



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

May 1, 2020

Ms. Cheryl A. Gayheart
Regulatory Affairs Director
Southern Nuclear Operating Co., Inc.
3535 Colonnade Parkway
Birmingham, AL 35243

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2 – AUDIT SUMMARY
IN SUPPORT OF THE LICENSE AMENDMENT REQUEST TECHNICAL
SPECIFICATION (TS) 3.3.7 (EPID L-2019-LLA-0278)

Dear Ms. Gayheart:

By letter dated December 12, 2019, Southern Nuclear Operating Company (SNC, the licensee) submitted a license amendment request (LAR) for Joseph M. Farley Nuclear Plant, Units 1 and 2 (Farley). The LAR proposes to revise Technical Specification (TS) 3.3.1, "Reactor Trip System (RTS)" and TS 3.3.7, "Control Room Emergency Filtration/Pressurization System (CREFS) Actuation Instrumentation."

The licensee proposed to revise TS 3.3.7, "CREFS Actuation Instrumentation," to change the unit of measure associated with the trip setpoint of TS Table 3.3.7-1, Function 3, "Control Room Radiation Control Room Air Intake (R-35A, B)," from " ≤ 800 cpm" (counts per minute) to an equivalent value of " $\leq 1 \times 10^{-5}$ $\mu\text{Ci/cc}$." Page E-3 of the LAR states, in part, "The proposed change from 800 cpm to $\leq 1 \times 10^{-5}$ $\mu\text{Ci/cc}$ results in equivalent control room ventilation isolation protection and is considered administrative." However, the LAR did not include information that explained this equivalency. During a clarification call on April 7, 2020, it was determined that a regulatory audit of the SNC setpoint calculation that was used to make the equivalency statement in the LAR would assist the Nuclear Regulatory Commission (NRC) staff in the timely completion of the licensing review.

Southern Nuclear Design Calculation Number SM-SNC972214-001, "Bases for R-24, R-25, & R-35 Tech Spec Setpoints" was provided to NRC staff on the licensee's electronic reading room. During the week of April 13, 2020, the NRC staff conducted a regulatory audit with the objectives to review the setpoint calculation and to identify any requests for additional information necessary in order for NRC staff to reach a licensing or regulatory decision.

The preliminary results of the audit were discussed with the licensee on April 24, 2020. An Audit Summary is provided as an enclosure to this letter.

If you have any questions, please contact me at 301-415-1009 or via e-mail at Shawn.Williams@nrc.gov.

Sincerely,

/RA/

Shawn A. Williams, Senior Project Manager
Plant Licensing Branch II 1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-348 and 50-364

Enclosure:
Audit Summary

cc: Listserv

AUDIT SUMMARY

LICENSE AMENDMENT REQUEST TECHNICAL SPECIFICATION (TS) 3.3.7

SOUTHERN NUCLEAR OPERATING COMPANY

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-348 AND 50-364

1.0 INTRODUCTION

By letter dated December 12, 2019 (Agency-wide Documents Access and Management System (ADAMS) Accession No. ML19346E959), Southern Nuclear Operating Company (SNC, the licensee) submitted a license amendment request (LAR) for Joseph M. Farley Nuclear Plant, Units 1 and 2 (Farley). The LAR proposes to revise Technical Specification (TS) 3.3.1, "Reactor Trip System (RTS)" and TS 3.3.7, "Control Room Emergency Filtration/Pressurization System (CREFS) Actuation Instrumentation."

The licensee proposed to revise TS 3.3.7, "CREFS Actuation Instrumentation," to change the unit of measure associated with the trip setpoint of TS Table 3.3.7-1, Function 3, "Control Room Radiation Control Room Air Intake (R-35A, B)," from " ≤ 800 cpm" (counts per minute) to an equivalent value of " $\leq 1 \times 10^{-5}$ $\mu\text{Ci/cc}$."

Page E-3 of the LAR states:

The proposed change from 800 cpm to 1×10^{-5} $\mu\text{Ci/cc}$ results in equivalent control room ventilation isolation protection and is considered administrative.

However, the LAR did not include information that explained this equivalency. During a clarification call on April 7, 2020, it was determined that a regulatory audit of the SNC setpoint calculation that was used to make the equivalency statement in the LAR would assist the Nuclear Regulatory Commission (NRC) staff in the timely completion of the licensing review.

To support the audit, the licensee provided Southern Nuclear Design Calculation Number SM-SNC972214-001, "Bases for R-24, R-25, & R-35 Tech Spec Setpoints" on the Farley's electronic reading room. The NRC staff conducted the Regulatory Audit of this basis document at NRC Headquarters.

2.0 AUDIT ACTIVITIES

During the week of April 13, 2020, the NRC staff conducted a regulatory audit with the objectives to review the setpoint calculation Southern Nuclear Design Calculation Number SM-SNC972214-001, and to identify any requests for additional (RAIs) information necessary in order for NRC staff to reach a licensing or regulatory decision. Specifically, NRC staff reviewed the setpoint calculation to confirm the current setpoint of ≤ 800 cpm is equivalent to the proposed value of $\leq 1 \times 10^{-5}$ $\mu\text{Ci/cc}$.

Enclosure

3.0 DOCUMENTS REVIEWED AS PART OF THE AUDIT

- Technical specification dated December 12, 2019
- The Farley Updated Final Safety Analysis Report (UFSAR), Revision 28, Chapter 11 dated October 30, 2018 (ADAMS Accession No. ML18312A075)
- Southern Nuclear Design Calculation Number SM-SNC972214-001 (Farley Setpoint Calculation) via Farley electronic reading room (Certrec Portal)
- NUREG-1431, "Standard Technical Specifications Westinghouse Plants," Revision 4, Volume 1 (ADAMS Accession No. ML12100A222)

4.0 NRC STAFF OBSERVATIONS AND DISCUSSION

The NRC staff notes that the Farley UFSAR, Rev. 28, Chapter 11, Section 11.4.2, "Process and Effluent Radiation Monitoring" (page 11.4-3) states that "Sensitivity of a radiation monitor is defined as the minimum signal level which is discernible above environmental noise (background). The sensitivity of all process and effluent monitors is designed to be two times the environmental signal level." The NRC guidance in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Table 3.3.7-1, provides NRC guidance on acceptable values for the Trip Setpoint for Control Room Radiation air intakes to be " $\leq [2]$ mR/hr." In general terms, a background level of 1 mR/hr is a nominal (detectable) value associated with background radiation levels.

The NRC staff reviewed the SNC Farley Calculation SM-SNC972214-001 (the setpoint calculation). The NRC staff notes that the setpoint calculation states that the technical bases is unknown for the Tech Spec setpoints for the R-24A/B (Containment Ventilation Purge Exhaust), R-25A/B (Spent Fuel Pool Ventilation Exhaust), and R-35A/B (Control Room Ventilation Intake) radiation monitors' Tech Spec Setpoints. As a result, the setpoint calculation established acceptance criteria for "reversed-engineered" setpoints to be within ~5% of the existing Tech Spec setpoints.

The calculation concludes that "the R-35A/B technical specification setpoint value of 800 cpm is based on one-tenth of the 10 CFR 20 Derived Air Concentration (DAC) for Krypton-85 (1×10^{-4} $\mu\text{Ci/mL}$). The calculation states that this setpoint will ensures MCR [main control room] ventilation intake isolation occurs well before the intake concentration reaches the 10 CFR 20 occupational limit and that the setpoint of 800 cpm for the existing rad monitors corresponds to 1×10^{-5} $\mu\text{Ci/cc}$ of Kr-85.

The calculation references document FNP-1-RCP-252 that describes the basis as gases under consideration are Kr-85 and Xe-133, with an occupational breathing limit of 1×10^{-4} $\mu\text{Ci/mL}$. NRC staff note that the Kr-85 and Xe-133 are noble gases, which are classified as a "submersion" hazard causing an external exposure, instead of an inhalation hazard (in spite of being listed in the 10 CFR 20, Appendix B, Table 1, Column 3 under the "Inhalation" heading). During the Audit Exit discussion on April 24, 2020, the licensee agreed the reference to "inhalation hazard" was in error and should be corrected to "submersion" hazard.

The NRC staff noted the licensing bases for the 800 cpm setpoint described in the LAR and setpoint calculation implied the setpoint was set at a fraction of an occupational dose limit

(10% of a DAC). NRC staff also noted that the UFSAR, Chapter 11, Section 11.4.2, states, "The sensitivity of all process and effluent monitors is designed to be two times the environmental signal level."

During the Audit Exit discussion on April 24, 2020, the NRC staff discussed with the licensee the relationship between the sensitivity of a radiation monitor as described in the UFSAR, Chapter 11.4, and the Farley TS setpoint of 800 cpm. The licensee maintained that the original plant license technical bases is unknown for the Tech Spec setpoints and, thus, could not confirm definitively that the setpoint was based on the UFSAR, Chapter 11, Section 11.4.2.

The NRC staff reviewed the setpoint calculation to confirm independently that the proposed change from ≤ 800 cpm is equivalent to the new proposed value of $\leq 1 \times 10^{-5}$ $\mu\text{Ci/cc}$. The NRC staff notes that the information contained in the setpoint calculation on sheets 19 and 20 under "Basis Determination" in the section titled "R-35A/B (MCR Isolation) Setpoint" will need to be submitted on the docket in order for NRC staff to reach a regulatory decision.

5.0 AUDIT CONCLUSION

The NRC staff concluded the Audit on April 17, 2020, and discussed the preliminary audit results with the licensee on April 24, 2020. The NRC staff stated any necessary information needed to support a regulatory decision will be issued via formal RAs within 1 week of the issuance of the Audit Summary.

6.0 AUDIT PARTICIPANTS

NRC Participants:

- Shawn Williams, Project Manager, Office of Nuclear Reactor Regulation (NRR), Division of Reactor Licensing (DORL)
- Dawnmathews Kalathiveettil, NRR, Division of Engineering and External Hazards (DEX), Instrumentation and Controls Branch A (EICA)
- Steven Garry, NRR, Division of Risk Assessment (DRA), Radiation Protection & Consequence Branch (ARCB)

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NAME	MMarkley	SWilliams		
DATE	5/1/2020	5/1/2020		

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