

November 12, 2015

Mr. Thomas J. Palmisano
Vice President and Chief Nuclear Officer
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3 –
REQUEST FOR ADDITIONAL INFORMATION REGARDING THE LICENSE
AMENDMENT REQUEST TO MAKE CHANGES TO SPECIFIC REGULATORY
GUIDE COMMITMENTS RELATED TO THE IMPLEMENTATION OF “COLD
AND DARK” STATUS (CAC NOS. L53073 AND L53074)

Dear Mr. Palmisano:

By letter dated August 20, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15236A018), Southern California Edison submitted a proposed amendment to the San Onofre Nuclear Generating Station, Units 2 and 3 (SONGS) Updated Final Safety Analysis Report (UFSAR) for review and approval by the U.S. Nuclear Regulatory Commission (NRC).

The proposed amendment would revise Appendix 3A of the UFSAR to more fully reflect the permanently shutdown status of SONGS. The revision would include a limited set of exceptions and clarifications to referenced Regulatory Guides to reflect the significantly reduced decay heat loads in the SONGS Units 2 and 3 Spent Fuel Pools and to support corresponding design basis changes and modifications that will allow for implementation of the “cold and dark” strategy outlined in the SONGS Post-Shutdown Decommissioning Activities Report.

In order to complete its review, the NRC staff requests additional information as specified in the Enclosure. The requested information was discussed in part with your staff during a meeting at NRC headquarters on October 20, 2015, as well as during subsequent status calls over the past several weeks. In order to continue an expedited review of the subject license amendment request, please respond to this request for additional information by December 11, 2015.

T. Palmisano

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If you have any questions, please contact me at (301) 415-3178 or via e-mail at marlayna.vaaler@nrc.gov.

Sincerely,

/RA/

Marlayna Vaaler, Project Manager
Reactor Decommissioning Branch
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket Nos.: 50-361 and 50-362

Enclosure:
Request for Additional Information

cc: Distribution via Listserv

T. Palmisano

- 2 -

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ADAMS Accession No. ML15314A321

OFFICE	NMSS/RDB/PM	NMSS/DUWP/LA	NRR/DSS/SBPB	NMSS/RDB/BC
NAME	M. Vaaler	C. Holston	G. Casto**	B. Watson
DATE	11/10/15	11/10/15	11/9/15	11/12/15

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REQUEST FOR ADDITIONAL INFORMATION

PROPOSED CHANGES TO SPECIFIC REGULATORY GUIDE COMMITMENTS

SOUTHERN CALIFORNIA EDISON

SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3

DOCKET NOS. 50-361 AND 50-362

By letter dated August 20, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15236A018), Southern California Edison (SCE) requested an amendment to the facility operating licenses for the San Onofre Nuclear Generating Station, Units 2 and 3 (SONGS). The proposed amendment would revise Appendix 3A of the Updated Final Safety Analysis Report (UFSAR) to more fully reflect the permanently shutdown status of SONGS. The revision would include a limited set of exceptions and clarifications to referenced Regulatory Guides to reflect the significantly reduced decay heat loads in the SONGS Units 2 and 3 Spent Fuel Pools and to support corresponding design basis changes and modifications that will allow for implementation of the “cold and dark” strategy outlined in the SONGS Post-Shutdown Decommissioning Activities Report. The following additional information is necessary to complete the NRC staff’s technical review:

BACKGROUND

General Design Criterion (GDC) 61, “Fuel Storage and Handling and Radioactivity Control,” of Appendix A, “General Design Criteria for Nuclear Power Plants,” to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, states in part that fuel storage facilities shall be designed to prevent a significant reduction in fuel storage coolant inventory under accident conditions. In addition to the capabilities described in the SONGS UFSAR, this criterion has been incorporated into the SONGS facility operating licenses as Technical Specification 4.3.2, “Drainage,” which states:

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below Technical Specification 3.1.1 value (23 feet above the top of irradiated fuel assemblies seated in the storage racks).

The capability to prevent a significant reduction in fuel storage coolant inventory under accident conditions prevents exposure of irradiated fuel cladding to air, which could result in significant offsite radiological consequences under certain conditions. In addition, the coolant inventory provides shielding and confinement of radioactive materials, as is also specified in GDC 61.

Section 3.1 of the Enclosure to SCE’s license amendment request included the following bullets related to the prevention of a significant reduction in spent fuel pool (SFP) coolant inventory under accident conditions:

- Inadvertent draining of the SFP, including siphoning, below approximately 23 feet above the stored fuel is not adversely impacted by replacing the [spent fuel pool cooling system] SFPCS with the [island SFPCS] ISFPCS. Any leakage is detected as a result of

Enclosure

reduction in pool inventory. A sump with adequate capacity is provided to collect system leakage. A high level alarm is provided to annunciate in the control room when a high sump level is reached.

- The Fuel Handling Building including its missile barriers, the SFP and Liner, and related Fuel Pool structural components remain safety-related Seismic Category I.
- The configuration of the ISFPCS cannot adversely impact the Seismic Category I qualification of the current system. The new intake is completely separate. The discharge shares diffuser hardware but the interconnection includes flexible hardware to avoid any transfer of loads between the two systems. Should a failure occur in the Seismic Category III Island it can be isolated through manipulation of the valves used to transfer between systems. Further, should such failures lead to leakage in the primary system(s), the fluid will not be lost but would be spilled back onto the Spent Fuel Pool operating deck(s) and return to the pool(s). Should a failure occur in the Island secondary system, there is no interaction with the current system.

Section 9.1.2.3 of the SONGS UFSAR, Revision 38, stated the following with respect to spent fuel pool leakage:

The cask loading area of the spent fuel storage pool is designed to withstand the impact loading of a dropped fuel shipping cask from a maximum height of 28 feet 6 inches. Any leakage caused by localized damage shall be within the limits of the SFP makeup water supply, and shall be confined to the leak chase system.

and:

Control of liquid leakage from the spent fuel pool is maintained by a system of leak chases which are placed behind the spent fuel pool liner plates. The leak chases are connected to drain lines that terminate in the leak detection sump. Observance of leakage from a drain line will allow identification of the general location of the leak.

Section 9.1.3.3 of the SONGS UFSAR, Revision 36, stated that the previously existing safety-related and Seismic Category I makeup capacity of 150 gallons per minute exceeded the normal leakage and evaporation losses. In Revision 38 of the SONGS UFSAR, Section 9.1.3.3 was revised to state that spent fuel pool inventory makeup is via the primary plant makeup pumps from the primary plant makeup storage tank.

The following statement was included in Section 3.2, "Discussion," of the enclosure to SCE's license amendment request:

Based on the provided analysis and the results of previous studies, the NRC staff concluded air cooling to be a credible method to maintain the fuel cladding temperature below that associated with the onset of cladding damage.

The NRC staff notes that this statement was taken out of context because the conclusion was based on an assessment for a beyond-design-basis condition associated with an amendment request for an exemption from emergency planning requirements, rather than the design-basis condition appropriate for this amendment request.

REQUESTS FOR ADDITIONAL INFORMATION

1. Makeup Water for Leakage Events

- A. Describe how leakage through the spent fuel pool liner resulting from the design basis cask drop and light load handling accidents would be managed. Address the actions specified in the plant procedures to reduce or eliminate leakage through the leak collection system and the resulting time available to provide makeup water. Provide justification for the quality classification of the makeup sources based on the time available for makeup for leakage events.
- B. Provide a diagram of the spent fuel handling building identifying: 1) the location of the pools; 2) the location of permanent makeup lines; 3) the location of standpipe connections that could be used for makeup; and, 4) the path(s) designated within the fuel handling building for SFP makeup water addition using hoses from the various alternate makeup sources.
- C. Considering the large number of potential makeup sources reliant on the Quality Class III electric electrical distribution system being installed to support the decommissioning activities at SONGS, explain the extent of testing and preventive maintenance that would be applicable to the identified engine-driven and gravity makeup sources (i.e., the diesel fire water pump, sources identified for mitigating strategies, and the portable fire water pump).

2. Attached Systems

Systems connected to the SFP, such as the cooling and permanent make-up water addition systems, may contribute to inadvertent drainage. Section 9.1.3 of the SONGS UFSAR described that anti-siphon devices and check valves provided protection against inadvertent drainage, and these features are within the scope of SONGS Technical Specification 4.3.2, "Drainage." The enclosure to SCE's amendment request states that related fuel pool structural components remain safety-related, Seismic Category I, but the fuel pool cooling system is described as Seismic Category III and quality Class III or Class III Augmented Quality (AQ). Clarify the seismic design and quality class specifications for the portions of the cooling and makeup systems directly connected to the SFP that have a function to limit inadvertent or accidental drainage. Also, clarify the scope of quality assurance measures that will be maintained for equipment with the Quality Class III AQ designation.

3. Island Spent Fuel Pool Cooling System

Clarify how the drainage prevention requirement of Technical Specification 4.3.2 will be satisfied by the ISFPCS. Specifically, either describe that the system is not connected to any piping that extends to within 23 feet of the top of the stored fuel or provide a drawing and describe how any leakage from the primary loop would be returned to the SFP.