



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

December 14, 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: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – ISSUANCE
OF AMENDMENT NOS. 340 AND 318 TO ADD CONTAINMENT SUMP
TECHNICAL SPECIFICATIONS (EPID L-2020-LLA-0256)

Dear Mr. Rhoades:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 340 to Renewed Facility Operating License No. DPR-53 and Amendment No. 318 to Renewed Facility Operating License No. DPR-69 for the Calvert Cliffs Nuclear Power Plant, Units 1 and 2 (Calvert Cliffs). The amendments consist of changes to the Calvert Cliffs technical specifications (TS) in response to Exelon Generation Company, LLC application transmitted by letter dated November 24, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20329A334), as supplemented by letter dated July 26, 2021 (ADAMS Accession No. ML21208A007).

The amendments revise TS 3.5.2, "ECCS [Emergency Core Cooling System] - Operating," TS 3.5.3, "ECCS - Shutdown," and TS 5.5.15, "Safety Function Determination Program (SFDP)." The proposed changes also added a new TS, "Containment Emergency Sump," to Section 3.6, "Containment Systems." The changes are based on Technical Specifications Task Force Traveler TSTF-567, Revision 1, "Add Containment Sump TS to Address GSI [Generic Safety Issue] -191 Issues," dated August 2, 2017 (ADAMS Accession No. ML17214A813).

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

Sincerely,

/RA by Michael Marshall for//

Andrea G. Mayer, 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. 340 to DPR-53
2. Amendment No. 318 to DPR-69
3. Safety Evaluation

cc: Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 340
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, the licensee) dated November 24, 2020, as supplemented by letter July 26, 2021, 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. 340, 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 Renewed Facility
Operating License and Technical
Specifications

Date of Issuance: December 14, 2021

ATTACHMENT TO LICENSE AMENDMENT NO. 340
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.

Remove Page
3

Insert Page
3

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 marginal lines indicating the areas of change.

Remove Pages
3.5.2-3
3.5.3-2

5.5-16

Insert Pages
3.5.2-3
3.5.3-2
3.6.9-1
3.6.9-2
3.6.9-3
5.5-16

- (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. 340, 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. 339 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:

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.5	Verify each ECCS automatic valve that is not locked, sealed, or otherwise secured in position, in the flow path actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.6	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.7	Verify each low pressure safety injection pump stops on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.8	Deleted.	
SR 3.5.2.9	Verify the Shutdown Cooling System open-permissive interlock prevents the Shutdown Cooling System suction isolation valves from being opened with a simulated or actual Reactor Coolant System pressure signal of ≥ 309 psia.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.3.1 The HPSI train related portions of the train following Surveillance Requirements are applicable: SR 3.5.2.1 SR 3.5.2.5 SR 3.5.2.2 SR 3.5.2.6 SR 3.5.2.3 SR 3.5.2.10	In accordance with applicable Surveillance Requirements

3.6 CONTAINMENT SYSTEMS

3.6.9 Containment Emergency Sump

LC0 3.6.9 The Containment emergency sump shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment emergency sump inoperable due to containment accident generated and transported debris exceeding the analyzed limits.	A.1 Initiate action to mitigate containment accident generated and transported debris.	Immediately
	<u>AND</u>	
	A.2 Perform SR 3.4.13.1.	Once per 24 hours
	<u>AND</u>	
	A.3 Restore the containment emergency sump to OPERABLE status.	90 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. Containment emergency sump inoperable for reasons other than Condition A.</p>	<p>B.1 -----NOTES----- 1. Enter applicable Conditions and Required Actions of LCO 3.5.2, "ECCS - Operating," and LCO 3.5.3, "ECCS - Shutdown," for emergency core cooling trains made inoperable by the containment emergency sump. 2. Enter applicable Conditions and Required Actions of LCO 3.6.6, "Containment Spray and Cooling Systems," for containment spray trains made inoperable by the containment emergency sump. ----- Restore the containment emergency sump to OPERABLE status.</p>	<p>72 hours</p>
<p>C. Required Action and associated Completion Time not met.</p>	<p>C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.</p>	<p>6 hours 36 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.9.1 Verify, by visual inspection, the containment emergency sump does not show structural damage, abnormal corrosion, or debris blockage.	In accordance with the Surveillance Frequency Control Program

5.5 Programs and Manuals

A loss of safety function exists when, assuming no concurrent single failure, a safety function assumed in the accident analysis cannot be performed. For the purpose of this program, a loss of safety function may exist when a support system is inoperable, and:

- a. A required system redundant to system(s) supported by the inoperable support system is also inoperable; or
- b. A required system redundant to system(s) in turn supported by the inoperable supported system is also inoperable; or
- c. A required system redundant to support system(s) for the supported systems (a) and (b) above is also inoperable.

The SFDP identifies where a loss of safety function exists. If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered. When a loss of safety function is caused by the inoperability of a single Technical Specification support system, the appropriate Conditions and Required Actions to enter are those of the support system.

5.5.16 Containment Leakage Rate Testing Program

A program shall be established to implement the leakage testing of the containment as required by 10 CFR 50.54(o) and 10 CFR Part 50, Appendix J, Option B. This program shall be in accordance with the guidelines contained in Nuclear Energy Institute (NEI) 94-01, "Industry Guideline for Implementing Performance Based Option of 10 CFR Part 50, Appendix J," Revision 3-A, dated July 2012, and the conditions and limitations specified in NEI 94-01, Revision 2-A dated October 2008.

The peak calculated containment internal pressure for the design basis loss-of-coolant accident, P_a , is 49.7 psig. The containment design pressure is 50 psig.



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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. 318
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, the licensee) dated November 24, 2020, as supplemented by letter July 26, 2021, 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.C.(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 318, 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 Renewed Facility
Operating License and Technical
Specifications

Date of Issuance: December 14, 2021

ATTACHMENT TO LICENSE AMENDMENT NO. 318
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.

Remove Page
3

Insert Page
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Calvert Cliffs Nuclear Power Plant, Unit 2, uses the same Appendix A Technical Specifications 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.

Remove Pages
3.5.2-3
3.5.3-2

5.5-16

Insert Pages
3.5.2-3
3.5.3-2
3.6.9-1
3.6.9-2
3.6.9-3
5.5-16

- (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. 318, 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 ADD CONTAINMENT SUMP TECHNICAL SPECIFICATIONS
AMENDMENT NO. 340 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-53
AMENDMENT NO. 318 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 24, 2020, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20329A334), as supplemented by letter dated July 26, 2021 (ADAMS Accession No. ML21208A007), Exelon Generation Company, LLC (Exelon, the licensee) submitted a license amendment request (LAR) for Calvert Cliffs Nuclear Power Plant, Units 1 and 2 (Calvert Cliffs). The supplement dated July 26, 2021, 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 February 23, 2021 (86 FR 11013).

The proposed amendments would revise Technical Specification (TS) 3.5.2, "ECCS [Emergency Core Cooling System] - Operating," and TS 3.5.3, "ECCS - Shutdown," and TS 5.5.15, "Safety Function Determination Program (SFDP)." The proposed changes would also add a new TS, "Containment Sump," to Section 3.6, "Containment Systems." The proposed changes are based on Technical Specifications Task Force Traveler (TSTF) 567, Revision 1, "Add Containment Sump TS to Address GSI [Generic Safety Issue] 191 Issues," dated August 2, 2017 (ADAMS Accession No. ML17214A813). The U.S. Nuclear Regulatory Commission (NRC, the Commission) issued a safety evaluation (SE) for TSTF567, Revision 1, on July 3, 2018 (ADAMS Accession No. ML18116A606).

The licensee proposed several variations from the TS changes described in TSTF-567. The variations are described in Section 2.2.5 and evaluated in Section 3.5 of this SE.

2.0 REGULATORY EVALUATION

2.1 System Description and TS Changes

The containment sump system consists of the containment drainage flow paths, any design features upstream of the containment sump that are credited in the containment debris analysis, the containment sump strainers, the pump suction trash racks, and the inlet to the ECCS and Containment Spray System (CSS) piping. Following an accident, water from the Reactor Coolant System (RCS) and the ECCS and water sprayed into the containment from the CSS collects in the sump. In this SE, reference to “containment sump” should be considered synonymous with “containment emergency sump,” which is the licensee’s nomenclature for the system (see Section 2.2.5, “Variations from TSTF-567, Revision 1”).

Technical Specifications include limiting conditions for operation (LCOs), which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. Specified with each stated condition of the LCO are required action(s) and completion time(s) (CTs) to meet TS requirements.

2.1.1 TS 3.5.2, “ECCS - Operating”

The function of the ECCS is to provide core cooling and negative reactivity to ensure the reactor core is protected after any of the following accidents:

- a. loss-of-coolant accident (LOCA), coolant leakage greater than the capability of the normal charging system,
- b. rod ejection accident,
- c. loss of secondary coolant accident, including uncontrolled steam release or loss of feedwater, and
- d. steam generator tube rupture.

TS 3.5.2 is applicable in Modes 1, 2, and 3 (with pressurizer pressure greater than or equal to 1750 psia) and requires that two independent ECCS trains be operable to ensure that sufficient ECCS flow is available, assuming a single failure affects either train.

TS 3.5.2 helps ensure the following acceptance criteria for ECCS, established by Title 10 of the *Code of Federal Regulations* (10 CFR) 50.46, will be met following a LOCA:

- a. maximum fuel element cladding temperature is \leq 2200 degrees Fahrenheit ($^{\circ}$ F),
- b. maximum cladding oxidation is \leq 0.17 times the total cladding thickness before oxidation,
- c. maximum hydrogen generation from a zirconium water reaction is \leq 0.01 times the hypothetical amount generated if all of the metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react,
- d. core is maintained in a coolable geometry, and

- e. adequate long-term core cooling capability is maintained.

TS 3.5.2 also limits the potential for a post-trip return to power following a main steam line break event and ensures that containment temperature limits are met.

2.1.2 TS 3.5.3, "ECCS - Shutdown"

TS 3.5.3 is applicable in Mode 3 (with pressurizer pressure less than 1750 psia) and Mode 4, and requires one of the two independent (and redundant) ECCS trains to be operable to ensure that sufficient ECCS flow is available to the core following a design basis accident.

2.1.3 TS 5.5.15, "Safety Function Determination Program (SFDP)"

TS 5.5.15 establishes the SFDP which implements the requirements of Limiting Condition for Operation (LCO) 3.0.6. The SFDP ensures loss of safety function is detected and appropriate actions are taken. Upon entry into LCO 3.0.6, an evaluation shall be made to determine if loss of safety function exists. Additionally, other appropriate actions may be taken as a result of the support system inoperability and corresponding exception to entering supported system conditions and required actions.

2.2 Proposed Changes to the TSs

The proposed changes would revise TS 3.5.2, "ECCS - Operating", TS 3.5.3, "ECCS - Shutdown," and TS 5.5.15, "Safety Function Determination Program." The proposed changes would also add a new TS, "Containment Emergency Sump," to Section 3.6, "Containment Systems." The proposed changes are described below.

2.2.1 Proposed Changes to TS 3.5.2, "ECCS - Operating"

TS 3.5.2 currently contains Surveillance Requirement (SR) 3.5.2.8, which requires the following verification at a frequency in accordance with the Surveillance Frequency Control Program (SFCP):

Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.

The licensee proposed to modify and move SR 3.5.2.8 from TS 3.5.2 and include it in the new TS 3.6.9, "Containment Emergency Sump."

2.2.2 Proposed Changes to TS 3.5.3, "ECCS - Shutdown"

TS 3.5.3 currently contains SR 3.5.3.1 which refers to applicable SRs under TS 3.5.2. One of those referenced SRs is SR 3.5.2.8, as described in Section 2.2.1 of this SE.

Because the licensee proposed to modify and move SR 3.5.2.8 from TS 3.5.2 and include it in the new TS 3.6.9, the licensee also proposed to delete the reference to SR 3.5.2.8 in SR 3.5.3.1.

2.2.3 Proposed Changes to TS 5.5.15, "Safety Function Determination Program (SFDP)"

The licensee proposed to add the following sentence at the end of TS 5.5.15:

When a loss of safety function is caused by the inoperability of a single Technical Specification support system, the appropriate Conditions and Required Actions to enter are those of the support system.

2.2.4 Proposed Addition of a New Containment Sump TS

The licensee proposed to add TS 3.6.9, "Containment Emergency Sump," which requires the containment sump to be operable during Modes 1, 2, 3, and 4. Condition A specifies that if the containment sump is inoperable due to containment accident generated and transported debris exceeding the analyzed limits, then the licensee is required to: (1) initiate action to mitigate the containment accident generated and transported debris immediately, (2) perform SR 3.4.13.1 once per 24 hours, and (3) restore the containment sump to OPERABLE status within 90 days (Required Actions A.1, A.2, and A.3, respectively). SR 3.4.13.1 requires verification that the RCS operational leakage is within limits by performance of an RCS water inventory balance.

Condition B specifies that if the containment sump is inoperable for reasons other than Condition A, then the licensee is required to restore the containment sump to operable status within 72 hours. Required Action B.1 is modified by two notes which direct entering the applicable conditions and required actions of LCO 3.5.2, "ECCS – Operating," and LCO 3.5.3, "ECCS – Shutdown," for ECCS trains made inoperable by the containment sump and entering the applicable conditions and required actions of LCO 3.6.6, "Containment Spray and Cooling Systems," CSS trains made inoperable by the containment sump.

Condition C specifies that if required actions and associated CTs under Condition A and B are not met, then the licensee is required to be in Mode 3 in 6 hours and Mode 5 in 36 hours (Required Actions C.1 and C.2, respectively).

New SR 3.6.9.1 requires the licensee to verify, by visual inspection, the containment sump does not show structural damage, abnormal corrosion, or debris blockage at a frequency in accordance with the SFCP.

2.2.5 Variations from TSTF-567, Revision 1

The Calvert Cliffs TS utilize different numbering than the CE Standard Technical Specifications (STS) on which TSTF-567 was based. Specifically, SR 3.5.2.10 in the STS is number 3.5.2.8 in the Calvert Cliffs TS. Also, the new proposed TS is TS 3.6.13 in the STS while the proposed Calvert Cliffs new proposed TS is 3.6.9. The Calvert Cliffs plant specific numbering is used throughout this SE. The Calvert Cliffs TSs contain a SFCP. Therefore, the frequency for SR 3.6.9.1 is in accordance with the SFCP. Also, for TS 3.6.9 and SR 3.6.9.1, Calvert Cliffs proposes to use "containment emergency sump" instead of "containment sump." These variations are editorial and do not affect the applicability of TSTF-567 to the proposed LAR.

2.3 Applicable Regulatory Requirements and Guidance

2.3.1 Technical Specification Requirements

Section 50.36(a)(1) of 10 CFR requires each applicant for a license authorizing operation of a utilization facility to include proposed TSs in the application. That regulation also states, in part, that “[a] summary statement of the bases or reasons for such specifications, other than those covering administrative controls, shall also be included in the application, but shall not become part of the technical specifications.”

The regulations at 10 CFR 50.36(b) require:

Each license authorizing operation of a ... utilization facility ... will include technical specifications. The technical specifications will be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto, submitted pursuant to [10 CFR] 50.34 [“Contents of applications; technical information”]. The Commission may include such additional technical specifications as the Commission finds appropriate.

The categories of items required to be in the TSs are provided in 10 CFR 50.36(c). As required by 10 CFR 50.36(c)(2)(i), the TSs will include LCOs, which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. The regulation at 10 CFR 50.36(c)(2)(i) requires that when an LCO of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the condition can be met.

The regulation at 10 CFR 50.36(c)(3) requires TSs to include SRs, which 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.

The regulation at 10 CFR 50.36(c)(5) requires TSs to include administrative controls, which “are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner.”

2.3.2 Guidance

The guidance that the NRC staff considered in its review of this LAR included the following:

- NUREG-0800, Revision 3, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition,” Chapter 16.0, “Technical Specifications,” dated March 2010 (ADAMS Accession No. ML100351425), provides guidance on review of TSs.
- U.S. NRC, “Standard Technical Specifications, Combustion Engineering Plants,” NUREG1432, Volume 1, “Specifications,” and Volume 2, “Bases,” Revision 4.0, dated April 2012 (ADAMS Accession Nos. ML12102A165 and ML12102A169).

3.0 TECHNICAL EVALUATION

3.1 Proposed Changes to TS 3.5.2, "ECCS - Operating"

The licensee proposed to modify and move SR 3.5.2.8 from TS 3.5.2 to the new containment sump TS 3.6.9 (new SR 3.6.9.1). Therefore, the licensee proposed deletion of SR 3.5.2.8. The new SR 3.6.9.1 does not limit the visual inspection to the suction inlet and suction inlet strainers (or screens) as required by the current plant TSs, but instead requires inspection of the entire containment sump system. The containment sump system consists of the containment drainage flow paths, any design features upstream of the containment sump that are credited in the containment debris analysis, the containment sump strainers (or screens), the pump suction trash racks, and the inlet to the ECCS and CSS piping.

The NRC staff concludes the proposed change is acceptable since the existing TS requirements are either unchanged or expanded and continue to ensure the containment sump is unrestricted (i.e., unobstructed) and stays in proper operating condition. The proposed change meets the requirements of 10 CFR 50.36(c)(3) in that it provides an SR to assure the necessary quality of systems and components are maintained, that facility operation will be within safety limits, and that the LCOs will be met.

3.2 Proposed Changes to TS 3.5.3, "ECCS - Shutdown"

The licensee proposed to delete the reference to SR 3.5.2.8 in SR 3.5.3.1. The NRC staff concludes the proposed change is acceptable because SR 3.5.2.8 is modified and moved to the new containment sump TS. The existing SR on the containment sump is augmented (requiring inspection of additional sump components) and moved to the new specification, and a duplicative requirement to perform the SR in TS 3.5.3 is removed. The new specification retains or expands the existing requirements on the containment sump, and retains the actions to be taken when the containment sump is inoperable (with the exception of adding new actions to be taken when the containment sump is inoperable due to containment accident generated and transported debris exceeding the analyzed limits). The new actions provide the licensee time to evaluate and correct the condition instead of requiring an immediate plant shutdown.

Therefore, the NRC staff finds that the proposed change to TS 3.5.3 meets the requirements of 10 CFR 50.36(c)(3) because it provides SRs to assure the necessary quality of systems and components are maintained, that facility operation will be within safety limits, and the LCOs will be met.

3.3 Proposed Changes to TS 5.5.15, "Safety Function Determination Program (SFDP)"

The licensee proposed to add the following sentence to TS 5.5.15:

When a loss of safety function is caused by the inoperability of a single Technical Specification support system, the appropriate Conditions and Required Actions to enter are those of the support system.

LCO 3.0.6 states:

When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions

associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, additional evaluations and limitations may be required in accordance with Specification 5.5.15, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

When a loss of safety function is determined to exist, the SFDP requires entry into the appropriate conditions and required actions of the LCO of the system in which the loss of safety function exists. When a loss of function is solely due to a single TS support system the appropriate LCO is the LCO for that support system. When the loss of function is the result of multiple support systems, the appropriate LCO is the LCO for the supported systems.

The NRC staff concludes that the proposed addition to TS 5.5.15 clarifies the intent of the allowance (not to enter the conditions and required actions) provided by LCO 3.0.6 and the SFDP for single train support systems. The NRC staff concludes the proposed change is acceptable since the actions for the support system LCO adequately address the inoperability of that system. Therefore, as required by 10 CFR 50.36(c)(5), the proposed change continues to provide adequate administrative controls to assure safe operation.

3.4 Proposed Addition of Containment Sump TS

The licensee proposed to add a new TS, TS 3.6.9, to address operability requirements of the containment sump. The containment sump supports the post-accident operation of the ECCS and CSS. However, only the current ECCS TSs contain SRs related to the containment sump and the TS do not specify required actions that specifically address an inoperable containment sump. If the containment sump were found to be inoperable, as an ECCS and CSS support system, those respective LCOs would not be met. In order to address concerns related to containment sump operability due to debris accumulation described in GSI-191, "Assessment of Debris Accumulation on Pressurized Water Reactor Sump Performance," the licensee proposed to add a new specification to address containment sump inoperability and create a condition for when the sump is inoperable due to analyzed containment accident generated and transported debris.

3.4.1 Evaluation of the Applicability

The new TS requires the containment sump to be operable during Modes 1, 2, 3, and 4. The ECCS and CSS TS currently in TS are applicable during Modes 1, 2, 3, and 4.

The NRC staff finds the proposed applicability is acceptable because the applicability is consistent with the applicability of the ECCS and CSS TS, which are supported by the containment sump system.

3.4.2 Evaluation of Condition A

As described in its license amendment request dated November 12, 2020 (ADAMS Accession No. ML20317A112), the licensee analyzed the susceptibility of the ECCS and CSS to the adverse effects of post-accident debris blockage and operation with debris-laden fluids. The licensee has established limits on the allowable quantities of containment accident generated debris that could be transported to the containment sump based on its current plant configuration. In the current TSs, if unanalyzed debris sources are discovered inside containment, if errors are discovered in debris-related analyses, or if a previously unevaluated phenomenon that can affect containment sump performance is discovered, the containment sump, and the supported ECCS and CSS, may be inoperable and the TSs would require a plant shutdown with insufficient time provided in the TSs for the licensee to evaluate the condition.

In order to address this situation and to provide sufficient time to evaluate and address the condition, the licensee proposed Condition A, which is applicable when the containment sump is inoperable due to containment accident generated and transported debris exceeding the analyzed limits. Under Condition A, the operability of the containment sump with respect to debris is based on a quantity of debris evaluated and determined to be acceptable by the licensee. Conditions not evaluated under Condition A (containment accident generated and transported debris) and that affect the quantity of analyzed debris will be evaluated using a deterministic process.

Under Condition A, Required Action A.1 mandates immediate action to be initiated to mitigate the condition. The licensee's proposed TS Bases for Required Action A.1 provided the following examples of mitigating actions:

- Removing the debris source from containment or preventing the debris from being transported to the containment sump
- Evaluating the debris source against the assumptions in the analysis
- Deferring maintenance that would affect availability of the affected systems and other LOCA mitigating equipment
- Deferring maintenance that would affect availability of primary defense-in-depth systems, such as containment coolers
- Briefing operators on LOCA debris management actions
- Applying an alternative method to establish new limits

The NRC staff finds the proposed Required Action A.1 and its CT are acceptable because they place urgency on the initiation of the appropriate actions that could mitigate or reduce the impact of the identified conditions.

Concurrently, Required Action A.2 mandates SR 3.4.13.1, the RCS water inventory balance, to be performed at an increased frequency of once per 24 hours. An unexpected increase in RCS leakage could be indicative of an increased potential for an RCS pipe break, which could result in debris being generated and transported to the containment sump.

The NRC staff finds the proposed Required Action A.2 and its CT are acceptable because the more frequent RCS leakage monitoring allows operators to act in a timely fashion to minimize the potential for an RCS pipe break while the containment sump is inoperable.

In addition, Required Action A.3 requires the inoperable containment sump to be restored to operable status in 90 days. The NRC staff finds the proposed Required Action A.3 and its CT are acceptable because they provide a reasonable amount of time to diagnose, plan, and possibly mitigate the unanalyzed debris condition and prevent a loss of ECCS and CSS safety function. In addition, 90 days is adequate given the conservatism in the containment debris analysis and the proposed compensatory actions required to be implemented immediately by Required Action A.1. As discussed later in this SE section, the new SR will also require visual inspection of the containment sump system (including the containment drainage flow paths, any design features upstream of the containment sump that are credited in the containment debris analysis, the containment sump strainers, the pump suction trash racks, and the inlet to the ECCS and CSS piping for evidence of structural degradation, potential for debris bypass, and presence of corrosion or debris blockage) to ensure no loose debris is present and there is no evidence of structural distress or abnormal corrosion.

Based on the above, the NRC staff concludes that Condition A and its Required Actions are acceptable.

3.4.3 Evaluation of Condition B

Condition B specifies the required actions for when the containment sump is inoperable for reasons other than containment accident generated and transported debris exceeding the analyzed limits. Required Action B.1 requires restoring the containment sump to operable status and is modified by two notes. These two notes direct entry into the conditions and required actions for the supported systems (ECCS and CSS) upon entering Required Action B.1. Since Required Action B.1 directs entry to the corresponding ECCS and CSS TS, these notes retain the existing TS actions for ECCS or CSS trains made inoperable by an inoperable containment sump for reasons other than containment accident generated and transported debris exceeding the analyzed limits. The proposed CT for Required Action B.1 is 72 hours. This CT is consistent with the less limiting CT for a single inoperable ECCS train or CSS train so that the ECCS and CSS TS Actions control the licensee's response.

The NRC staff finds the proposed change is acceptable since it continues to provide remedial actions for when the containment sump is inoperable for reasons other than Condition A and ensures safe operation of the plant. In addition, the proposed CT is acceptable since it provides a reasonable time for repairs, and there is a low probability of an accident occurring during this period that would require the use of the containment sump.

3.4.4 Evaluation of Condition C

If operators are unable to restore the affected containment sump to operable status under Condition A or B, Required Action C.1 requires the unit to be in Mode 3 in 6 hours followed by Mode 5 in 36 hours, as required by Required Action C.2.

The NRC staff finds this proposed condition and its required actions are acceptable because the condition is consistent with the STS and the required action requires the operators to place the unit in a condition in which the LCO no longer applies. In addition, the proposed CTs allow a reasonable amount of time to decrease from full power conditions to the required plant conditions in a safe manner and without challenging plant systems.

3.4.5 Evaluation of the New SR

The licensee proposed a new SR (SR 3.6.9.1) in the new containment sump TS 3.6.9. This SR was originally located in TS 3.5.2 and referenced in TS 3.5.3. The frequency of the new SR is in accordance with the SFCP.

The proposed SR requires verification, by visual inspection, that the containment sump does not show structural damage, abnormal corrosion, or debris blockage. The new SR is stated in generic terms and expands the scope of the required visual inspection to include the entire containment sump system, whereas the current TS specifies visual examination of only the containment suction inlet and suction inlet strainers. The entire containment sump system consists of the containment drainage flow paths, the containment sump strainers (or screens), the pump suction trash racks, and the inlet to the ECCS and CSS piping.

The NRC staff finds the proposed new SR is acceptable since it expands the scope of inspection of the original SR. In addition, the proposed frequency is acceptable since it is the same as that currently required by the TSs. Therefore, the NRC staff finds that, as required by 10 CFR 50.36(c)(3), the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

3.4.6 Evaluation of Changes to the TS Bases

The licensee submitted the TS Bases changes (that correspond to the proposed TS changes) to provide the reasons for the proposed TSs. The licensee stated that the TS bases changes are consistent with the bases changes in the model application.

3.4.7 Conclusion Regarding Proposed Containment Sump TS

The new containment sump TS retains and expands the existing TS requirements except for the addition of Condition A. Condition A provides a condition for an inoperable containment sump due to containment accident generated and transported debris exceeding the analyzed limits.

The NRC staff reviewed the proposed changes against the regulations and concludes that, for the reasons discussed above, the changes continue to meet the requirements of 10 CFR 50.36(c)(2)(i) and 50.36(c)(3), and thus provide reasonable assurance that the adoption of these TSs will have the requisite requirements and controls to operate safely. Therefore, the NRC staff concludes that the proposed TS changes are acceptable.

3.5 Variations

Section 2.2.5 describes numbering differences between the Calvert Cliffs TS and TSTF-567, Revision 1. The differences are editorial and do not affect the applicability of TSTF-567 to the proposed LAR. Therefore, the NRC staff finds the TS numbering to be acceptable as proposed by the licensee in its LAR.

The Calvert Cliffs TSs contain a SFCP. Therefore, the Frequency for SR 3.6.9.1 is in accordance with the SFCP. SR 3.5.2.8, which is being replaced by SR 3.6.9.1, uses the SFCP to determine its frequency. Therefore, there is no effective change to the required frequency of the SR and the frequency is acceptable.

For TS 3.6.9 and SR 3.6.9.1, Calvert Cliffs proposes to use “Containment Emergency Sump” instead of “Containment Sump.” This variation simply clarifies the sump to which the TS and SR apply. No changes to the requirements of the TS or SR result from the change. Therefore, the variation is acceptable.

3.6 Technical Evaluation Conclusion

The NRC staff determined that the proposed TS changes meet the requirements for TS in 10 CFR 50.36 and are, therefore, acceptable. As required by 10 CFR 50.36(c)(2), the LCOs specify the lowest functional capability or performance levels of equipment required for safe operation of the facility. The proposed changes to the SR 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 and satisfy 10 CFR 50.36(c)(3). In addition, the proposed changes to the administrative controls include provisions to assure safe operation of the facility as required by 10 CFR 50.36(c)(5).

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Maryland State official was notified of the proposed issuance of the amendment on September 2, 2021. 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 February 23, 2021 (86 FR 11013). 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 Contributor: S. Smith, NRR

Date: December 14, 2021

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – ISSUANCE OF AMENDMENT NOS. 340 AND 318 TO ADD CONTAINMENT SUMP TECHNICAL SPECIFICATIONS (EPID L-2020-LLA-0256) DATED DECEMBER 14, 2021

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