



# Calvert Cliffs Nuclear Power Plant Control Element Assembly Recovery Time Improvement Project LAR

NRC Pre-submittal Meeting  
May 10, 2022

Non-Proprietary

# Agenda

- Introductions
- Background
- Current Calvert Cliffs Nuclear Power Plant (CCNPP) Technical Specifications (TS)
- Proposed Change to TS 3.1.4
- Associated License Amendment Request (LAR) and Engineering Modifications
- Submittal Schedule

# Introductions – Constellation Team

## Licensing

- Darani Reddick, Director Licensing
- Dave Helker, Senior Manager Licensing
- Wendi Croft, Principal Regulatory Engineer
- Larry Smith, Manager Site Regulatory Assurance
- Art Simpson, Principal Regulatory Engineer

## Nuclear Fuels

- Tamara Stathes, Manager Nuclear Fuels
- Seth Spooner, Senior Manager Nuclear Fuels
- Lewis Wells, Senior Staff Fuels Engineer
- Chris Staum, Senior Staff Fuels Engineer
- Tim Schearer, Senior Staff Fuels Engineer

## Reactor Engineering

- Ken Conner, Manager Reactor Engineering
- Alex Broderick, Reactor Engineer

# Introductions – Framatome Team

## Framatome

- Rachel Love, Project Manager
- CJ Markum, Neutronics Engineer
- Morris Byram, Licensing and Regulatory Affairs
- Fernando Cortazar, Neutronics Engineer
- Mohsin Reza, Neutronics Engineer
- John Adams, Safety Analysis Supervisor
- Jeff Moore, Safety Analysis Engineer
- Jim Hoerner, Thermal Mechanics Engineer

# Background

- CCNPP has observed a trend with the current configuration where a single-point vulnerability caused a Control Element Assembly (CEA) to become misaligned in the core at full power.
  - CCNPP is replacing the current CEA drive system on both Units (2023/2024)
- Under the current TS, if a CEA is misaligned > 15 inches in Modes 1 and **2**, the site is required to:
  - Restore CEA in accordance with the Core Operating Limits Report (COLR) (0 to 2 hours based on  $F_r^T$ ) OR
  - Reduce Reactor Thermal Power (RTP) to  $\leq 70\%$  within 1 hour AND
  - Restore CEA within 2 hours, OR
  - Be in Mode 3 within 6 hours.

# Current CCNPP Technical Specifications

## 3.1 REACTIVITY CONTROL SYSTEMS

### 3.1.4 Control Element Assembly (CEA) Alignment

LCO 3.1.4 All CEAs shall be OPERABLE and aligned to within 7.5 inches (indicated position) of their respective group, and the CEA motion inhibit and the CEA deviation circuit shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more CEAs trippable and misaligned from its group by > 7.5 inches and ≤ 15 inches.	A.1 Restore CEA alignment.	1 hour
B. One CEA trippable and misaligned from its group by > 15 inches.	B.1 Restore CEA alignment.	In accordance with the COLR
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Reduce THERMAL POWER to ≤ 70% RTP. AND C.2 Restore CEA alignment.	1 hour 2 hours

# Proposed Change to TS 3.1.4

3.1 REACTIVITY CONTROL SYSTEMS				
3.1.4 Control Element Assembly (CEA) Alignment				
LCD 3.1.4	All CEA shall be OPERABLE and aligned to within 7.5 inches (indicated position) of their respective group, and the CEA motion inhibit and the CEA deviation circuit shall be OPERABLE.			
APPLICABILITY: MODES 1 and 2.				
ACTIONS				
CONDITION	REQUIRED ACTION	COMPLETION TIME		
A. One or more CEA trippable and misaligned from its group by > 7.5 inches and ≤ 15 inches.	A.1 Restore CEA alignment.	1 hour		
B. One CEA trippable and misaligned from its group by > 15 inches.	B.1 Restore CEA alignment.	In accordance with the COLR		
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Reduce THERMAL POWER to ≤ 70% RTP. AND C.2 Restore CEA alignment.	1 hour 2 hours		
D. Required Action and associated completion time of Condition B not met	D.1 Reduce THERMAL POWER to ≤ 60 % RTP AND D.2 Restore CEA Alignment	1 hour 7 days		

- Under the proposed TS change, if a CEA is misaligned > 15 inches in Modes 1 and 2, the site is required to:
  - Restore CEA in accordance with the COLR OR
  - Reduce RTP to ≤ 60% within 1 hour AND
  - Restore CEA within **7 days**
  - Be in Mode 3 within 6 hours.

**Framatome safety analysis demonstrated that up to 7 days is available to recover a misaligned CEA using the approved methodologies listed in TS 5.6.5.b.**

# Associated LAR and Engineering Modifications

- The recently withdrawn Studsvik LAR is not associated/linked with this planned LAR
  - Constellation is planning to separately submit documentation to meet Generic Letter 83-11 demonstration / verification requirements (not under 50.90)
  - The Studsvik Topical Report SSP-14-P01/028-TR is NOT an input in the Framatome analysis

**The CEA Recovery Time Improvement Project LAR does  
NOT require approval of any other LARs or Topical  
Reports planned or currently under NRC review**

# Associated LAR and Engineering Modifications

- The GARDEL Engineering Modification will
  - Install new core monitoring software
  - Be completed in December 2023
- Constellation is strategically submitting the CEA Recovery Time Improvement Project LAR in 4Q2022 to permit implementation shortly after the GARDEL Engineering Modification is complete to provide the maximum misaligned CEA recovery benefit
  - COLR change will be implemented after GARDEL is installed
  - TS Changes will be implemented during startup from CCNPP U1 2024 Spring RFO (mid-cycle U2)

# Submittal Schedule

Action	Date
• Submittal of CEA Recovery Time Improvement Project LAR	4Q2022
• CCNPP replacing the CEA drive system on Unit 2	02/2023 CCNPP U2 Spring RFO
• GARDEL Engineering Modification Complete	12/2023
• Projected NRC approval of CEA Recovery Time Improvement Project LAR	4Q2023
• CCNPP replacing the CEA drive system on Unit 1 <b>and</b> CEA Recovery Time Improvement Project LAR Implementation for both CCNPP Units	02/2024 CCNPP U1 Spring RFO

# End of Public Portion