plant operations. The MSIVs would continue to be tested under the FitzPatrick TS for primary containment leakage rate testing with an allowable leakage rate that is within the licensee's radiological dose analysis. Because the NRC staff finds the MSIV leakage radiological dose consequence analysis meets the limits in 10 CFR 50.67, there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, and no significant increase in individual or cumulative occupational radiation exposure. Therefore, the requirements of 10 CFR 51.22(c)(9)(ii) and (iii) are met.

V. Conclusions.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, the exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security; also, special circumstances are present. Therefore, the Commission hereby grants to Exelon an exemption from the requirements of 10 CFR Part 50, Appendix J, Option B, paragraphs III.A and III.B, for FitzPatrick.

Dated: July 21, 2020.

For the Nuclear Regulatory Commission.

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