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Columbia Generating Station License Amendment Request NRC Pre-Submittal Meeting

Agenda

- Introductions and Opening Remarks
- License Amendment Request Overview
- Regulatory Requirements and Guidance
- LAR Technical Details
- Closing Remarks/Schedule

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Introductions and Opening Remarks

- Introductions
  - Nuclear Regulatory Commission
  - Energy Northwest
- Opening Remarks
- Purpose of Pre-Submittal Meeting

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License Amendment Request Overview

- Approval of revision to Required Action in TS 3.3.2.1, Control Rod Block Instrumentation, is requested
- This revision eliminates a restriction on the number of reactor startups with an inoperable Rod Worth Minimizer while continuing to minimize accident consequences
- Reason for request

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Regulatory Requirements and Guidance

- 10 CFR 50.36, Technical Specifications
- 10 CFR 50, Appendix A, General Design Criteria
  - Criterion 13, Instrumentation and Controls
  - Criterion 20, Protection System Functions
  - Criterion 26, Reactivity Control System Redundancy and Capability
  - Criterion 28, Reactivity Limits
- NUREG-0800, Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition

LAR Technical Details - BPWS & RWM

- Banked Position Withdrawal Sequence
  - Applicable for operation between all-rods-in and 10% power
  - Limits consequences of control rod drop accident during startup/shutdown
- Rod Worth Minimizer
  - Enforces BPWS at low power levels
  - Provides backup to operator control of rod sequences
  - Ensures initial conditions of control rod drop accident are not violated
  - Can apply rod blocks but no direct plant control

LAR Technical Details – TS 3.3.2.1

- History of TS 3.3.2.1
  - RWM vs. RCSC
  - ISTS Conversion
  - GE Analysis

Current Actions

Suspend rod movement

Verify >12 rods withdrawn and verify rod movement with additional staff

Verify startup with inop RWM not performed recently and verify rod movement with additional staff

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LAR Technical Details - Accident Analysis

- Rod Drop Accident
  - Design basis reactivity insertion event
  - Maximum reactivity worth rod falling from full insertion to full withdrawal
  - Can create localized fuel melting prior to automatic systems initiating a SCRAM
  - Estimated probability of 10^{-12} per reactor year and requires a series of failures/errors
  - Consequences not directly reliant on RWM
- Rod Withdrawal Error

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LAR Technical Details - Safety

- Low Accident Probability
- Engineered Safety Feature
- Defense-in-Depth
- Safety During Startup

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License Amendment Request Overview

Current TS 3.3.2.1	Proposed TS 3.3.2.1
Compliance with BPWS required per TS 3.1.6, Rod Pattern Control	Compliance with BPWS required per TS 3.1.6, Rod Pattern Control
Control rods moved by licensed Operator in accordance with pre-established rod withdrawal sequences	Control rods moved by licensed Operator in accordance with pre-established rod withdrawal sequences
2nd licensed Operator or qualified member of the technical staff enforces adherence to BPWS if RWM inoperable and >12 rods withdrawn	2nd licensed Operator or qualified member of the technical staff enforces adherence to BPWS and rod couplings checked if RWM inoperable and <12 rods withdrawn
Reactor startup with inoperable RWM restricted to once per calendar year	Reactor startup with inoperable RWM not restricted

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License Amendment Request Overview

Current TS

C.	Rod worth minimizer (RWM) inoperable during reactor startup.	C.1 Suspend control rod movement except by scram.	Immediately
		OR	
		C.2.1.1 Verify ≥ 12 rods withdrawn.	Immediately
		OR	
		C.2.1.2 Verify by administrative methods that startup with RWM inoperable has not been performed in the last calendar year.	Immediately
		AND	
		C.2.2 Verify movement of control rods is in compliance with banked position withdrawal sequence (BPWS) by a second licensed operator or other qualified member of the technical staff.	During control rod movement

Proposed TS

C.	Rod worth minimizer (RWM) inoperable during reactor startup.	C.1 Suspend control rod movement except by scram.	Immediately
		OR	
		C.2.1.1 Verify ≥ 12 rods withdrawn.	Immediately
		OR	
		C.2.1.2 Verify rod coupling checks are performed for first 12 rods.	Within 24 hours prior to reactor startup
		AND	
		C.2.2 Verify movement of control rods is in compliance with banked position withdrawal sequence (BPWS) by a second licensed operator or other qualified member of the technical staff.	During control rod movement

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Closing Remarks

- Columbia LAR follows similar precedence
  - Oyster Creek, ML011160423
  - FitzPatrick, ML24313A147
- Additional action to perform coupling checks ensure the equipment is working as intended to preclude an accident
- All other provisions of TS 3.3.2.1 will remain

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Current Schedule

- Submittal end of March 2025
- Audit/RAI dates after July 2025 are preferable due to an extended refueling outage
- Approval requested within 12 months

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QUESTIONS?