



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

August 13, 2020

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

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – ISSUANCE
OF AMENDMENT NOS. 336 AND 314 CONCERNING REACTOR COOLANT
PUMP FLYWHEEL INSPECTION PROGRAM (EPID L-2019-LLA-0261)

Dear Mr. Hanson:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 336 to Renewed Facility Operating License No. DPR-53 and Amendment No. 314 to Renewed Facility Operating License No. DPR-69 for the Calvert Cliffs Nuclear Power Plant, Units 1 and 2. These amendments consist of changes to the technical specifications in response to your application dated November 21, 2019, as supplemented by letter dated April 16, 2020 (Agencywide Documents Access and Management System Accession Nos. ML19325C128 and ML20107F765, respectively). These amendments revise certain inspection requirements in Technical Specification 5.5.7, "Reactor Coolant Pump Flywheel Inspection Program."

A copy of our related safety evaluation is enclosed. Notice of issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Michael L. Marshall, Jr., Senior Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-317 and 50-318

Enclosures:

1. Amendment No. 336 to DPR-53
2. Amendment No. 314 to DPR-69
3. Safety Evaluation

cc: Listserv



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

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 336
Renewed License No. DPR-53

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Exelon Generation Company, LLC (Exelon Generation, the licensee) dated November 21, 2019, as supplemented by letter dated April 16, 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-53 is hereby amended to read as follows:

2. Technical Specifications

- The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 336, are hereby incorporated into this license. Exelon Generation 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

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

Attachment:
Changes to the License and Technical
Specifications

Date of Issuance: August 13, 2020

ATTACHMENT TO LICENSE AMENDMENT NO. 336
CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT 1
RENEWED FACILITY OPERATING LICENSE NO. DPR-53
DOCKET NO. 50-317

Replace the following page of the Renewed Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

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Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain a marginal line indicating the area of change.

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- (4) Exelon Generation pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use, in amounts as required, any byproduct, source, and special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) Exelon Generation pursuant to the Act and 10 CFR Parts 30 and 70 to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

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

(1) Maximum Power Level

Exelon Generation is authorized to operate the facility at steady-state reactor core power levels not in excess of 2737 megawatts-thermal in accordance with the conditions specified herein.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 336, are hereby incorporated into this license. Exelon Generation shall operate the facility in accordance with the Technical Specifications.

- (a) For Surveillance Requirements (SRs) that are new, in Amendment 227 to Facility Operating License No. DPR-53, the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment 227. For SRs that existed prior to Amendment 227, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the Surveillance was last performed prior to implementation of Amendment 227.

(3) Additional Conditions

The Additional Conditions contained in Appendix C as revised through Amendment No. 327 are hereby incorporated into this license. Exelon Generation shall operate the facility in accordance with the Additional Conditions.

(4) Secondary Water Chemistry Monitoring Program

Exelon Generation shall implement a secondary water chemistry monitoring program to inhibit steam generator tube degradation. This program shall include:

5.5 Programs and Manuals

5.5.6 Concrete Containment Tendon Surveillance Program

This program provides controls for monitoring any tendon degradation in pre-stressed concrete containments, including effectiveness of its corrosion protection medium, to ensure containment structural integrity. The program shall include baseline measurements prior to initial operation. The Tendon Surveillance Program, inspection frequencies, and acceptance criteria shall be in accordance with Section XI, Subsection IWL of the ASME Boiler and Pressure Vessel Code and applicable addenda as required by 10 CFR 50.55a, as amended by relief granted in accordance with 10 CFR 50.55a(a)(3).

The provisions of SR 3.0.3 are applicable to the Tendon Surveillance Program inspection frequencies.

5.5.7 Reactor Coolant Pump Flywheel Inspection Program

This program shall provide for the inspection of each reactor coolant pump flywheel per the recommendations of Regulatory Position C.4.b of Regulatory Guide 1.14, Revision 1, August 1975.

In lieu of Regulatory Position C.4.b(1) and C.4.b(2), a qualified in-place UT examination over the volume from the inner bore of the flywheel to the circle one-half of the outer radius or a surface examination (MT and/or PT) of exposed surfaces of the removed flywheels may be conducted at an interval not to exceed 20 years.

5.5.8 DELETED

5.5.9 Steam Generator (SG) Program

A Steam Generator Program shall be established and implemented to ensure that SG tube integrity is maintained. In addition, the Steam Generator Program shall include the following:

- a. Provisions for condition monitoring assessments. Condition monitoring assessment means an evaluation of the "as found" condition of the tubing with respect to the performance

5.5 Programs and Manuals

criteria for structural integrity and accident induced leakage. The "as found" condition refers to the condition of the tubing during an SG inspection outage, as determined from the inservice inspection results or by other means, prior to the plugging of tubes. Condition monitoring assessments shall be conducted during each outage during which the SG tubes are inspected or plugged to confirm that the performance criteria are being met.

- b. Performance criteria for SG tube integrity. Steam generator tube integrity shall be maintained by meeting the performance criteria for tube structural integrity, accident induced leakage, and operational LEAKAGE.
 - 1. Structural integrity performance criterion: All in-service steam generator tubes shall retain structural integrity over the full range of normal operating conditions (including startup, operation in the power range, hot standby, and cool down), all anticipated transients included in the design specification, and design basis accidents. This includes retaining a safety factor of 3.0 against burst under normal steady-state full power operation primary to secondary pressure differential and a safety factor of 1.4 against burst applied to the design basis accident primary-to-secondary pressure differentials. Apart from the above requirements, additional loading conditions associated with the design basis accidents, or combination of accidents in accordance with the design and licensing basis, shall also be evaluated to determine if the associated loads contribute significantly to burst or collapse. In the assessment of tube integrity, those loads that do significantly affect burst or collapse shall be determined and assessed in combination with the loads due to pressure with a safety factor of 1.2 on the combined primary loads and 1.0 on axial secondary loads.

5.5 Programs and Manuals

2. Accident induced leakage performance criterion: The primary to secondary accident induced leakage rate for any design basis accident, other than a SG tube rupture, shall not exceed the leakage rate assumed in the accident analysis in terms of total leakage rate for all SGs and leakage rate for an individual SG. Leakage is not to exceed 100 gpd per SG.
3. The operational LEAKAGE performance criterion is specified in LCO 3.4.13, "RCS Operational LEAKAGE."
- c. Provisions for SG tube plugging criteria. Tubes found by inservice inspection to contain flaws with a depth equal to or exceeding 40% of the nominal tube wall thickness shall be plugged.
- d. Provisions for SG tube inspections. Periodic SG tube inspections shall be performed. The number and portions of the tubes inspected and methods of inspection shall be performed with the objective of detecting flaws of any type (e.g., volumetric flaws, axial, and circumferential cracks) that may be present along the length of the tube, from the tube-to-tubesheet weld at the tube inlet to the tube-to-tubesheet weld at the tube outlet, and that may satisfy the applicable tube plugging criteria. The tube-to-tubesheet weld is not part of the tube. In addition to meeting the requirements of d.1, d.2, and d.3 below, the inspection scope, inspection methods, and inspection intervals shall be such as to ensure that SG tube integrity is maintained until the next SG inspection. A degradation assessment shall be performed to determine the type and location of flaws to which the tubes may be susceptible and, based on this assessment, to determine which inspection methods need to be employed and at what locations.
 1. Inspect 100% of the tubes in each SG during the first refueling outage following SG installation.
 2. After the first refueling outage following SG installation, inspect each SG at least every 72 effective full power months or at least every third refueling outage (whichever results in more frequent

5.5 Programs and Manuals

inspections). In addition, the minimum number of tubes inspected at each scheduled inspection shall be the number of tubes in all SGs divided by the number of SG inspection outages scheduled in each inspection period as defined in a, b, c, and d below. If a degradation assessment indicates the potential for a type of degradation to occur at a location not previously inspected with a technique capable of detecting this type of degradation at this location and that may satisfy the applicable tube plugging criteria, the minimum number of locations inspected with such a capable inspection technique during the remainder of the inspection period may be prorated. The fraction of locations to be inspected for this potential type of degradation at this location at the end of the inspection period shall be no less than the ratio of the number of times the SG is scheduled to be inspected in the inspection period after the determination that a new form of degradation could potentially be occurring at this location divided by the total number of times the SG is scheduled to be inspected in the inspection period. Each inspection period defined below may be extended up to 3 effective full power months to include a SG inspection outage in an inspection period and the subsequent inspection period begins at the conclusion of the included SG inspection outage.

- a) After the first refueling outage following SG installation, inspect 100% of the tubes during the next 144 effective full power months. This constitutes the first inspection period;
- b) During the next 120 effective full power months, inspect 100% of the tubes. This constitutes the second inspection period;
- c) During the next 96 effective full power months, inspect 100% of the tubes. This constitutes the third inspection period; and
- d) During the remaining life of the SGs, inspect 100% of the tubes every 72 effective full power months.

5.5 Programs and Manuals

This constitutes the fourth and subsequent inspection periods.

3. If crack indications are found in any SG tube, then the next inspection for each affected and potentially affected SG for the degradation mechanism that caused the crack indication shall not exceed 24 effective full power months or one refueling outage (whichever results in more frequent inspection). If definitive information, such as from examination of a pulled tube, diagnostic non-destructive testing, or engineering evaluation indicates that a crack-like indication is not associated with a crack(s), then the indication need not be treated as a crack.
- e. Provisions for monitoring operational primary to secondary LEAKAGE.

5.5.10 Secondary Water Chemistry Program

This program provides controls for monitoring secondary water chemistry to inhibit steam generator tube degradation and low pressure turbine disc stress corrosion cracking. The program shall include:

- a. Identification of a sampling schedule for the critical variables and control points for these variables;
- b. Identification of the procedures used to measure the values of the critical variables;
- c. Identification of process sampling points which shall include monitoring the discharge of the condensate pumps for evidence of condenser in leakage;
- d. Procedures for the recording and management of data;
- e. Procedures defining corrective actions for all off control point chemistry conditions; and

5.5 Programs and Manuals

- f. A procedure identifying the authority responsible for the interpretation of the data and the sequence and timing of administrative events, which are required to initiate corrective action.

5.5.11 Ventilation Filter Testing Program

A program shall be established to implement the following required testing of engineered safety feature (ESF) filter ventilation systems. Tests described in Specifications 5.5.11.a and 5.5.11.b shall be performed once per 18 months for ventilation systems other than the Iodine Removal System (IRS) and 24 months for the IRS; after each complete or partial replacement of the high efficiency particulate air (HEPA) filter bank or charcoal adsorber bank; after any structural maintenance on the HEPA filter or charcoal adsorber housing; and following painting, fire, or chemical release in any ventilation zone communicating with the system.

Tests described in Specification 5.5.11.c shall be performed once per 18 months for ventilation systems other than the IRS and 24 months for the IRS; after 720 hours of system operation; after any structural maintenance on the HEPA filter or charcoal adsorber housing; and following painting, fire, or chemical release in any ventilation zone communicating with the system.

Tests described in Specification 5.5.11.d shall be performed once per 18 months for ventilation systems other than the IRS and 24 months for the IRS.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Ventilation Filter Testing Program test frequencies.

- a. Demonstrate for each of the ESF systems that an inplace test of the HEPA filters shows a penetration and system bypass $\leq 1.0\%$ ($\leq 0.05\%$ for the CREVS only) when tested in accordance with Regulatory Positions C.5.a and C.5.c of Regulatory



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EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 314
Renewed License No. DPR-69

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Exelon Generation Company, LLC (Exelon Generation, the licensee) dated November 21, 2019, as supplemented by letter dated April 16, 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-69 is hereby amended to read as follows:

2. Technical Specifications

- The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 314, are hereby incorporated into this 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

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

Attachment:
Changes to the License and Technical
Specifications

Date of Issuance: August 13, 2020

ATTACHMENT TO LICENSE AMENDMENT NO. 314
CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT 2
RENEWED FACILITY OPERATING LICENSE NO. DPR-69
DOCKET NO. 50-318

Replace the following page of the Renewed Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

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Calvert Cliffs Nuclear Power Plant, Unit 2, uses the same Appendix A as Calvert Cliffs Nuclear Power Plant, Unit 1. Accordingly, the Unit 1 Renewed Facility Operating License has been updated with the following pages, which are applicable to both Units 1 and 2.

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5.5-11

- (4) Exelon Generation pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use, in amounts as required, any byproduct, source, and special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) Exelon Generation pursuant to the Act and 10 CFR Parts 30 and 70 to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

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

(1) Maximum Power Level

Exelon Generation is authorized to operate the facility at steady-state reactor core power levels not in excess of 2737 megawatts-thermal in accordance with the conditions specified herein.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 314, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications.

- (a) For Surveillance Requirements (SRs) that are new, in Amendment 201 to Facility Operating License No. DPR-69, the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment 201. For SRs that existed prior to Amendment 201, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the Surveillance was last performed prior to implementation of Amendment 201.

(3) Less Than Four Pump Operation

The licensee shall not operate the reactor at power levels in excess of five (5) percent of rated thermal power with less than four (4) reactor coolant pumps in operation. This condition shall remain in effect until the licensee has submitted safety analyses for less than four pump operation, and approval for such operation has been granted by the Commission by amendment of this license.

(4) Environmental Monitoring Program

If harmful effects or evidence of irreversible damage are detected by the biological monitoring program, hydrological monitoring program, and the



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 336 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-53

AMENDMENT NO. 314 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-69

EXELON GENERATION COMPANY, LLC

CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2

DOCKET NOS. 50-317 AND 50-318

1.0 INTRODUCTION

By application dated November 21, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19325C128), as supplemented by letter dated April 16, 2020 (ADAMS Accession No. ML20107F765), Exelon Generation Company, LLC (the licensee) submitted a license amendment request for changes to the Calvert Cliffs Nuclear Power Plant, Units 1 and 2, Technical Specifications (TSs). The supplement dated April 16, 2020, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC or the Commission) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on April 21, 2020 (85 FR 22185).

The TSs for Calvert Cliffs, Units 1 and 2, contain inspection requirements to which the reactor coolant pump (RCP) flywheels are subject in TS 5.5.7, consistent with Section (C)(4)(b) of Regulatory Guide (RG) 1.14, Revision 1, "Reactor Coolant Pump Flywheel Integrity" (ADAMS Accession No. ML003739936). The proposed changes would revise certain inspection requirements in the Reactor Coolant Pump Flywheel Inspection Program described in the Calvert Cliffs, Units 1 and 2, TSs. Specifically, the licensee proposed extending the ultrasonic (UT) inspection interval for the RCP flywheels from 10-year to 20-year intervals based on PWROG-17011-NP-A, Revision 2, "Update for Subsequent License Renewal: WCAP-14535A, 'Topical Report on Reactor Coolant Pump Flywheel Inspection Elimination,' and WCAP-15666-A, 'Extension of Reactor Coolant Pump Motor Flywheel Examination'" (hereafter "the TR") (ADAMS Accession No. ML19318D189), and the associated NRC final safety evaluation (SE), dated September 11, 2019, for the TR (ADAMS Accession No. ML19198A056).

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," Criterion 4, "Environmental and dynamic effects design bases," state that nuclear power plant structures, systems, and components important to safety

shall be protected against the effects of missiles that might result from equipment failures. However, Calvert Cliffs was not licensed to the principal design criteria listed in 10 CFR 50, Appendix A. The principal design criteria for Calvert Cliffs are described in Section 1.4 and Appendix 1C of the Calvert Cliff Updated Final Safety Analysis Report (UFSAR). Criterion 40, "Missile Protection," in Appendix 1C requires the protection of engineered safety features from missiles that might result from plant equipment failures. The RCP flywheels may generate such missiles.

PWROG-17011, Revision 2, describes alternative inspection (or examination) guidance for RCP flywheels other than the inspection guidance described in Section (C)(4)(b) of RG 1.14, Revision 1. PWROG-17011, Revision 2, was approved by the NRC staff in the SE dated September 11, 2019, with some limitations. The SE allows the licensee to extend the inspection interval for ultrasonic (UT) inspection of the RCP flywheels from a 10-year interval to a 20-year interval for an 80-year operating life. The TR explicitly includes consideration of Calvert Cliffs, Units 1 and 2, and contains several provisions for the implementation of the TR to the Calvert Cliffs, Units 1 and 2, RCP flywheels.

The NRC SE for PWROG-17011, Revision 2, contains the following pertinent limitations:

There is no limitation or condition for the Westinghouse RCP flywheels, considering that the flywheel operating and material data used in the generic analyses have already been examined twice and accepted during plant-specific applications using WCAP-14535A and WCAP-15666-A. However, the flywheel operating and material data used in the generic analyses for Calvert Cliffs in this TR are new and need to be confirmed by the licensee:

- the normal operating speed for the RCP flywheels is 900 rpm [revolutions per minute]
- the design limiting speed for the RCP flywheels is 1125 rpm
- the maximum overspeed following a design basis LOCA [loss-of-coolant accident] is 1368 rpm
- it is appropriate to use 70 °F [degree Fahrenheit] as the medium temperature for design limiting event (Table 3-2) in the PFM analysis

3.0 TECHNICAL EVALUATION

The NRC staff confirmed the applicability of PWROG-17011, Revision 2, to the proposed license amendments. The NRC staff further confirmed that the conditions set out in the SE of the TR have been satisfied, as discussed below. Additionally, the NRC staff considered the risk insights associated with the proposed changes to the flywheel inspection program.

3.1 Confirmation of Applicability and Conditions

The inspection guidance for RCP flywheels described in the TR is applicable to Calvert Cliffs, Units 1 and 2, because the TR explicitly includes consideration of Calvert Cliffs, Units 1 and 2.

Subsection 4.1.3.3.1 of the Calvert Cliffs UFSAR states that the RCP flywheels maintain 900 rpm under normal operating conditions; therefore, the condition concerning the normal operating speed for the RCP flywheels is met.

Subsection 4.1.3.3.1 of the Calvert Cliffs UFSAR states that the RCP flywheels are designed to be capable of operating “up to 125 percent of normal operating speeds for periods not exceeding 10 seconds,” which calculates to 1,125 rpm; therefore, the condition concerning the design-limiting speed for the RCP flywheels is met.

Subsection 4.1.3.3.1 of the Calvert Cliffs UFSAR states that the RCP flywheels are estimated to reach 1,350 rpm after a rupture in the discharge piping (loss-of-coolant accident); therefore, the condition concerning the maximum overspeed following a design-basis loss-of-coolant accident is met.

The normal operating temperature of the containment to which the RCP flywheels is subject to is estimated to be 120 degrees Fahrenheit (°F) in the UFSAR (this temperature is dependent on measurement location). Containment temperatures are to be maintained between 60 °F and 125 °F per the UFSAR. In calculating non-ductile critical crack length, the analysis in the TR conservatively chose to use 70°F as representing Calvert Cliffs ambient containment temperature. The temperature used for Calvert Cliffs in the TR was conservatively chosen to be low and bounding. This value is conservative as it is below temperatures that are experienced in containment during unit operation at any time during the year. The licensee provided further details concerning the operating temperature in its April 16, 2020, supplement. Specifically, the licensee provided several temperature traces illustrating temperatures in the containment in several seasons. The staff found that it was reasonable to believe that the median medium temperature would be above 70°F and consequently that a 70°F median medium bounding analysis would be bounding. Based on the submitted information, the NRC staff found that the containment would reliably be 70 °F or higher all year round. Therefore, the condition concerning the medium temperature for the design-limiting event is met.

Based on the above, the NRC staff concluded that the licensee’s proposed changes to the Calvert Cliffs, Units 1 and 2, TSs are acceptable. The TR and associated NRC SE bounds this license amendment request because the 20-year flywheel inspection interval evaluated in PWROG-17011-NP-A for an 80-year operating life is more conservative than the current Calvert Cliffs, Units 1 and 2, license amendment request for only a 60-year operating life. Further, the staff concluded Calvert Cliffs, Units 1 and 2, meet all the conditions in the NRC SE for the TR.

3.2 Technical Conclusion

The NRC staff concludes that the proposed changes to the flywheel inspection program provide reasonable assurance of the structural integrity of the flywheels in the event of design overspeed transients, because the proposed changes are consistent with the inspection program described in the TR approved by the NRC staff. The staff finds that the proposed changes are acceptable because the proposed changes to the flywheel inspection program continue to meet the requirements of Criterion 40 to protect engineered safety features from the effects of missiles by minimizing the potential for failures of the flywheels through an acceptable inspection program.

4.0 STATE CONSULTATION

In accordance with the Commission’s regulations, the Maryland State official was notified of the proposed issuance of the amendments on June 12, 2020. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. 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 that the amendments involve no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* on April 21, 2020 (85 FR 22185). 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 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: D. Widrevitz
J. Dozier

Date: August 13, 2020

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – ISSUANCE
OF AMENDMENT NOS. 336 AND 314 CONCERNING REACTOR COOLANT
PUMP FLYWHEEL INSPECTION PROGRAM (EPID L-2019-LLA-0261)
DATED AUGUST 13, 2020

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