



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

November 30, 2018

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 –
CORRECTION TO AMENDMENT NOS. 326 AND 304 RE: ADD
RISK-INFORMED COMPLETION TIME PROGRAM (EPID L-2016-LLA-0001)

Dear Mr. Hanson:

By letter dated October 30, 2018, the U.S. Nuclear Regulatory Commission (NRC) issued Amendment No. 326 to Renewed Facility Operating License No. DPR-53 and Amendment No. 304 to Renewed Facility Operating License No. DPR-69 for the Calvert Cliffs Nuclear Power Plant (Calvert Cliffs), Units 1 and 2, respectively. The amendments consisted of changes to the Technical Specifications (TSs) in response to your application dated February 25, 2016, as supplemented by letters dated April 3, 2017, and January 11, January 18, June 21, and August 27, 2018.

The amendments revised the Calvert Cliffs, Units 1 and 2, TSs related to completion times for required actions to provide the option to calculate longer risk-informed completion times. The amendments also added a new program, the "Risk-Informed Completion Time Program," to TS Section 5.5, "Programs and Manuals."

Subsequent to issuance of the amendments, the NRC staff was notified by Exelon Generation Company, LLC of (1) two errors that had been identified in the Safety Evaluation (SE) and (2) an indication that in several of the updated TS pages, change bars were not placed consistent with prior Calvert Cliffs TS change bar usage.

Safety Evaluation Corrections:

1. On page 7, "TS 3.5.2, Condition C – One or more containment air locks inoperable for reasons other than Conditions A or B, Required Action C.3," TS 3.5.2 should be corrected to TS 3.6.2.
2. On page 8, "TS 3.8.9, Condition A – One or more AC electrical power distribution subsystems inoperable," is missing the "Required Action A.1," at the end of the sentence.

The NRC staff has determined that these errors were inadvertently made in the SE and are entirely editorial in nature. These corrections do not change any of the conclusions in the SE associated with the issuance of Amendment Nos. 326 and 304 and do not affect the associated notice to the public. Enclosed are two replacement SE pages containing a marginal line indicating the area of change.

TS Page Corrections:

Change bar locations have been corrected for several TS pages to be consistent with prior Calvert Cliffs TS change bar usage. Enclosure 2 contains the corrected TS pages with change bars removed/relocated as appropriate for the following pages:

3.3.6-3
3.3.6-4
3.6.2-6
3.6.6-2
3.7.3-4
3.7.3-5
3.7.3-6
3.7.6-3
3.7.7-3
3.8.1-10
3.8.1-11
3.8.1-12
3.8.1-13
3.8.1-14
3.8.1-15
3.8.1-16
3.8.1-17
3.8.1-18

We apologize for any inconvenience caused. If you have any questions, please contact me at (301) 415-2871 or Michael.Marshall@nrc.gov.

Sincerely,



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. Corrected pages 7 and 8 to Safety Evaluation
2. Corrected Renewed Facility Operating License pages 3.3.6-3, 3.3.6-4, 3.6.2-6, 3.6.6-2, 3.7.3-4, 3.7.3-5, 3.7.3-6, 3.7.6-3, 3.7.7-3, 3.8.1-10, 3.8.1-11, 3.8.1-12, 3.8.1-13, 3.8.1-14, 3.8.1-15, 3.8.1-16, 3.8.1-17, 3.8.1-18

cc: Listserv

ENCLOSURE 1

Corrected pages 7 and 8 to Safety Evaluation

- TS 3.3.5 Condition A - One AFW actuation system manual start channel or actuation logic channel inoperable, Required Action A.1.
- TS 3.3.5 Condition C - One or more functions with one manual actuation channel or actuation logic channel inoperable except AFW actuation system, Required Action C.1.
- TS 3.3.6 Condition A - One or more functions with one sensor module or associated measurement channel per DG inoperable, Required Actions A.2.1 and A.2.2.
- TS 3.3.6 Condition B - One or more functions with two sensor modules or associated measurement channels per DG inoperable, Required Action B.2.2.
- TS 3.5.2 Condition A - One or more trains Inoperable and at least 100 percent of the emergency core cooling system flow equivalent to a single operable emergency core cooling system train available, Required Action A.1.
- TS 3.6.2 Condition C - One or more containment air locks inoperable for reasons other than Conditions A or B, Required Action C.3.
- TS 3.6.3 Condition A - One or more penetration flow paths with one containment isolation valve inoperable. (Only applicable to penetration flow paths with two containment isolation valves and not a closed system.) Required Action A.1.
- TS 3.6.3 Condition C - One or more penetration flow paths with one or more containment isolation valves inoperable, Required Action C.1.
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- TS 3.6.6 Condition A - One containment spray train inoperable, Required Action A.1.
- TS 3.6.6 Condition B - One containment cooling train inoperable, Required Action B.1.
- TS 3.7.3 Condition A - One steam-driven AFW pump inoperable, Required Action A.2.
- TS 3.7.3 Condition B - One motor-driven AFW pump inoperable, Required Action B.2.
- TS 3.7.3 Condition C - Two AFW pumps inoperable, Required Action C.4.
- TS 3.7.3 Condition D - One AFW train inoperable for reasons other than Conditions A, B, or C, Required Action D.1.
- TS 3.7.5 Condition A - One component cooling (CC) LOOP inoperable, Required Action A.1.
- TS 3.7.6 Condition A - One service water heat exchanger inoperable, Required Action A.2.
- TS 3.7.6 Condition B - One service water subsystem inoperable, Required Action B.1.
- TS 3.7.7 Condition A - One saltwater subsystem inoperable, Required Action A.1.

- TS 3.7.18 Condition A - One required atmospheric dump valve (ADV) line inoperable, Required Action A.1.
- TS 3.8.1 Condition A - One required LCO 3.8.1.a offsite circuit inoperable, Required Action A.3.
- TS 3.8.1 Condition B - One LCO 3.8.1.b DG inoperable, Required Action B.5.
- TS 3.8.1 Condition G - Two required LCO 3.8.1.a offsite circuits inoperable. OR One required LCO 3.8.1.a offsite circuit that provides power to the CREVS and CRETS inoperable and the required LCO 3.8.1.c offsite circuit inoperable, Required Action G.2.
- TS 3.8.1 Condition H - One required LCO 3.8.1.a offsite circuit inoperable AND One LCO 3.8.1.b DG inoperable, Required Action H.1 and H.2.
- TS 3.8.4 Condition A - One DC channel A.1 inoperable due to an inoperable battery and the reserve battery available, Required Action A.1.
- TS 3.8.4 Condition B - One DC channel inoperable for reasons other than Condition A, Required Action B.1.
- TS 3.8.7 Condition A - One required inverter inoperable, Required Action A.1.
- TS 3.8.9 Condition A - One or more AC electrical power distribution subsystems inoperable, Required Action A.1.
- TS 3.8.9 Condition B - One or more AC vital bus subsystem(s) inoperable, Required Action B.1.
- TS 3.8.9 Condition C - One DC electrical power distribution subsystem inoperable, Required Action C.1.

Also, the licensee proposed to add the following example to the TSs as Example 1.3-8:

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Restore subsystem to OPERABLE status.	7 days <u>OR</u> In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.	6 hours 36 hours

ENCLOSURE 2

**Corrected Renewed Facility Operating License
pages 3.3.6-3, 3.3.6-4, 3.6.2-6, 3.6.6-2, 3.7.3-4, 3.7.3-5,
3.7.3-6, 3.7.6-3, 3.7.7-3, 3.8.1-10, 3.8.1-11, 3.8.1-12, 3.8.1-13,
3.8.1-14, 3.8.1-15, 3.8.1-16, 3.8.1-17, 3.8.1-18**

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more Functions with more than two sensor modules or associated measurement channels inoperable.	C.1 Restore at least two sensor modules and associated measurement channels to OPERABLE status.	1 hour
D. Required Action and associated Completion Time not met.	D.1 Enter applicable Conditions and Required Actions for the associated DG made inoperable by DG-LOVS instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.6.1 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.6.2 Perform CHANNEL CALIBRATION with setpoint Allowable Values as follows:</p> <ol style="list-style-type: none"> 1. Transient Degraded Voltage Function ≥ 3630 V and ≤ 3790 V; Time Delay: ≥ 7.6 seconds and ≤ 8.4 seconds; 2. Steady State Degraded Voltage Function ≥ 3820 V and ≤ 3980 V Time Delay: ≥ 97.5 seconds and ≤ 104.5 seconds; and 3. Loss of voltage Function ≥ 2345 V and ≤ 2555 V Time Delay: ≥ 1.8 seconds and ≤ 2.2 seconds at 2450 V. 	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.6.2.2 Verify only one door in the air lock can be opened at a time.	In accordance with the Surveillance Frequency Control Program

Containment Spray and Cooling Systems
3.6.6

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. ----- NOTE ----- Not applicable when second containment spray train intentionally made inoperable. ----- Two containment spray trains inoperable.</p>	<p>C.1 Verify LCO 3.7.8, "CREVS," is met. <u>AND</u> C.2 Restore at least one containment spray train to OPERABLE status.</p>	<p>1 hour 24 hours</p>
<p>D. Two containment cooling trains inoperable.</p>	<p>D.1 Restore one containment cooling train to OPERABLE status.</p>	<p>72 hours</p>
<p>E. Required Action and associated Completion Time not met.</p>	<p>E.1 Be in MODE 3. <u>AND</u> E.2 Be in MODE 4.</p>	<p>6 hours 12 hours</p>
<p>F. Any combination of three or more trains inoperable.</p>	<p>F.1 Enter LCO 3.0.3.</p>	<p>Immediately</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two AFW trains inoperable.	F.1 -----NOTE ----- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. ----- Initiate action to restore one AFW train to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.3.1 Verify each AFW manual, power-operated, and automatic valve in each water flow path and in both steam supply flow paths to the steam turbine-driven pumps, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.3.2 Cycle each testable, remote-operated valve that is not in its operating position.	In accordance with the INSERVICE TESTING PROGRAM

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.7.3.3 -----NOTE----- Not required to be performed for the turbine-driven AFW pump until 24 hours after reaching 800 psig in the steam generators. -----</p> <p>Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.</p>	<p>In accordance with the INSERVICE TESTING PROGRAM</p>
<p>SR 3.7.3.4 -----NOTE----- Not required to be performed for the turbine-driven AFW pump until 24 hours after reaching 800 psig in the steam generators. -----</p> <p>Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.3.5 -----NOTE----- Not required to be performed for the turbine-driven AFW pump until 24 hours after reaching 800 psig in the steam generators. -----</p> <p>Verify each AFW pump starts automatically on an actual or simulated actuation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.7.3.6 -----NOTE----- Not required to be performed for the AFW train with the turbine-driven AFW pump until 24 hours after reaching 800 psig in the steam generators. ----- Verify the AFW system is capable of providing a minimum of 300 gpm nominal flow to each flow leg.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.3.7 Verify the proper alignment of the required AFW flow paths by verifying flow from the condensate storage tank to each steam generator.</p>	<p>Prior to entering MODE 2 whenever unit has been in MODE 5 or 6 for > 30 days</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.6.1 -----NOTE----- Isolation of SRW flow to individual components does not render SRW inoperable. -----</p> <p>Verify each SRW manual, power-operated, and automatic valve in the flow path servicing safety-related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.6.2 Verify each SRW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.6.3 Verify each SRW pump starts automatically on an actual or simulated actuation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.7.2	Verify each SW System automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.7.3	Verify each SW System pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>J. Required Action and associated Completion Time of Condition A, C, F, G, H, or I not met.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Required Action B.2, B.3, B.4.1, B.4.2, or B.5 not met.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Required Action E.2, E.3, E.4.1, E.4.2, or E.5 not met.</p>	<p>J.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>J.2 Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>
<p>K. Three or more required LCO 3.8.1.a and LCO 3.8.1.b AC sources inoperable.</p>	<p>K.1 Enter LCO 3.0.3.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

-----NOTE-----
 SR 3.8.1.1 through SR 3.8.1.15 are only applicable to LCO 3.8.1.a and LCO 3.8.1.b AC sources. SR 3.8.1.16 is only applicable to LCO 3.8.1.c AC sources.

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.1 -----NOTE----- Only required to be performed when SMECO is being credited for an offsite source. -----</p> <p>Verify correct breaker alignment and indicated power availability for the 69 kV SMECO offsite circuit.</p>	<p>Once within 1 hour after substitution for a 500 kV offsite circuit</p> <p><u>AND</u></p> <p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.2 Verify correct breaker alignment and indicated power availability for each required 500 kV offsite circuit.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.3 ----- NOTES -----</p> <ol style="list-style-type: none"> 1. Performance of SR 3.8.1.9 satisfies this Surveillance Requirement. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this Surveillance Requirement as recommended by the manufacturer. When modified start procedures are not used, the voltage and frequency tolerances of SR 3.8.1.9 must be met. <p>-----</p> <p>Verify each DG starts and achieves steady state voltage ≥ 4060 V and ≤ 4400 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.4 ----- NOTES -----</p> <ol style="list-style-type: none"> 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients below the load limit do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This Surveillance Requirement shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.3 or SR 3.8.1.9. <p>-----</p> <p>Verify each DG is synchronized and loaded, and operates for ≥ 60 minutes at a load ≥ 4000 kW for DG 1A and ≥ 2700 kW for DGs 1B, 2A, and 2B.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.5 Verify each day tank contains \geq a one hour supply.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.6 Check for and remove accumulated water from each day tank.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.7 Verify the fuel oil transfer system operates to automatically transfer fuel oil from storage tank[s] to the day tank.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.8 Verify interval between each sequenced load block is within $\pm 10\%$ of design interval for each emergency and shutdown load sequencer.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.9 -----NOTE----- All DG starts may be preceded by an engine prelube period. ----- Verify each DG starts from standby condition and achieves, in ≤ 10 seconds, voltage > 4060 V and frequency > 58.8 Hz, and after steady state conditions are reached, maintains voltage ≥ 4060 V and ≤ 4400 V and frequency of > 58.8 Hz and ≤ 61.2 Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.10 Verify manual transfer of AC power sources from the normal offsite circuit to the alternate offsite circuit.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.11 -----NOTE-----</p> <ol style="list-style-type: none"> 1. Momentary transients outside the load and power factor limits do not invalidate this test. 2. If performed with the DG synchronized with offsite power, the surveillance test shall be performed at the required power factor. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable. <p>-----</p> <p>Verify each DG, operating at a frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and an appropriate accident load power factor operates for ≥ 4 hours while loaded to ≥ 4000 kW for DG 1A and ≥ 3000 kW for DGs 1B, 2A, and 2B.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.12 Verify each DG rejects a load ≥ 500 hp without tripping.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.13 Verify that automatically bypassed DG trips are automatically bypassed on an actual or simulated required actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.14 Verify each DG: <ul style="list-style-type: none"> a. Synchronizes with offsite power source while loaded upon a simulated restoration of offsite power; b. Manually transfers loads to offsite power source; and c. Returns to ready-to-load operation. 	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.15 -----NOTE----- All DG starts may be preceded by an engine prelube period. -----</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated Engineered Safety Feature actuation signal:</p> <ul style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: <ul style="list-style-type: none"> 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through load sequencer, 3. maintains steady state voltage ≥ 4060 V and ≤ 4400 V, 4. maintains steady state frequency of ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. 	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.16 For the LCO 3.8.1.c AC electrical sources, SR 3.8.1.1, SR 3.8.1.2, SR 3.8.1.3, SR 3.8.1.5, SR 3.8.1.6, and SR 3.8.1.7 are required to be performed.</p>	<p>In accordance with applicable Surveillance Requirements</p>
<p>SR 3.8.1.17 -----NOTE----- Momentary transients outside the load and power factor limits do not invalidate this test. -----</p> <p>Verify each DG operates for ≥ 24 hours:</p> <p>a. For ≥ 2 hours of the test loaded to ≥ 4200 kW for DG 1A, and ≥ 3150 kW and ≤ 3300 kW for DGs 1B, 2A, and 2B, and</p> <p>b. For the remaining hours of the test loaded to ≥ 3600 kW for DG 1A, and ≥ 2700 kW and ≤ 3000 kW for DGs 1B, 2A, and 2B.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

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CORRECTION TO AMENDMENT NOS. 326 AND 304 RE: ADD
RISK-INFORMED COMPLETION TIME PROGRAM (EPID L-2016-LLA-0001)
DATED NOVEMBER 30, 2018

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