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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
Spent Fuel Pool Cooling
San Onofre Nuclear Generating Station
Units 2 and 3

References: 1) May 11, 1990, Letter from F. R. Nandy (SCE) to the Document Control Desk (NRC), Subject: Spent Fuel Pool Cooling

2) April 8, 1991, Letter from Harold B. Ray (SCE) to the Document Control Desk (NRC), Subject: Use of the Shutdown Cooling System to Provide Primary Cooling to the Spent Fuel Pool, San Onofre Nuclear Generating Station, Units 2 and 3

3) August 26, 1991, Letter from R. M. Rosenblum (SCE), to the Document Control Desk (NRC), Subject: Spent Fuel Pool Cooling

4) May 1, 1990, Letter from Lawrence E. Kokajko (NRC) to Harold B. Ray (SCE), Subject: Issuance of Amendment No. 87 to Facility Operating License No. NPF-10 and Amendment No. 77 to Facility Operating License No. NPF-15, San Onofre Nuclear Generating Station, Unit Nos. 2 and 3 (TAC Nos. 68308 and 68309)

5) June 3, 1991, Letter from Lawrence E. Kokajko (NRC) to Harold B. Ray (SCE), Subject: Issuance of Amendment Nos. 94 and 84 to Facility Operating License Nos. NPF-10 and NPF-15 for the San Onofre Nuclear Generating Station, Unit Nos. 2 and 3 (TAC Nos. 80101 and 80102)

This letter is to 1) inform the NRC of changes to our administrative controls and 2) document in one letter all Spent Fuel Pool (SFP) cooling related administrative controls, including those from the letters referenced above. The enclosure contains the administrative controls for the SFP cooling system

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in a technical specification format. These administrative controls use the term "FUNCTIONAL" in lieu of "OPERABLE" to provide a distinction for systems which are controlled by administrative controls rather that by Technical Specifications. "FUNCTIONAL" is considered a more appropriate term to use when describing the ability of a system to perform its design functions when the system is not governed by the Technical Specifications. The changes to our administrative controls will be fully implemented on January 13, 1993. No action is needed by the NRC.

BACKGROUND

In reference 1 Southern California Edison (SCE) informed the NRC of the administrative controls we previously imposed on the SFP cooling system. By references 2 and 3, we informed the NRC of several changes to these SFP cooling system administrative controls. References 4 and 5 documented the NRC review and approval of using the Shutdown Cooling (SDC) system to cool the SFP.

Design Description

As described in the San Onofre Units 2 and 3 UFSAR Section 9.1.3, the SFP cooling system includes two pumps, each powered from the class 1E electrical system, and two heat exchangers. Each SFP cooling pump can be aligned to either SFP cooling heat exchanger. The heat exchangers are cooled by the non-critical loop of the Component Cooling Water (CCW) system. The non-critical loop cooling water is supplied by either of two critical loop trains of CCW and would be isolated on receipt of a containment isolation actuation signal. Each critical loop train of CCW is cooled by an independent train of Salt Water Cooling (SWC) which transfers heat to the ultimate heat sink, the Pacific Ocean. The NRC's Safety Evaluation Report (NUREG 0712) documented that the SFP cooling system meets the redundancy requirements of General Design Criterion (GDC) 44.

The SFP cooling system is designed to maintain the SFP temperature at or below 140°F with one pump and one heat exchanger of the SFP cooling system running during normal operations. During normal refuelings (1/2 core offload) one pump and two heat exchangers of the SFP cooling system are required to maintain the SFP temperature less than or equal to 140°F. During a full core offload and a full SFP, both SFP cooling pumps and heat exchangers are required to maintain the water temperature consistent with the Units 2 and 3 Spent Fuel Pool Reracking Licensing Report. The maximum SFP water temperature was calculated to be less than 160°F.

Technical Specifications (TSs)

There is no TS which addresses the SFP cooling system and allowable outages of equipment for maintenance. The only TSs on the SFP are TS 3/4.9.11, "Water Level-Storage Pool" which requires at least 23 feet of water over the top of

irradiated fuel assemblies in the storage racks, and TS 3/4.9.13, "Spent Fuel Pool Boron Concentration," which requires a minimum boric acid concentration.

To formulate these administrative controls for the components of the SFP cooling system as well as for the components of the CCW system and the SDC system which apply to SFP cooling, we have used the corresponding requirements for Mode 6, fuel in the vessel, vessel head removed as a model. TS 3/4.9.8 "Shutdown Cooling and Coolant Circulation" requires one SDC train to be operable and in operation when the water level above the top of the reactor vessel flange is greater than or equal to 23 feet. As indicated in the basis for this Technical Specification:

> "The requirement to have two shutdown cooling trains OPERABLE when there is less than 23 feet of water above the reactor pressure vessel flange, ensures that a single failure of the operating shutdown cooling loop will not result in a complete loss of decay heat removal capacity. With the reactor vessel head removed and 23 feet of water above the reactor pressure vessel flange, a large heat sink is available for core cooling, thus in the event of a failure of the operating shutdown cooling train, adequate time is provided to initiate emergency procedures to cool the core."

DISCUSSION

In the absence of an explicit TS on the SFP cooling system, SCE will administratively control the system consistent with the comparable requirements of TS 3/4.9.8. The water level above the fuel will always be maintained greater than or equal to 23 feet as required by TS 3/4.9.11. In addition, two trains of SFP cooling will normally be functional with two trains of CCW, one aligned to supply the non-critical loop, and SWC to provide heat removal from the SFP to the Pacific Ocean. During refueling outages both SFP cooling pumps and heat exchangers will normally be functional; however, only one train of both CCW and SWC, and one diesel generator will be required to be operable.

As requested by our April 8, 1991 letter, Reference 2, and approved by your June 3, 1991 letter, Reference 4, the SDC system may be used as an alternative primary means to cool the SFP. The SDC system will be used to cool the SFP only when all fuel is removed from the reactor vessel. During times when the SDC system is used to cool the spent fuel pool only one train of SDC, CCW, SWC, and one diesel generator will be required to be operable.

Our August 26, 1991 letter, Reference 3, documents NRC concurrence for temporary shutdown of SFP cooling to determine if leakage from the CCW critical loops to the non-critical loop is within allowable limits. The leakage test is performed early in each refueling outage so any required maintenance on the CCW critical to non-critical loop isolation valves can be properly planned and implemented. The leakage test requires isolation valves to be closed from the control room, isolating the CCW non-critical loop. Two 1" vent valves in the CCW non-critical loop are then opened. Leakage across the isolation valves from the critical loops into the non-critical loop can

then be measured by collecting the water from the open vent valves. Maintenance on these CCW valves must be performed during a complete core offload when SFP cooling is provided by the SDC System.

In addition to the SFP administrative controls discussed above, this letter identifies changes to the previous controls. These changes are:

a. Increasing the allowable time for one train of SFP cooling to be out of service during normal plant and normal refueling operations from 72 hours to 7 days, and

b. Allowing removal of both trains of the SFP cooling system from service for up to 72 hours during normal, non-outage conditions to allow maintenance activities on the SFP cooling system components.

Maintenance is required on SFP cooling system components including the portion of the SFP cooling system used by the SDC system to cool the SFP. This maintenance prohibits use of both SFP cooling trains and the use of the SDC system to cool the SFP. All cooling to the SFP may be safely isolated for up to 72 hours because SCE will implement administrative controls as discussed in the enclosure to ensure that the SFP temperature does not exceed the 140°F limit for normal operation as stated in the UFSAR. These controls for two trains of SFP cooling out of service apply to all planned maintenance or testing requiring two trains of SFP cooling out of service and, as such, supersede the controls discussed above for the CCW cross train leakage testing.

ADMINISTRATIVE CONTROLS

- Enclosed are the administrative controls for SFP cooling written in a Limiting Condition for Operation (LCO) format. Each of the three LCO's are written for specific SFP heat loads:

- Applicable to MODES 1 through 5 and MODE 6 prior to fuel movement from the core to the SFP.

- Applicable to MODE 6 after commencing fuel movement from the core to the SFP for a refueling that does not result in a full core offload. (Less than or equal to 109 fuel assemblies being transferred to the spent fuel pool)

- Applicable to MODE 6 after commencing fuel movement from the core to the SFP for a full core offload. (Greater than 109 fuel assemblies being transferred to the spent fuel pool.)

SUMMARY

The administrative controls described in this letter allow required SFP cooling system maintenance and component cooling water system testing. These

controls consolidate and supersede the commitments made in References 1, 2, and 3. Procedures are now being revised to reflect the changes in our existing administrative controls.

If you have any questions or would like additional information, please let me know.

Very truly yours,

Enclosure

cc: J. B. Martin, Regional Administrator, NRC Region V
C. W. Caldwell, NRC Senior Resident Inspector, San Onofre Units 1, 2&3

SPENT FUEL POOL COOLING ADMINISTRATIVE CONTROLS

Limiting Condition for Operation

- Applicable to MODES 1 through 5 and MODE 6 prior to fuel movement from the core to the SFP.
- Applicable to MODE 6 after commencing fuel movement from the core to the SFP for a refueling that does not result in a full core offload. (Less than or equal to 109 fuel assemblies being transferred to the spent fuel pool)
- Applicable to MODE 6 after commencing fuel movement from the core to the SFP for a full core offload. (Greater than 109 fuel assemblies being transferred to the spent fuel pool.)

SPENT FUEL POOL COOLING SYSTEM

Applicable to MODES 1 through 5 and MODE 6 prior to fuel movement from the core to the spent fuel pool.

LCO: Maintain 2 spent fuel pool pumps and 2 spent fuel pool heat exchangers FUNCTIONAL. Maintain 1 spent fuel pool pump and 1 spent fuel pool heat exchanger operating to maintain the spent fuel pool temperature $\leq$ 140°F.

APPLICABILITY: MODES 1, 2, 3, 4, 5, and 6 prior to fuel movement from the core to the spent fuel pool.

ACTION:

1. With less than the required components FUNCTIONAL,

   a. Place fuel elements in a safe location and suspend all fuel handling operations.

   b. Restore the NON-FUNCTIONAL component to FUNCTIONAL status prior to reaching 140°F or a maximum of 7 days, which ever is more restrictive.

      Additionally, monitor the spent fuel pool temperature once a shift, estimate the outage time available before reaching 140°F, and initiate actions to expedite the return of the spent fuel pool cooling system to FUNCTIONAL status, as required to maintain the spent fuel pool temperature below 140°F.

      i) If the outage duration extends past 7 days, prepare a division incident report to identify the cause of the extended outage and identify corrective actions to limit future equipment outages to less than 7 days.

      ii) If the spent fuel pool temperature exceeds 140°F prepare an Operations Division Experience Report (ODER).

2. With no spent fuel pool cooling system FUNCTIONAL,

   a. Place fuel elements in a safe location and suspend all fuel handling operations.

b. Restore at least 1 spent fuel pool cooling pump and 1 heat exchanger to FUNCTIONAL and operating prior to reaching 140°F or a maximum of 72 hours, which ever is more restrictive.

Additionally, monitor the spent fuel pool temperature twice per shift, estimate the outage time available before reaching 140°F, and initiate actions to expedite the return of the spent fuel pool cooling system to FUNCTIONAL status, as required to maintain the spent fuel pool temperature below 140°F.

i) If 1 spent fuel pool cooling pump and 1 heat exchanger are not restored within 72 hours, prepare a division incident report to identify the cause of the extended equipment outage and identify corrective actions to limit future equipment outages to less than 72 hours.

ii) If the spent fuel pool temperature exceeds 140°F prepare an ODER.

iii) If the spent fuel pool temperature reaches 212°F, prepare a voluntary LER.

c. Provide for makeup to the SFP as necessary.

SURVEILLANCE REQUIREMENTS

The spent fuel pool cooling system shall be demonstrated FUNCTIONAL:

Once per shift, verify spent fuel pool pumps and spent fuel pool heat exchangers are operating and the spent fuel pool temperature < 140°F.

Once per thirty-one days, verify the spent fuel pool cooling system is FUNCTIONAL by verifying the correct breaker alignments and power availability.

SPENT FUEL POOL COOLING SYSTEM

Applicable to MODE 6 after commencing fuel movement from the core to the spent fuel pool for a refueling that does not result in a full core offload. (Less than or equal to 109 fuel assemblies being transferred to the spent fuel pool)

LCO: Maintain 2 spent fuel pool pumps and 2 spent fuel pool heat exchangers FUNCTIONAL. Maintain 1 spent fuel pool pump and 2 spent fuel pool heat exchangers operating to maintain the spent fuel pool temperature $\leq$ 140°F.

APPLICABILITY: MODE 6 after commencing fuel movement from the core to the spent fuel pool for a refueling that will not result in a full core offload. (Less than or equal to 109 fuel assemblies being transferred to the spent fuel pool)

ACTION:

1. With less than the required components FUNCTIONAL,

   a. Place fuel elements in a safe location and suspend all fuel handling operations.

   b. Restore the NON-FUNCTIONAL component to FUNCTIONAL status prior to reaching 140°F or a maximum of 7 days, which ever is more restrictive.

      Additionally, monitor the spent fuel pool temperature once a shift, estimate the outage time available before reaching 140°F, and initiate actions to expedite the return of the spent fuel pool cooling system to FUNCTIONAL status, as required to maintain the spent fuel pool temperature below 140°F.

      i) If the outage duration extends past 7 days, prepare a division incident report to identify the cause of the extended outage and identify corrective actions to limit future equipment outages to less than 7 days.

      ii) If the spent fuel pool temperature exceeds 140°F, prepare an ODER.

      iii) If the spent fuel pool temperature reaches 212°F, prepare a voluntary LER.

2. With no spent fuel pool cooling system FUNCTIONAL,

   a. Place fuel elements in a safe location and suspend all fuel handling operations.

   b. Immediately initiate action to restore at least 1 spent fuel pool cooling pump and 2 heat exchangers to FUNCTIONAL and operating.

      Additionally, monitor the spent fuel pool temperature twice per shift.

      i) If the spent fuel pool temperature exceeds 140°F prepare an ODER.

      ii) Provide for makeup to the SFP as necessary to replace lost inventory in the SFP.

      iii) If the spent fuel pool temperature reaches 212°, prepare a voluntary LER.

SURVEILLANCE REQUIREMENTS

The spent fuel pool cooling system shall be demonstrated FUNCTIONAL:

Once per shift, verify spent fuel pool pumps and spent fuel pool heat exchangers are operating and the spent fuel pool temperature $\leq$ 140°F.

Once per thirty-one days, verify the spent fuel pool cooling system is FUNCTIONAL by verifying the correct breaker alignments and power availability.

SPENT FUEL POOL COOLING SYSTEM

Applicable to MODE 6 after commencing fuel movement from the core to the spent fuel pool for a full core offload. (Greater than 109 fuel assemblies being transferred to the spent fuel pool.)

LCO: Maintain 2 spent fuel pool pumps and 2 spent fuel pool heat exchangers FUNCTIONAL and operating to maintain the spent fuel pool temperature below 160°F[1],

or after the fuel is completely offloaded from the core,

Maintain 1 train of shutdown cooling FUNCTIONAL and in operation cooling the spent fuel pool.

APPLICABILITY: MODE 6 after commencing fuel movement from the core to the spent fuel pool for a full core offload. (Greater than 109 fuel assemblies being transferred to the spent fuel pool.)

ACTION.

1. With less than the required components FUNCTIONAL or with the spent fuel pool temperature greater than or equal to 160°F,

   a. Place fuel elements in a safe location and suspend all fuel handling operations.

   b. Immediately initiate action to restore at least 2 spent fuel pool cooling pumps and 2 heat exchangers to FUNCTIONAL and operating

      or

      Return 1 train of shutdown cooling to FUNCTIONAL and operating to cool the spent fuel pool.

      Additionally, monitor the spent fuel pool temperature twice per shift.

      i) If the spent fuel pool temperature reaches 212°F prepare a voluntary LER.

   c. Provide for makeup to the SFP as necessary to replace lost inventory in the SPF.

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[1] 212°F is the limiting temperature for the spent fuel pool licensing basis, however, the post accident cleanup units are not analyzed with the pool temperature in excess of 160°F.

SURVEILLANCE REQUIREMENTS

The spent fuel pool cooling system shall be demonstrated FUNCTIONAL:

Once per shift, verify 2 spent fuel pool pumps and 2 spent fuel pool heat exchangers are operating, and the spent fuel pool temperature < 160°F.

and

Once per thirty-one days, verify the spent fuel pool cooling system is FUNCTIONAL by verifying the correct breaker alignments and power availability.

or

Once per shift, verify 1 shutdown cooling pump and 1 shutdown cooling heat exchanger are operating, and the spent fuel pool temperature < 160°F.

and

Once per thirty-one days, verify 1 shutdown cooling pump and 1 shutdown cooling heat exchanger are FUNCTIONAL by verifying the correct breaker alignments and power availability.