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

February 19, 2021

LICENSEE: Southern Nuclear Operating Company, Inc.

FACILITY: Joseph M. Farley Nuclear Plant, Units 1 and 2, and
Vogtle Electric Generating Plant, Units 1 and 2

SUBJECT: SUMMARY OF FEBRUARY 16, 2021, PUBLIC MEETING WITH SOUTHERN NUCLEAR OPERATING COMPANY, INC., REGARDING A PROPOSED LICENSE AMENDMENT REQUEST TO CHANGE THE CORE POWER DISTRIBUTION MONITORING SYSTEM FOR JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2, AND VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2 (EPID NO. L-2021-LRM-0011)

On February 16, 2021, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of Southern Nuclear Operating Company, Inc. (SNC, the licensee). The purpose of the meeting was for SNC to describe its plan to submit a license amendment request (LAR) to change the on-line core power distribution monitoring system (PDMS) for performing technical specification (TS) surveillances of core thermal limits for Joseph M. Farley Nuclear Plant (Farley), Units 1 and 2, and Vogtle Electric Generating Plant (Vogtle), Units 1 and 2.

A list of attendees is provided as an Enclosure.

On February 5, 2021 (Agencywide Document and Access Management System (ADAMS) Accession No. ML21036A338), the meeting was noticed on the NRC public webpage.

The SNC presented slides contained in ADAMS Accession No. ML21036A117.

Introduction

The NRC staff opened the meeting with introductory remarks and introduction of the attendees.

The SNC staff discussed the following topics: (1) background information on the Best Estimate Analyzer for Core Operations – Nuclear (BEACON™) Technical Specification Monitor (TSM), and (2) the proposed LAR.

Background

SNC representatives stated that the core power distribution information is used to verify to following core parameters: (1) control rod position (Technical Specification (TS) 3.1.7), (2) heat flux hot channel factor (TS 3.2.1), (3) nuclear enthalpy rise hot channel factor (TS 3.2.2), (4) quadrant power tilt ratio (QPTR) (TS 3.2.4), and (5) axial flux difference (AFD) for calibration of OTΔT reactor trip function (TS 3.3.1). SNC said that the core power distribution information is

typically obtained by taking a monthly flux map using the Movable Incore Detector System (MIDS).

Westinghouse developed the BEACON™ system to improve operational support for pressurized-water reactors (PWRs). It is a core monitoring and support package that uses Westinghouse standard instrumentation in conjunction with an analytical methodology for online generation of three-dimensional power distributions. The system provides the following for the core: monitoring, measurement reduction, analysis, and predictions.

BEACON™ Online Monitor (OLM) adds capability to calculate estimated critical condition, shutdown margin, load swing and other reactor engineering support functions plus on-line monitoring of core power distribution using core exit thermocouple data with no calculation of online uncertainties.

BEACON™ TSM has all the functions of BEACON™ OLM plus TS monitoring. BEACON™ TSM calculates online dynamic uncertainties based on instrumentation characteristics and time since the last flux map, plus allows the user to perform power distribution surveillances without taking a flux map using only the available instrumentation.

SNC stated that advantages of using the BEACON™-TSM application of the core power distribution monitoring system (PDMS) include: (1) essentially continuous monitoring of the core power distribution, and (2) flux maps using MIDS only required for BEACON™ calibration. SNC said that MIDS flux maps typically performed every 31 effective full power days (EFPD), and will allow extending performance of MIDS flux maps using up to 180 EFPD.

Proposed LAR

SNC representatives stated that the following TSs explicitly mention using MIDs or flux maps: (1) TS 3.1.7 Rod Position Indication, (2) TS 3.2.1 Heat Flux Hot Channel Factor (FQ(Z)), (3) TS 3.2.2 Nuclear Enthalpy Rise Hot Channel Factor ($F^N\Delta H$), (4) TS 3.2.4 Quadrant Power Tilt Ratio (QPTR), and (5) TS 3.3.1 Reactor Trip System (RTS) Instrumentation. SNC stated that it plans to revise TS to refer to using core power distribution information, and the functionality requirements for the BEACON PDMS will be included in the SNC owner-controlled Technical Requirements Manual (TRM) and implemented in plant procedures.

SNC representatives stated that the following plants have implemented BEACON™-TSM amendments:

(1) V. C. Summer, Amendment 142, April 9, 1999 (ADAMS Accession No. ML012260068),

(2) Salem Units 1 and 2, Amendments 237 (Unit 1) and 218 (Unit 2), November 6, 2000, (ADAMS Accession Nos. ML003761792 and ML003767901),

(3) Diablo Canyon Units 1 and 2, Amendments 164 (Unit 1) and 166 Unit 2, March 31, 2004, (ADAMS Accession No. ML040920245),

(4) South Texas Project Units 1 and 2, Amendments 175 (Unit 1) and 163 (Unit 2), March 31, 2006 (ADAMS Accession Nos. ML060760501 and ML060950451),

(5) Callaway, Amendment 182, March 21, 2007, (ADAMS Accession Nos. ML070460584 and ML070680350),

(6) Commanche Peak Units 1 and 2, Amendments 144 (Unit 1) and 144 (Unit 2), April 2, 2008, (ADAMS Accession Number ML080510083/ML080500627),

(7) Watts Bar Unit 1, Amendment 82, October 27, 2009, (ADAMS Accession Number ML092710381),

(8) Wolf Creek, Amendment 188, July 23, 2010, (ADAMS Accession Number ML100820517), and

(9) Prairie Island Units 1 and 2, Amendments 201 (Unit 1) and 188 (Unit 2), May 4, 2011, (ADAMS Accession Number ML103430498).

SNC representatives stated that it plans a proposed LAR to adopt a new on-line core PDMS for performing TS surveillances of core thermal limits at Farley and Vogtle. SNC said that the new monitoring system is called BEACON™ TSM. The licensee also stated that the current monitoring system used at both Farley and Vogtle plants is BEACON™ OLM. The licensee stated that Farley and Vogtle will have the option of determining TS required core power distribution information without using moveable incore detectors (MIDs), provided the BEACON™ TSM calibration requirements have been satisfied, and if the proposed LAR is approved. SNC representatives said that the scope of the proposed LAR will be similar to the Prairie Island Nuclear Generating Plant, Units 1 and 2, amendments approved by letter dated May 4, 2011 (ADAMS Accession No. ML103430498).

SNC representatives stated that the proposed LAR will provide a high-level overview on WCAP-12472-P "BEACON Core Monitoring and Operations Support System." SNC representatives said that the proposed LAR will discuss temperature and neutron monitoring used to generate power distribution, and the submittal will discuss the SPNOVA 3-D neutronics analysis Code originally used in BEACON™ as well as the 3-D Advanced Nodal Code (ANC). The licensee stated that the proposed LAR will discuss the minimum monitoring requirements per WCAP, and how the conditions from the WCAP safety evaluation report (SER) will be met. SNC representatives said that the NRC has approved four addenda to WCAP-12472-P-A, and the proposed LAR will discuss each addendum, and the applicability to Farley and Vogtle.

NRC Questions to SNC

The NRC staff asked about the uncertainty calculations. SNC representatives said that the uncertainty would be discussed in the submittal. The NRC staff questioned the specific approval that SNC would be requesting. SNC stated that it will request approval of the BEACON™ TSM only, and the BEACON™ PDMS will be moved to the TRM. The NRC staff asked about the limitations and conditions of WCAP-12472-P-A. SNC said that the submittal will contain a discussion of how SNC meets the limitations and conditions from the WCAP-12472-P-A for Farley and Vogtle. The NRC staff questioned when the proposed LAR will be submitted and what will be the requested review date. SNC stated that the proposed LAR should be submitted in approximately May 2021, and SNC will request the review to be completed in 12 months.

Public Questions to NRC

There were no members of the public in attendance.

Closing

The NRC staff made no regulatory decisions during the meeting.

Once received, the NRC staff will perform a thorough review of the proposed LAR and make any regulatory decisions in writing in a timely manner.
Public Meeting Feedback forms were available, but no comments were received.

The meeting adjourned at 10:28 am (Eastern time).

Please direct any inquiries to me at 301-415-3100.

/RA/

John G. Lamb, Senior Project Manager
Plant Licensing Branch, II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-348, 50-364, 50-424
and 50-425

Enclosure: List of Attendees

cc w/encls: Listserv

LIST OF ATTENDEES

FEBRUARY 16, 2021, PUBLIC MEETING WITH SOUTHERN NUCLEAR COMPANY

REGARDING A PROPOSED LICENSE AMENDMENT REQUEST TO CHANGE THE CORE

POWER DISTRIBUTION MONITORING SYSTEM

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

ATTENDEE	**REPRESENTING**
John G. Lamb	NRC
Matt Panicker	NRC
Shawn Williams	NRC
Kevin Heller	NRC
Robert Lukes	NRC
Josh Borromeo	NRC
Charley Peabody	NRC
Stephanie Devlin-Gill	NRC
Ryan Joyce	SNC
Bob Florian	SNC
Jennifer Baker	SNC
Jamie Coleman	SNC
Bob Sears	SNC
Wes Sparkman	SNC
James Farr	SNC
Matt Leonard	SNC

Enclosure

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SKrepel, NRR

ADAMS Accession Nos.:
ML21036A137 (Package)
ML21036A338 (Meeting Notice)
ML21047A262 (Meeting Summary)
ML21036A117 (Slides)

OFFICE	NRR/DORL/LPL2-1/PM	NRR/DORL/LPL2-1/LA	NRR/DSS/SFNB/BC
NAME	JLamb	KGoldstein	RLukes
DATE	02/16/2021	02/17/2021	02/16/2021
OFFICE	NRR/DORL/LPL2-1/BC	NRR/DORL/LPL2-1/PM	
NAME	MMarkley	JLamb	
DATE	02/18/2021	02/19/2021	

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