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

February 15, 1995

Mr. Harold B. Ray
Senior Vice President
Southern California Edison Co.
Irvine Operations Center
23 Parker Street
Irvine, California 92718

SUBJECT: ISSUANCE OF AMENDMENT FOR SAN ONOFRE NUCLEAR GENERATING STATION, UNIT NO. 2 (TAC NO. M90057) AND UNIT NO. 3 (TAC NO. M90058)

Dear Mr. Ray:

The Commission has issued the enclosed Amendment No. 116 to Facility Operating License No. NPF-10 and Amendment No. 105 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 (TS) in response to your application dated July 28, 1994, designated by you as PCN-402, as supplemented by letters dated January 30 and February 13, 1995.

These amendments revise, on a one-time basis for each unit, Technical Specification (TS) 3.9.8.1 "Shutdown Cooling and Coolant Circulation -- High Water Level," TS 3.9.8.2 "Shutdown Cooling and Coolant Circulation -- Low Water Level," and the Refueling Operations, Bases: 3/4.9.8 "Shutdown Cooling and Coolant Circulation." Specifically, these amendments will:

(1) reduce the water level where two trains of shutdown cooling (SDC) are required from 23 feet to 20 feet above the reactor pressure vessel flange,

(2) increase the time a required train 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,

(3) allow the SDC system to be removed from service to allow testing of Low Pressure Safety Injection system components,

(4) allow for running 1 train of shutdown cooling with additional requirements when the water level is less than 20 feet but greater than 12 feet above the reactor pressure vessel flange, and

(5) add an action to be taken when operating 1 train of SDC with less than 20 feet above the reactor pressure vessel flange when the specified requirements are not met.

In addition, these amendments permanently remove obsolete footnotes from TS 3.9.8.1 and TS 3.9.8.2.

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

Sincerely,

Original signed by:

Mel B. Fields, Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-361 and 50-362

Enclosures: 1. Amendment No. 116 to NPF-10
2. Amendment No. 105 to NPF-15
3. Safety Evaluation

cc w/encls: See next page

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KPerkins, RIV/WCFO	RIV/WCFO (4)

DOCUMENT NAME: S090057.AMD * See previous concurrence

OFC	PD4-2	PD4-2	NRR:SRXB	OGC
NAME	DFoster-Curseen	MFields:ye	RJones*	EHolleran
DATE	2/15/95	2/15/95	2/1/95	2/13/95

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cc:
Mr. R. W. Krieger, Vice President
Southern California Edison Company
San Onofre Nuclear Generating Station
P. O. Box 128
San Clemente, California 92674-0128

Chairman, Board of Supervisors
County of San Diego
1600 Pacific Highway, Room 335
San Diego, California 92101

Alan R. Watts, Esq.
Rourke & Woodruff
701 S. Parker St. No. 7000
Orange, California 92668-4702

Mr. Sherwin Harris
Resource Project Manager
Public Utilities Department
City of Riverside
3900 Main Street
Riverside, California 92522

Dr. Harvey Collins, Chief
Division of Drinking Water and
and Environmental Management
California Department of Health Services
P. O. Box 942732
Sacramento, California 94234-7320

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
Harris Tower & Pavilion
611 Ryan Plaza Drive, Suite 400
Arlington, Texas 76011-8064

Mr. Richard Krumvieda
Manager, Nuclear Department
San Diego Gas & Electric Company
P. O. Box 1831
San Diego, California 92111

Mr. Steve Hsu
Radiologic Health Branch
State Department of Health Services
Post Office Box 942732
Sacramento, California 94234

Resident Inspector/San Onofre NPS
c/o U.S. Nuclear Regulatory Commission
Post Office Box 4329
San Clemente, California 92674

Mayor
City of San Clemente
100 Avenida Presidio
San Clemente, California 92672

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. 116
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 July 28, 1994, as supplemented by letters dated January 30 and February 13, 1995, 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-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.116 , 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 must be fully implemented no later than 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Mel B. Fields

Mel B. Fields, Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 15, 1995

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 116 TO 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 the captioned amendment number and contain marginal lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE	INSERT
3/4 9-8	3/4 9-8
-	3/4 9-8a
3/4 9-9	3/4 9-9
-	3/4 9-9a
-	3/4 9-9b
B 3/4 9-2a	B 3/4 9-2a
-	B 3/4 9-2b

REFUELING OPERATIONS

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION**

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one shutdown cooling train shall be OPERABLE and in operation.#*

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is greater than or equal to 23 feet.

ACTION:

With no shutdown cooling train OPERABLE and in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.1 a. At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2200 gpm at least once per 12 hours.

#The shutdown cooling train may be removed from operation for up to 1 hour per 8-hour period during the performance of CORE ALTERATIONS in the vicinity ofthe reactor pressure vessel hot legs.

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

**This Technical Specification is not effective during the Unit 2 Cycle 8 refueling outage.

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION**

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one shutdown cooling train shall be OPERABLE and in operation.#*

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is greater than or equal to 20 feet.

ACTION:

With no shutdown cooling train OPERABLE and in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.1 a. At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2200 gpm at least once per 12 hours.

#With the upper guide structure removed from the reactor vessel, the shutdown cooling train may be removed from operation for up to 2 hours per 8-hour period during the performance of 1) CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs or 2) testing of LPSI system components required by the inservice inspection program provided:

a. The maximum RCS temperature is maintained $\leq$ 140°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 $\geq$ 20 feet above the top of the reactor pressure vessel flange, or, for Core Alterations, $\geq$ 23 feet above the top of the reactor pressure vessel flange.

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

**This Technical Specification is effective only for the Unit 2 Cycle 8 refueling outage.

LOW WATER LEVEL**

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent shutdown cooling trains shall be OPERABLE and at least one shutdown cooling train shall be in operation.*

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is less than 23 feet.

ACTION:

a. With less than the required shutdown cooling trains OPERABLE, immediately initiate corrective action to return the required shutdown cooling trains to OPERABLE status, or to establish greater than or equal to 23 feet of water above the reactor pressure vessel flange as soon as possible.

b. With no shutdown cooling train in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.2 At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2200 gpm at least once per 12 hours.

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

**This Technical Specification is not effective during the Unit 2 Cycle 8 refueling outage.

REFUELING OPERATIONS

LOW WATER LEVEL**

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent shutdown cooling trains shall be OPERABLE and at least one shutdown cooling train shall be in operation.*

or

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

1) The reactor has been shut down for at least 6 days.

2) The water level above the reactor vessel flange is greater than 12 feet.

3) One train of Salt Water Cooling (SWC) is OPERABLE and operating.

4) One train of Component Cooling Water (CCW) and the CCW swing pump are OPERABLE, and the CCW train is operating with either of the OPERABLE CCW pumps.

5) One train of Shutdown Cooling is OPERABLE with a containment spray pump operating on shutdown cooling, the high pressure safety injection pump and the low pressure safety injection pump of the same train are OPERABLE and 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 when the water level above the top of the reactor pressure vessel flange is less than 20 feet.

ACTION:

a. With less than the required shutdown cooling trains OPERABLE, immediately initiate corrective action to return the required shutdown cooling trains to OPERABLE status, or to establish greater than or equal to 20 feet of water above the reactor pressure vessel flange as soon as possible.

b. If operating one train of the shutdown cooling system with less than 20 feet of water above the reactor pressure vessel flange and any of the required conditions (1 through 8) are not met, immediately take action to establish greater than or equal to 20 feet of water above the reactor pressure vessel flange.

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*This Technical Specification is effective only for the Unit 2 Cycle 8 refueling outage.

REFUELING OPERATIONS

LOW WATER LEVEL**

LIMITING CONDITION FOR OPERATION

c. With no shutdown cooling train in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.2 At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2200 gpm at least once per 12 hours.

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

**This Technical Specification is effective only for the Unit 2 Cycle 8 refueling outage.

BASES

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION**

The requirement that at least one shutdown cooling train be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification.

In MODE 6 a containment spray (CS) pump may be used in place of the low pressure safety injection (LPSI) pump in either or both shutdown cooling trains to provide shutdown cooling (SDC) flow.

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.

**This Technical Specification Basis is not effective during the Unit 2 Cycle 8 refueling outage.

BASES

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION**

The requirement that at least one shutdown cooling train be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification.

In MODE 6 a containment spray (CS) pump may be used in place of the low pressure safety injection (LPSI) pump in either or both shutdown cooling trains to provide shutdown cooling (SDC) flow.

The requirement to have two shutdown cooling trains OPERABLE when there is less than 20 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 20 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.

With the reactor vessel head removed and 12 feet of water above the reactor pressure vessel flange and all the specified requirements met, a heat sink is available for core cooling and a method is available to restore the reactor cavity level to 20 feet above the reactor vessel flange. Therefore, in the event of a failure of the operating shutdown cooling train, adequate time is provided to initiate emergency procedures to cool the core.

**This Technical Specification Basis is effective only for the Unit 2 Cycle 8 refueling outage.

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. 105
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 July 28, 1994, as supplemented by letters dated January 30 and February 13, 1995, 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. 105 , 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 must be fully implemented no later than 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Mel B. Fields

Mel B. Fields, Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 15, 1995

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 105 TO 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 the captioned amendment number and contain marginal lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE	INSERT
3/4 9-8	3/4 9-8
-	3/4 9-8a
3/4 9-9	3/4 9-9
-	3/4 9-9a
-	3/4 9-9b
B 3/4 9-2a	B 3/4 9-2a
-	B 3/4 9-2b

REFUELING OPERATIONS

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION**

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one shutdown cooling train shall be OPERABLE and in operation.#*

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is greater than or equal to 23 feet.

ACTION:

With no shutdown cooling train OPERABLE and in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.1 a. At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2200 gpm at least once per 12 hours.

#The shutdown cooling train may be removed from operation for up to 1 hour per 8-hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs.

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

**This Technical Specification is not effective during the Unit 3 Cycle 8 refueling outage.

REFUELING OPERATIONS

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION**

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one shutdown cooling train shall be OPERABLE and in operation.#*

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is greater than or equal to 20 feet.

ACTION:

With no shutdown cooling train OPERABLE and in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.1 a. At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2200 gpm at least once per 12 hours.

#With the upper guide structure removed from the reactor pressure vessel, the shutdown cooling train may be removed from operation for up to 2 hours per 8-hour period during the performance of 1) CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs or 2) testing of LPSI system components required by the inservice inspection program provided:

a. The maximum RCS temperature is maintained $\leq$ 140°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 $\geq$ 20 feet above the top of the reactor pressure vessel flange, or, for Core Alterations, $\geq$ 23 feet above the top of the reactor pressure vessel flange.

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

**This Technical Specification is effective only for the Unit 3 Cycle 8 refueling outage.

REFUELING OPERATIONS

LOW WATER LEVEL**

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent shutdown cooling trains shall be OPERABLE and at least one shutdown cooling train shall be in operation.*

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is less than 23 feet.

ACTION:

a. With less than the required shutdown cooling trains OPERABLE, immediately initiate corrective action to return the required shutdown cooling trains to OPERABLE status, or to establish greater than or equal to 23 feet of water above the reactor pressure vessel flange as soon as possible.

b. With no shutdown cooling train in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.2 At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2200 gpm at least once per 12 hours.

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

**This Technical Specification is not effective during the Unit 3 Cycle 8 refueling outage.

LOW WATER LEVEL**

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent shutdown cooling trains shall be OPERABLE and at least one shutdown cooling train shall be in operation.*

or

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

1) The reactor has been shut down for at least 6 days.

2) The water level above the reactor vessel flange is greater than 12 feet.

3) One train of Salt Water Cooling (SWC) is OPERABLE and operating.

4) One train of Component Cooling Water (CCW) and the CCW swing pump are OPERABLE, and the CCW train is operating with either of the OPERABLE CCW pumps.

5) One train of Shutdown Cooling is OPERABLE with a containment spray pump operating on shutdown cooling, the high pressure safety injection pump and the low pressure safety injection pump of the same train are OPERABLE and 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 when the water level above the top of the reactor pressure vessel flange is less than 20 feet.

ACTION:

a. With less than the required shutdown cooling trains OPERABLE, immediately initiate corrective action to return the required shutdown cooling trains to OPERABLE status, or to establish greater than or equal to 20 feet of water above the reactor pressure vessel flange as soon as possible.

b. If operating one train of the shutdown cooling system with less than 20 feet of water above the reactor pressure vessel flange and any of the required conditions (1 through 8) are not met, immediately take action to establish greater than or equal to 20 feet of water above the reactor pressure vessel flange.

*This Technical Specification is effective only for the Unit 3 Cycle 8 refueling outage.

REFUELING OPERATIONS

LOW WATER LEVEL**

LIMITING CONDITION FOR OPERATION

c. With no shutdown cooling train in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.2 At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2200 gpm at least once per 12 hours.

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

**This Technical Specification is effective only for the Unit 3 Cycle 8 refueling outage.

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION**

The requirement that at least one shutdown cooling train be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification.

In MODE 6 a containment spray (CS) pump may be used in place of the low pressure safety injection (LPSI) pump in either or both shutdown cooling trains to provide shutdown cooling (SDC) flow.

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.

**This Technical Specification Basis is not effective during the Unit 3 Cycle 8 refueling outage.

BASES

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION**

The requirement that at least one shutdown cooling train be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification.

In MODE 6 a containment spray (CS) pump may be used in place of the low pressure safety injection (LPSI) pump in either or both shutdown cooling trains to provide shutdown cooling (SDC) flow.

The requirement to have two shutdown cooling trains OPERABLE when there is less than 20 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 20 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.

With the reactor vessel head removed and 12 feet of water above the reactor pressure vessel flange and all the specified requirements met, a heat sink is available for core cooling and a method is available to restore the reactor cavity level to 20 feet above the reactor vessel flange. Therefore, in the event of a failure of the operating shutdown cooling train, adequate time is provided to initiate emergency procedures to cool the core.

**This Technical Specification Basis is effective only for the Unit 3 Cycle 8 refueling outage.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 116 TO FACILITY OPERATING LICENSE NO. NPF-10

AND AMENDMENT NO. 105 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 letter dated July 28, 1994, as supplemented by letters dated January 30 and February 13, 1995, Southern California Edison Company, et al. (SCE or the licensee) submitted a request for changes to the Technical Specifications (TS) for San Onofre Nuclear Generating Station, Unit Nos. 2 and 3. The proposed changes would revise TS 3.9.8.1 "Shutdown Cooling and Coolant Circulation -- High Water Level," TS 3.9.8.2 "Shutdown Cooling and Coolant Circulation -- Low Water Level," and the Refueling Operations, Bases: 3/4.9.8 "Shutdown Cooling and Coolant Circulation." Specifically, this request will:

(1) reduce the water level where two trains of shutdown cooling (SDC) are required from 23 feet to 20 feet above the reactor pressure vessel flange,

(2) increase the time a required train 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,

(3) allow the SDC system to be removed from service to allow testing of Low Pressure Safety Injection system components,

(4) allow for running 1 train of shutdown cooling with additional requirements when the water level is less than 20 feet but greater than 12 feet above the reactor pressure vessel flange,

(5) add an action to be taken when operating 1 train of SDC with less than 20 feet above the reactor pressure vessel flange when the specified requirements are not met, and

(6) delete two obsolete items in the TS.

The licensee's letter dated February 13, 1995, amended the TS application to request that the proposed changes be effective only for each unit's Cycle 8 refueling outage.

2.0 BACKGROUND

The purpose of the Emergency Core Cooling System (ECCS) is to inject borated water into the Reactor Coolant System (RCS) to cool the core following a Loss of Coolant Accident (LOCA) and to maintain the reactor subcritical following a LOCA or a Main Steam Line Break (MSLB).

The ECCS system includes two High Pressure Safety Injection (HPSI) pumps, two Low Pressure Safety Injection (LPSI) pumps, and two Containment Spray (CS) pumps. These pumps are arranged in two redundant and independent trains. A third swing HPSI pump can be aligned to either train.

The two LPSI pumps also provide SDC flow through the reactor core and the SDC system heat exchangers for shutdown plant cooling or for long term cooling for small break loss of cooling accident scenarios. Also, as the result of a recent design change, the containment spray pumps may be aligned to be used in place of a LPSI pump in either or both shutdown cooling trains to provide shutdown cooling flow.

3.0 EVALUATION

The present Limiting Conditions for Operation (LCO) in TSs 3.9.8.1 and 3.9.8.2 define the operability requirements for the SDC system during refueling operations (Mode 6). When the water level above the top of the reactor vessel flange is at least 23 feet, TS 3.9.8.1 requires only one train of SDC to be operable. When the water level is less than 23 feet above the reactor vessel flange, TS 3.9.8.2 requires two trains of SDC to be available. The objective of these TSs is to ensure that (1) sufficient cooling is available to remove decay heat, (2) the water in the reactor vessel is maintained below 140°F, and (3) sufficient coolant circulation is maintained in the reactor core to minimize boron stratification leading to a boron dilution incident.

3.1 Proposed Changes to TS 3.9.8.1

The request to lower the required water level from 23 feet above the reactor pressure vessel flange to 20 feet above the reactor pressure vessel flange and to increase the time the SDC system is allowed to be out of service from "$\leq$ 1 hour per 8-hour period" to "$\leq$ 2 hours per 8-hour period" will allow testing of LPSI system components (e.g., Inservice Testing of the LPSI pump suction check valves) in conjunction with the normal reactor cavity fill evolutions during a refueling outage without requiring the core to be offloaded from the reactor vessel. This change allows the SDC cooling system alignments to be made and the tests to be completed as part of an integrated outage plan, and will reduce the overall refueling outage time. The time the SDC system is allowed to be secured is increased to 2 hours, but during the short test the water

level is being increased by approximately 4 to 20 inches with a high flow rate of cool water from the RWST. 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. The 2-hour period will allow the required valve lineup changes to be performed without unnecessary urgency.

The reduction in the required water level from 23 feet to 20 feet above the reactor pressure vessel flange will also allow one train of SDC and the supporting trains of CCW and salt water cooling (SWC) to be removed from service and still allow some reactor internals removal preparations to be performed. Under the current TS, the train outages would have to be delayed approximately 14 hours to allow the removal preparations of the reactor internals to reach the point when the reactor cavity can be filled to 23 feet above the reactor pressure vessel flange.

The reduction of water from 23 feet above the reactor pressure vessel flange to 20 feet above the reactor pressure vessel flange is a small change and has little impact on the time to boil (3.7 hours to 3.5 hours at six days following the reactor shutdown, as calculated by the licensee). The safety objective 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 train of SDC is still maintained.

To assure the objectives of TS 3.9.8.1 are satisfied during performance of the testing of LPSI system components the following requirements will be added to this TS:

(1) The periods in which a SDC train is not in operation will be limited to $\leq$ 2 hours per 8-hour period.

(2) The maximum RCS temperature will be maintained $\leq$ 140°F.

(3) No operations will be permitted that would cause a reduction of the RCS boron concentration.

(4) The capability to close the containment penetrations with direct access to the outside atmosphere within the calculated time to boil will be maintained.

(5) The reactor cavity water level will be maintained greater than or equal to 20 feet above the reactor pressure vessel flange.

(6) The upper guide structure will be removed from the reactor vessel.

With no SDC system operating, the above described compensatory measures provide assurance that performance of the full-flow LPSI pump suction header check valve test is of minimal safety consequence.

The maximum RCS temperature is maintained $\leq$ 140°F for the entire period when a SDC train is not in operation. The operators have available in the control room RCS heatup curves following shutdown of SDC to assist them in determining

when all SDC can be removed from operation. The licensee has stated that this 2 hour period is sufficient time to align the system to test, perform the test, and restore the train of SDC to operation prior to exceeding 140°F. The initial conditions and heatup rate are selected such that RCS temperature remains $\leq$ 140°F during the test. Typically, the reactor cavity water initial temperature will be less than 100°F.

No operations are permitted that would cause a reduction of the RCS boron concentration. This minimizes the probability of an inadvertent boron dilution event. Boron stratification due to temperature gradients will not develop to any significant extent during the time when no train of SDC is in operation. The use of adequately borated water for injection into the RCS during the test provides assurance that the test itself cannot lead to a boron dilution event. The requirement to remove the upper guide structure from the reactor vessel before securing the remaining SDC train increases the circulation flow area in the reactor vessel and reduces the possibility of significant localized boiling. When the SDC system is operating, the minimum SDC flow rate of 2200 gpm imposed by TS 4.9.8.1 and TS 4.9.8.2 is sufficient to ensure complete mixing of the boron within the RCS.

The capability to close the containment penetrations with direct access to the outside atmosphere within the calculated time to boil is maintained. During outages, the licensee's Operations Department has updated information based on current calculations which show the time to boil. Provisions are maintained in place to ensure containment closure can be established within the calculated time frame. With the reactor cavity flooded to any level above the reactor pressure vessel flange, the licensee has determined that containment closure can be achieved within 1 hour even in the event of a loss of offsite power. It will take 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, at 6 days following shutdown, with 20 feet of water above the reactor pressure vessel flange is approximately 3.5 hours. The time to uncover the core is approximately 77.5 hours.

The reactor cavity water level is maintained greater than or equal to 20 feet above the reactor pressure vessel flange when TS 3.9.8.1 is applicable (i.e., when only one train of SDC is required to be OPERABLE). This level ensures an adequate heat sink and allows room to perform the LPSI pump suction header check valve test, which will increase this water level.

Based on the considerations discussed above, the staff finds acceptable the requested one-time changes to TS 3.9.8.1. This change is effective only for the Cycle 8 refueling outage for each unit.

3.2 Proposed Changes to TS 3.9.8.2

Currently, TS 3.9.8.2 is applicable in MODE 6 when the water level above the top of the reactor pressure vessel flange is less that 23 feet, and requires two independent SDC trains to be OPERABLE and one SDC train to be in operation. Besides changing the applicable water level from 23 to 20 feet to be consistent with TS 3.9.8.1, the licensee proposes to reduce the number of

SDC trains required to OPERABLE from two trains to one train, with several operational restrictions added. Specifically, these provisions will:

1. Require the reactor to be shutdown for at least 6 days to ensure that the time to boil is greater than twice the time it would take the licensee to establish containment closure, and significantly more time than it would take to commence reactor cavity fill with the required standby equipment. Limiting this proposed configuration to at least 6 days following reactor shutdown allows the decay heat to be naturally reduced which increases the time to boil. Furthermore, the time to boil and time to uncover the core both increase each subsequent day following reactor shutdown.

2. Limit the water level above the reactor pressure vessel flange to greater than 12 feet providing enough cooling to allow time for corrective actions. To perform the outage work supported by this change (i.e., SDC, CCW, and SWC train outages running concurrent with reactor internals disassembly and reassembly) the licensee needs a water level less than 12'9" above the reactor pressure vessel flange. The licensee plans to maintain a level closer to the 12'9" than the 12' above the flange. Twelve feet of water above the reactor vessel flange corresponds to 24' 8-7/8" above the active fuel.

3. Require one train of SWC and CCW operable, and the CCW swing pump maintained operable to reduce the probability of CCW failure.

4. Require the one train of Shutdown Cooling to operate with a containment spray pump to allow the high capacity LPSI pump to be the main standby pump ready to fill the cavity to at least 20 feet above the reactor pressure vessel flange following any loss of components in the operating SDC train. In the event that CCW is lost, cooling flow to all ECCS pumps is also lost. Maintaining the LPSI pump as backup for emergency filling of the reactor cavity ensures the cavity can be filled within the operating limits of the LPSI pump motor without CCW cooling flow. (The LPSI pump can operate for 30 minutes without CCW flow.) The high pressure safety injection pump will also be maintained ready to increase the water level if needed. In support of this contingency the RWST will be required to contain the volume of water required to raise the level to 20 feet above the reactor vessel flange. The reactor cavity can be filled at a rate of approximately 4.0 inches per minute using the LPSI pump.

5. Require the water temperature of the SDC system to be maintained less than 120°F. This is the temperature the time to boil curves are based on. However, the normal operating temperature during this condition will typically be less than 100°F.

6. Provided that only one train of the shutdown cooling system is operable with less than 20 feet of water above the reactor pressure vessel flange and any of the required conditions are not met, action will be taken to immediately establish greater than or equal to 20 feet of water above the reactor pressure vessel flange. By taking action to restore the level to

20 feet above the reactor pressure vessel flange the plant will be placed in TS 3.9.8.1, which only requires one train 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 the one train of SDC or take other actions to provide core cooling.

The allowance to operate with only one train of SDC OPERABLE and operating with the reactor cavity water level less than 20 feet above the reactor pressure vessel flange, but greater than 12 feet above the reactor vessel flange, will provide for a significant savings in outage time. The provisions added by this TS change ensure 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 3.9.8.1.

Based on the considerations discussed above, the staff finds acceptable the requested one-time changes to TS 3.9.8.2. This change is effective only for the Cycle 8 refueling outage for each unit.

3.3 Proposed Editorial Changes

TS 3.9.10 "Water Level - Reactor Vessel" requires the reactor cavity water level to be at least 23 feet above the top of the reactor pressure vessel flange during the movement of fuel assemblies and control element assemblies within the reactor pressure vessel when either the fuel assemblies are being moved or the fuel assemblies seated within the reactor vessel are irradiated fuel assemblies. Therefore, the footnote (#) in TS 3.9.8.2 for Unit 3 was only applicable to the initial core load. This footnote was added to the Unit 3 TS 3.9.8.2 to facilitate initial fuel load by Amendment 1 to NFP-15 on January 14, 1983. This footnote was appropriate then because no decay heat was present. However, this footnote is not appropriate following operation. This is only an editorial change and has no impact on operation; therefore, the staff finds this change acceptable.

The footnotes (*) in TS 3.9.8.1 referring to DCP 2-6863 (in the Unit 2 TS) and MMP 3-6863 (in the Unit 3 TS) were added because the TS were issued prior to the completion of the design change. Therefore, a clarification was needed that the note only applied following the completion of the work. The design change has been completed for both Units 2 and 3, therefore, the notes always apply and the references to DCP/MMP 2(3)-6863 are no longer needed. This is only an editorial change and has no impact on operation; therefore, the staff finds this change acceptable.

The editorial changes to TS 3.9.8.1 and TS 3.9.8.2 are permanent.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the California State official was notified of the proposed issuance of the amendment. 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 and change surveillance requirements. 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 (59 FR 51627). 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: Warren Lyon
Mel B. Fields

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