Sequoyah Nuclear Plant

Pre-Submittal Conference for Proposed License Amendment Request Regarding a Revision to the Fuel Handling Accident Analysis and a Change to the Sequoyah Nuclear Plant Technical Specification 3.9.8 “Decay Time”

February 22, 2024

TVA TENNESSEE VALLEY AUTHORITY

Agenda

- Introduction
- Reason for the Proposed Changes
- Proposed Change to Technical Specification 3.9.8
- Technical Evaluation
- Regulatory Precedent
- Schedule for Submittal

Introduction

- Tennessee Valley Authority (TVA) is submitting a license amendment request (LAR) for Renewed Facility Operating License Nos. DPR-77 and DPR-79 for Sequoyah Nuclear Plant (SQN), Units 1 and 2.

- Approval is requested for two related items.

    - A change to Technical Specification (TS) 3.9.8, “Decay Time,” to modify the Limiting Condition for Operation (LCO), Action A Condition, and Surveillance Requirement (SR) 3.9.8.1 to reduce the duration from 100 hours to 70 hours.

    - A revised Fuel Handling Accident (FHA) dose analysis.

Reason for the Proposed Changes

- CORE ALTERATIONS are defined as the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the head removed and fuel in the vessel.

- The duration of subcriticality required by TS 3.9.8 before the start of CORE ALTERATIONS ensures that the fission product inventories assumed in the FHA analysis are met.
    - Therefore a change to TS 3.9.8 requires a change to the FHA analysis.

- By enabling an earlier start of CORE ALTERATION activities during a refueling outage, this proposed license amendment would facilitate a more efficient outage schedule.

Proposed Change to SQN Technical Specification 3.9.8

3.9.8 Decay Time

LCO 3.9.8 The reactor shall be subcritical for ≥ ~~100~~ 70 hours.

APPLICABILITY: During CORE ALTERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor subcritical for < ~~100~~ 70 hours.	A.1 Suspend CORE ALTERATIONS.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.8.1	Verify the reactor has been subcritical for ≥ ~~100~~ 70 hours.	Prior to CORE ALTERATIONS

Technical Evaluation

- The major areas of evaluation in support of this proposed change are as follows:
    - The FHA dose analysis
    - Removal of spent fuel pool decay heat

Technical Evaluation (continued)

FHA Dose Analysis

- Original selective implementation of AST for the FHA was the last time the analysis was submitted (NRC Safety Evaluation dated October 28, 2003 ML033030206)
- Revised analysis utilizes RG 1.183 R0 consistent with original approval
- All inputs and assumptions remain the same except as follows:
    - Decay time revised from 100 hrs to 70 hrs
    - X/Qs were updated
        - Determined using PAVAN and ARCON96
        - Updated MET data from 1970's to 2004-2013
        - Consistent with RG 1.145, RG 1.194, and RIS 2006-04
    - Removed TPBARs from source term

Technical Evaluation (continued)

Spent Fuel Pool Decay Heat Removal

- It is standard practice at SQN to perform a full core offload to the spent fuel pool (SFP) during a refueling outage.
- Decay heat from the spent fuel pool is removed by the spent fuel pool cooling and cleanup system (SFPCCS). The SFPCCS heat exchangers are cooled by the component cooling system (CCS).
- Operation of the SFPCCS within the constraints of heat load, SFP heat exchanger fouling and less than design values for CCS coolant temperatures ensures the maximum design temperatures of the SFP are not exceeded. Information in UFSAR Table 9.1.3-4 “SFP Cooling and Cleanup System Thermal Design Parameters Summary” provides a summary of maximum allowable decay heat loads and resultant SFP thermal parameters. This information remains unchanged.

Technical Evaluation (continued)

Spent Fuel Pool Decay Heat Removal (continued)

- Administrative controls are proceduralized to ensure that the SFP heat load limits are not exceeded.
- Plant procedures require a heat removal capability assessment to be performed every refueling outage to determine whether the heat load in the spent fuel pool is projected to exceed the limits listed in UFSAR Table 9.1.3-4. This assessment considers the fouling factor of the CCS heat exchanger, actual reactor core decay heat and spent fuel pool heat load values, essential raw cooling water (ERCW) inlet temperature, and flow rates for the ERCW and CCS systems.
- In this manner, actual plant conditions are used to determine whether core offload can be approved. The proposed change of the decay time value in TS 3.9.8 has no impact on this determination.

Regulatory Precedent

- Florida Power & Light submitted a license amendment request for Turkey Point Nuclear Plant to reduce the minimum time required for reactor subcriticality prior to removing irradiated fuel from the reactor vessel from 100 hours to 72 hours (Letter from Florida Power & Light Company to NRC, *Reduction of Decay Time for Core Offload and Revision of Technical Specification 3/4.9.3*, dated October 21, 2002 [ML023030225]).
- The NRC approved that request in a letter from the NRC to Florida Power and Light Company, *Issuance of Amendments Regarding Reduction in Decay Time from 100 to 72 Hours*, dated March 4, 2003 [ML030620746].
- The scope of that precedent is the same as the scope of this request.

Schedule for Submittal

- February 22, 2024 – Pre-submittal teleconference with NRC
- March 28, 2024 – Submit LAR to NRC
- Request NRC approval by April 2025


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