

May 13, 1999

Mr. Harold B. Ray
Executive Vice President
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, California 92674-0128

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3 -
ISSUANCE OF AMENDMENTS RE: SHUTDOWN COOLING AND COOLANT
CIRCULATION (TAC NOS. MA4746 AND MA4747)

Dear Mr. Ray:

The Commission has issued the enclosed Amendment No. 153 to Facility Operating License No. NPF-10 and Amendment No. 144 to Facility Operating License No. NPF-15 for San Onofre Nuclear Generating Station, Unit Nos. 2 and 3. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated May 8, 1996, as supplemented by your letter dated January 13, 1999.

These amendments modify the TSs to allow refueling operation with 20 feet of water level in the refueling cavity for many operating conditions, and at 12 feet of water level for certain specified conditions and restore a phrase to a note to Limiting Conditions for Operation for TSs 3.9.4 and 3.9.5 that was inadvertently deleted by previous amendments.

A copy of our related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

/s/

L. Raghavan, Senior Project Manager, Section 2
Project Directorate IV-2 and Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

9905260081 990513
PDR ADOCK 05000361
P PDR

Docket Nos. 50-361 and 50-362

- Enclosures: 1. Amendment No. 153 to NPF-10
2. Amendment No. 144 to NPF-15
3. Safety Evaluation

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DISTRIBUTION: See attached list *See previous concurrence

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NAME	LRaghavan: LR		CJamerson CJ		EWWeiss	MZobler	SDembek SD
DATE	5/13/99		5/13/99		02/22/99	5/5/99	5/13/99

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May 13, 1999

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Executive Vice President
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, California 92674-0128

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3 -
ISSUANCE OF AMENDMENTS RE: SHUTDOWN COOLING AND COOLANT
CIRCULATION (TAC NOS. MA4746 AND MA4747)

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Sincerely,

/s/

L. Raghavan, Senior Project Manager, Section 2
Project Directorate IV-2 and Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-361 and 50-362

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OFFICE	PDIV-2/PM	E	PDIV-D/LA	E	**SC:SRXB	*OGC	PDIV-2/SC
NAME	LRaghavan: LR		CJamerson CJ		EWWeiss	MZobler	SDembek SD
DATE	5/13/99		5/13/99		02/22/99	5/5/99	5/13/99

OFFICIAL RECORD COPY



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20565-0001

May 13, 1999

Mr. Harold B. Ray
Executive Vice President
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, California 92674-0128

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3 -
ISSUANCE OF AMENDMENTS RE: SHUTDOWN COOLING AND COOLANT
CIRCULATION (TAC NOS. MA4746 AND MA4747)

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These amendments modify the TSs to allow refueling operation with 20 feet of water level in the refueling cavity for many operating conditions, and at 12 feet of water level for certain specified conditions and restore a phrase to a note to Limiting Conditions for Operation for TSs 3.9.4 and 3.9.5 that was inadvertently deleted by previous amendments.

A copy of our related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

A handwritten signature in black ink, appearing to read "L. Raghavan", written over a horizontal line.

L. Raghavan, Senior Project Manager, Section 2
Project Directorate IV-2 and Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-361 and 50-362

Enclosures: 1. Amendment No. 153 to NPF-10
2. Amendment No. 144 to NPF-15
3. Safety Evaluation

cc w/encls: See next page

San Onofre Nuclear Generating Station, Units 2 and 3

cc:

**Mr. R. W. Krieger, Vice President
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**Mayor
City of San Clemente
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**Mr. Dwight E. Nunn, Vice President
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, California 92674-0128**

DATED: May 13, 1999

AMENDMENT NO. 153 TO FACILITY OPERATING LICENSE NO. NPF-10 - SONGS 2
AMENDMENT NO. 144 TO FACILITY OPERATING LICENSE NO. NPF-15 - SONGS 3

Docket File (50-361/50-362)

PUBLIC

PDIV-2 r/f

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503107



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

SOUTHERN CALIFORNIA EDISON COMPANY

SAN DIEGO GAS AND ELECTRIC COMPANY

THE CITY OF RIVERSIDE, CALIFORNIA

THE CITY OF ANAHEIM, CALIFORNIA

DOCKET NO. 50-361

SAN ONOFRE NUCLEAR GENERATING STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 153
License No. NPF-10

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Southern California Edison Company, et al. (SCE or the licensee), dated May 8, 1996, as supplemented by letter dated January 13, 1999, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C(2) of Facility Operating License No. NPF-10 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 153 , are hereby incorporated in the license. Southern California Edison Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 30 days of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Stephen Dembek, Chief, Section 2
Project Directorate IV-2 & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: May 13, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 153

FACILITY OPERATING LICENSE NO. NPF-10

DOCKET NO. 50-361

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

INSERT

3.9-6

3.9-6

3.9-7

3.9-7

3.9-8

3.9-8

3.9-9

3.9-9

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3.9-9a

3.9 REFUELING OPERATIONS

3.9.4 Shutdown Cooling (SDC) and Coolant Circulation-High Water Level

LCO 3.9.4 One SDC loop shall be OPERABLE and in operation.

-----NOTE-----
With the upper guide structure removed from the reactor vessel the required SDC loop may be removed from operation for ≤ 2 hours per 8-hour period, provided:

- a. The maximum RCS temperature is maintained $\leq 140^\circ\text{F}$.
- b. No operations are permitted that would cause a reduction of the RCS boron concentration.
- c. The capability to close the containment penetrations with direct access to the outside atmosphere within the calculated time to boil is maintained.
- d. The reactor cavity water level is maintained ≥ 20 feet above the top of the reactor pressure vessel flange, or, for core alterations, ≥ 23 feet above the top of the reactor pressure vessel flange.

-----NOTE-----
A containment spray pump may be used in place of a low pressure safety injection pump in either or both shutdown cooling loops to provide shutdown cooling flow.

APPLICABILITY: MODE 6 with the water level ≥ 20 ft above the top of the reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDC loop requirements not met.	A.1 Suspend operations involving a reduction in reactor coolant boron concentration.	Immediately
	AND	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 Suspend loading irradiated fuel assemblies in the core.	Immediately
	<u>AND</u>	
	A.3 Initiate action to satisfy SDC loop requirements.	Immediately
	<u>AND</u>	
	A.4 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours or within the calculated time to boil, whichever is less

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.4.1 Verify one SDC loop is in operation and circulating reactor coolant at a flow rate of ≥ 2200 gpm.	12 hours

3.9 REFUELING OPERATIONS

3.9.5 Shutdown Cooling (SDC) and Coolant Circulation—Low Water Level

LCO 3.9.5 Two SDC loops shall be OPERABLE, and one SDC loop shall be in operation.

-----NOTE-----
A containment spray pump may be used in place of a low pressure safety injection pump in either or both shutdown cooling loops to provide shutdown cooling flow.

or

One loop of shutdown cooling shall be OPERABLE and operating under the following conditions:

- 1) The reactor has been shutdown for at least 6 days.
- 2) The water level above the reactor vessel flange is 12 feet or greater.
- 3) The associated loop of Salt Water Cooling (SWC) is OPERABLE and operating.
- 4) The associated Component Cooling Water (CCW) pump and the CCW swing pump are OPERABLE, and the associated CCW loop is OPERABLE and operating.
- 5) The Shutdown Cooling system is operating using the containment spray pump, and the associated high pressure safety injection pump and the low pressure safety injection pump are OPERABLE and at ambient temperature, available for injection from the RWST.
- 6) The RWST contains the volume of water required to raise the level to 20 feet above the reactor vessel flange.
- 7) The associated Emergency Diesel Generator is OPERABLE.
- 8) The water temperature of the SDC system is maintained less than 120°F.

APPLICABILITY: MODE 6 with the water level < 20 ft above the top of reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One SDC loop inoperable.</p> <p>(Applicable to initial conditions of two shutdown cooling loops OPERABLE)</p>	<p>A.1 Initiate action to restore SDC loop to OPERABLE status.</p> <p><u>OR</u></p> <p>A.2 Initiate actions to establish ≥ 20 ft of water above the top of reactor vessel flange.</p>	<p>Immediately</p> <p>Immediately</p>
<p>B. One SDC loop operable, less than 20 feet of water above the reactor vessel flange and any of the 8 requirements not met</p> <p>(Applicable to initial conditions of one shutdown cooling loop OPERABLE and operating with requirements 1-8)</p>	<p>B.1 Initiate actions to establish ≥ 20 feet of water.</p>	<p>Immediately</p>
<p>C. No SDC loop OPERABLE or in operation.</p>	<p>C.1 Suspend operations involving a reduction in reactor coolant boron concentration.</p> <p><u>AND</u></p>	<p>Immediately</p> <p>(continued)</p>



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

SOUTHERN CALIFORNIA EDISON COMPANY

SAN DIEGO GAS AND ELECTRIC COMPANY

THE CITY OF RIVERSIDE, CALIFORNIA

THE CITY OF ANAHEIM, CALIFORNIA

DOCKET NO. 50-362

SAN ONOFRE NUCLEAR GENERATING STATION, UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 144
License No. NPF-15

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Southern California Edison Company, et al. (SCE or the licensee) dated May 8, 1996, as supplemented by letter dated January 13, 1999, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

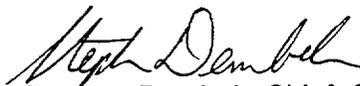
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C(2) of Facility Operating License No. NPF-15 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 144 , are hereby incorporated in the license. Southern California Edison Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 30 days of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Stephen Dembek, Chief, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: May 13, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 144

FACILITY OPERATING LICENSE NO. NPF-15

DOCKET NO. 50-362

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.9-6

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INSERT

3.9-6

3.9-7

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3.9-9

3.9-9a

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 Suspend loading irradiated fuel assemblies in the core.	Immediately
	<u>AND</u>	
	A.3 Initiate action to satisfy SDC loop requirements.	Immediately
	A.4 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours or within the calculated time to boil, whichever is less

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.4.1 Verify one SDC loop is in operation and circulating reactor coolant at a flow rate of ≥ 2200 gpm.	12 hours

3.9 REFUELING OPERATIONS

3.9.5 Shutdown Cooling (SDC) and Coolant Circulation - Low Water Level

LCO 3.9.5 Two SDC loops shall be OPERABLE, and one SDC loop shall be in operation.

-----NOTE-----
A containment spray pump may be used in place of a low pressure safety injection pump in either or both shutdown cooling loops to provide shutdown cooling flow.

or

One loop of shutdown cooling shall be OPERABLE and operating under the following conditions:

- 1) The reactor has been shutdown for at least 6 days.
- 2) The water level above the reactor vessel flange is 12 feet or greater.
- 3) The associated loop of Salt Water Cooling (SWC) is OPERABLE and operating.
- 4) The associated Component Cooling Water (CCW) pump and the CCW swing pump are OPERABLE, and the associated CCW loop is OPERABLE and operating.
- 5) The Shutdown Cooling system is operating using the containment spray pump, and the associated high pressure safety injection pump and the low pressure safety injection pump are OPERABLE and at ambient temperature, available for injection from the RWST.
- 6) The RWST contains the volume of water required to raise the level to 20 feet above the reactor vessel flange.
- 7) The associated Emergency Diesel Generator is OPERABLE.
- 8) The water temperature of the SDC system is maintained less than 120°F.

APPLICABILITY: MODE 6 with the water level < 20 ft above the top of reactor vessel flange.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 153 TO FACILITY OPERATING LICENSE NO. NPF-10
AND AMENDMENT NO. 144 TO FACILITY OPERATING LICENSE NO. NPF-15
SOUTHERN CALIFORNIA EDISON COMPANY
SAN DIEGO GAS AND ELECTRIC COMPANY
THE CITY OF RIVERSIDE, CALIFORNIA
THE CITY OF ANAHEIM, CALIFORNIA
SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3
DOCKET NOS. 50-361 AND 50-362

1.0 INTRODUCTION

By application dated May 8, 1996, as supplemented by letter dated January 13, 1999, Southern California Edison Company, et al. (SCE or the licensee) requested changes to the Technical Specifications (TSs) (Appendix A to Facility Operating License Nos. NPF-10 and NPF-15) for San Onofre Nuclear Generating Station, Unit Nos. 2 and 3. The proposed changes would revise TSs 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation -- High Water Level," and 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation -- Low Water Level." These changes would (1) reduce the minimum water level allowed in the reactor cavity when two loops of SDC are required from 23 feet to 20 feet above the reactor coolant pressure vessel flange; (2) increase the time that a required loop of the SDC system may be removed from service from up to 1 hour per 8-hour period to up to 2 hours per 8-hour period, provided the upper guide structure has been removed from the reactor pressure vessel; (3) allow for running only one loop of SDC with additional requirements when the water level in the reactor cavity is less than 20 feet but greater than 12 feet above the reactor pressure vessel flange; (4) add an action to be taken when operating only one loop of SDC with less than 20 feet of water above the reactor pressure vessel flange when the specified requirements are not met; and (5) restore provisions inadvertently deleted by a previous TS amendment.

The staff also notes that Amendment No. 116 for SONGS Unit 2, and Amendment No. 105 for SONGS Unit 3, dated February 15, 1995, approved similar TS changes (except for item (5)) on a one-time basis. The licensee requested the proposed TS changes to reduce outage durations. The required minimum water level during fuel movement will still remain 23 feet above the reactor vessel flange as specified in TS 3.9.10.

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2.0 BACKGROUND

The two low pressure safety injection (LPSI) pumps provide SDC flow through the reactor core and through the SDC system heat exchanges to provide shutdown plant cooling. As the result of a recent design change, the containment spray pumps may also be aligned to be used in place of LPSI pumps in either or both SDC loops to provide SDC flow.

Limiting Conditions for Operation (LCO) in TSs 3.9.4 and 3.9.5 define the operability requirements for the SDC system during refueling operations (Mode 6) while the water level above the top of the reactor vessel flange in the reactor cavity is at least 23 feet, and less than 23 feet, respectively. The 23-foot water level was originally chosen to assure a large heat sink was available for core cooling so that in the event of a failure of the operating SDC loop, there would be adequate time to initiate alternate procedures to cool the reactor core.

3.0 EVALUATION

3.1 Proposed Changes to TS 3.9.4

The licensee proposes to reduce the minimum allowable water level in the reactor cavity from 23 feet to 20 feet above the reactor pressure vessel flange for one train of SDC in operation, and increase the time that the required loop of the SDC system may be removed from service from up to 1 hour per 8-hour period to up to 2 hours per 8-hour period.

The licensee has added the following operational restrictions under these conditions:

- Maximum reactor coolant system (RCS) temperature will be maintained $\leq 140^{\circ}\text{F}$;
- No operations will be permitted that would cause a reduction of the RCS boron concentration;
- The licensee will maintain the capability to close the containment penetrations that have direct access to the outside atmosphere within the calculated time to boil; and
- The licensee will remove the upper guide structure from the reactor pressure vessel during the time that the required loop of the SDC system is removed from service (up to 2 hours per 8-hour period).

Requiring that the maximum RCS temperature be maintained $\leq 140^{\circ}\text{F}$ during all conditions, including the time when the SDC train is removed from service to test the full flow LPSI pump suction header valve, provides adequate time for the operators to take appropriate actions to maintain RCS inventory. It takes approximately 6 days to reach the point in the outage where the reactor head is removed and the cavity is filled with water. The time to boil with initial conditions of 6 days following shutdown and 20 feet of water above the reactor vessel flange is approximately 3.5 hours. The time to core uncover with these same initial conditions is approximately 77.5 hours. The time to boil assuming 23 feet of water above the reactor vessel flange is approximately 4.0 hours. The reduction of water from 23 feet above the reactor vessel flange to 20 feet above the reactor vessel flange has little impact on the time to boil, thus the basis of having a sufficient heat sink to provide core cooling and allow time to take other actions to cool the core in the event of losing the operating loop of SDC is still maintained.

By prohibiting operations that would cause a reduction in the RCS boron concentration, the likelihood of an inadvertent boron dilution event is minimized. Boron stratification due to temperature gradients will not develop to any significant extent during the time when no SDC loop is in operation. The use of adequately borated water for injection into the RCS during the test provides assurance that the test itself will not lead to a boron dilution event. When the SDC system is operating, the minimum SDC flow rate of 2200 gpm imposed by Surveillance Requirement (SR) 3.9.4.1 and SR 3.9.5.2 is sufficient to ensure complete mixing of boron within the RCS.

The capability to close the containment penetrations that have direct access to the outside atmosphere within the calculated time to boil provides assurance that the likelihood of radioactive material releases to the environment is minimized. The licensee stated in its request that containment closure can be achieved within 1 hour, even in the event of a loss of offsite power. The safety function of the containment to control possible radioactive release to the environment is, therefore, maintained.

Specifically requiring that the upper guide structure will be removed assures that natural convection heat transfer is not impeded in the reactor vessel during the time that the SDC loop is secured for testing.

The time that the SDC system is allowed to be secured is proposed to be increased to 2 hours. This is acceptable because of the operational restrictions identified in the second paragraph of Section 3.1, above, which ensure maintaining appropriate operating conditions.

During the short test of the full flow LPSI pump suction header valve, the water level is being increased by approximately 4 to 20 inches with a high flow rate of cool borated water from the refueling water storage tank. The 6-hour period following the test that the SDC system would be required to run is adequate to provide mixing and prevent boron stratification.

In its January 13, 1999, supplemental amendment request, the licensee stated, "[i]n the request for the October 10, 1991, waiver of compliance, the increase in the RCS temperature without SDC in operation due to decay heat was estimated to be a maximum of 2.6°F per hour." This temperature increase rate is not generally applicable to the conditions covered by the licensee's amendment request, and was not credited by the staff in this evaluation.

Based on the above discussion, the staff finds acceptable the licensee's proposal to lower the minimum allowable water level in TS 3.9.4 to 20 feet above the top of the reactor vessel flange, and increase the time to 2 hours per 8-hour period that a required loop of the SDC system may be removed from service. The staff concludes that the operational restrictions that the licensee proposed will continue to assure that a sufficiently large heat sink will be available for core cooling, so that in the event of a failure of the operating SDC loop, adequate time would be available to initiate alternate means to cool the core. In addition, the staff concludes that the operational restrictions will reasonably assure adequate mixing and prevent boron stratification in the RCS.

3.2 Proposed Changes to TS 3.9.5

To maintain consistency with TS 3.9.4, the licensee proposed to change the applicability of TS 3.9.5 to reflect actions required when the water level is less than 20 feet above the top of the

reactor vessel flange. Currently, TS 3.9.5 is applicable when the water level is less than 23 feet above the top of the reactor vessel flange.

The licensee proposed to add the following operational restrictions to TS 3.9.5 to enhance plant safety under reduced water inventory conditions.

- a. The reactor will be shut down for at least 6 days;
- b. The water level above the reactor vessel flange is 12 feet or greater;
- c. The associated loop of salt water cooling (SWC) is OPERABLE and operating;
- d. The associated component cooling water (CCW) pump and the CCW swing pump are OPERABLE, and the associated CCW loop is OPERABLE and operating;
- e. The SDC system is operating using the containment spray pump, and the associated high pressure safety injection (HPSI) pump and the low pressure safety injection (LPSI) pump are OPERABLE and at ambient temperature, available for injections from the refueling water storage tank (RWST);
- f. The RWST contains the volume of water required to raise the refueling water level to 20 feet above the reactor vessel flange;
- g. The associated emergency diesel generator is OPERABLE; and
- h. The water temperature of the SDC system is maintained less than 120°F.

Requiring the reactor to be shut down for at least 6 days ensures that the time to boil is greater than twice the time it would take to establish containment closure, and significantly more time than it would take to commence reactor cavity fill with the required standby equipment. Furthermore, the time to boil and time to uncover the core increase with each subsequent day following reactor shutdown. With the reactor cavity water level at 12 feet above the flange and at 6 days after shutdown, it takes approximately 2.3 hours to boil and 48 hours to uncover the core. Since containment closure can be achieved within 1 hour even in the absence of offsite power, this will provide a minimum of a 1.3 hour margin. If the operating SDC train becomes inoperable, alternate means of providing coolant to the RCS can be initiated in approximately 30 minutes, and the water level can be raised to the 20-foot level above the reactor vessel flange in approximately 25 additional minutes.

Limiting the water level above the reactor vessel flange to 12 feet or greater provides sufficient coolant inventory to allow time for corrective actions. Although 12 feet will be the absolute lower limit, the normal lower limit will be closer to the 12-foot 9-inch level needed to support the planned outage work. The reactor pressure vessel flange is approximately 11 feet above the top of the fuel. Therefore, the water level will be a minimum of 23 feet above the fuel, thus maintaining a large volume of water to provide a heat sink.

Operational restrictions c, d, e, f, and g assure that the necessary support systems providing cooling to the core are operable and in operation, and assure the availability of backup systems to provide coolant to the RCS. In the event that CCW is lost, cooling flow to all ECCS

[emergency core cooling system] pumps is also lost. The LPSI pump can start cold and raise the reactor cavity water level from 12 feet above the reactor vessel flange to 20 feet above the reactor vessel flange in approximately 25 minutes without CCW flow. The HPSI pump will also be maintained as a standby pump ready to increase the water volume if needed. In support of this contingency, the licensee will maintain the RWST with the volume of water needed to raise the level to 20 feet above the reactor vessel flange.

Operational restriction h. requires that the water temperature of the SDC system be maintained less than 120°F. This provides the operators with sufficient time to react to potential loss of cooling situations. The normal operating temperature for water levels below 20 feet are typically less than 100°F.

TS 3.9.5 further stipulates that if only one loop of the SDC system is operable with less than 20 feet of water above the reactor vessel flange and any of the required operational restrictions are not met, the licensee will take action immediately to establish greater than or equal to 20 feet above the reactor vessel flange. By taking action to restore the level to 20 feet above the reactor vessel flange, the licensee will place the plant in TS 3.9.4, which requires only one loop of SDC to be operable. Additionally, the core will not heat up while the reactor cavity water level is being raised with cool water from the RWST. This will provide additional time to either restore one loop of SDC or take other actions to provide core cooling as required by TS 3.9.4.

The provisions of the operational restrictions supporting this TS change ensure that there is adequate time to take action and provide a method to restore the reactor cavity water level to 20 feet above the reactor vessel flange, taking the plant to a condition bounded by TS 3.9.4.

Based on this evaluation, the staff finds acceptable the licensee's proposal to use 20 feet above the top of the reactor vessel flange as the definition of low water level in TS 3.9.5. The operational restrictions that the licensee imposed will provide additional assurance that a sufficiently large heat sink will be available for core cooling, and will minimize the possibility of losing the ability to cool the core.

3.3 Restore Provisions Inadvertently Deleted by a Previous TS Amendment

Amendment No. 127 for SONGS Unit 2, and Amendment No. 116 for SONGS Unit 3, added a note to the LCO for both TS 3.9.4 and TS 3.9.5. The note reads:

A containment spray pump may be used in place of a low pressure safety injection pump to provide shutdown cooling flow.

Prior to these amendments, the note had included the phrase, "in either or both shutdown cooling loops." The licensee proposed to restore this phrase, which was inadvertently deleted with the issuance of TS Amendment Nos. 127 and 116.

The addition of this phrase brings the TS back into conformance with the approved use of the containment spray pumps. The staff, therefore, finds this editorial change acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the California State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (64 FR 14285). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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