

February 22, 2000

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

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3 -  
ISSUANCE OF AMENDMENTS ON SMALL BREAK LOSS-OF-COOLANT  
ACCIDENT CHARGING FLOW AND MAIN STEAM SAFETY VALVE  
SETPOINTS (TAC NOS. MA5700 AND MA5702)

Dear Mr. Ray:

The Commission has issued the enclosed Amendment No. 163 to Facility Operating License No. NPF-10 and Amendment No.154 to Facility Operating License No. NPF-15 for San Onofre Nuclear Generating Station, Units 2 and 3, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated June 8, 1999 (PCN-495).

These amendments modify the TSs to (1) reflect that charging flow is not required to mitigate the effects of design-basis small-break loss-of-coolant accidents, and (2) increase the maximum as-found lift pressure positive tolerance of main steam safety valves from +1 percent to +2 percent of the lift setting.

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,  
/RA/

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

Docket Nos. 50-361 and 50-362

Enclosures: 1. Amendment No. 163 to NPF-10  
2. Amendment No. 154 to NPF-15  
3. Safety Evaluation

cc w/encls: See next page

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

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Executive Vice President  
Southern California Edison Company  
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Sincerely,

A handwritten signature in black ink, appearing to read "L. Raghavan", with a long horizontal line extending to the right.

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

Docket Nos. 50-361 and 50-362

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2. Amendment No. 154 to NPF-15  
3. Safety Evaluation

cc w/encls: See next page

San Onofre Nuclear Generating Station, Units 2 and 3

cc:

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San Diego, CA 92112-4150

February 15, 2000



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 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 163  
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 June 8, 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-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. 163, 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: February 22, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 163

FACILITY OPERATING LICENSE NO. NPF-10

DOCKET NO. 50-361

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.1-21  
3.5-6  
3.7-4  
5.0-28

INSERT

3.1-21  
3.5-6  
3.7-4  
5.0-28

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.9.1	Verify the boron concentration in the BAMU tank(s) is within limits.	7 days
SR 3.1.9.2	Verify the volume of borated water contained in the BAMU tank(s) is within limits.	7 days
SR 3.1.9.3	Verify that each flow path is operable and that each valve (manual, power operated or automatic, that is not locked, sealed, or otherwise secured) in the above required flow paths is in its correct position.	31 days
SR 3.1.9.4	Verify that each automatic valve in the above required flow paths actuates to its correct position on an SIAS test signal.	24 months
SR 3.1.9.5	Verify each charging pump is OPERABLE.	In accordance with the Inservice Testing Program

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE				FREQUENCY	
SR 3.5.2.4	Verify ECCS piping is full of water.			31 days	
SR 3.5.2.5	Verify the following ECCS pumps develop the indicated developed head and/or flow rate.			In accordance with the Inservice Testing Program	
	<u>Pump</u>	<u>Full Flow</u> GPM	<u>Full Flow</u> Head (Ft)		<u>Miniflow</u> Head(Ft)
	HPSI-P017	650	≥ 2142		-
	HPSI-P018	650	≥ 2101		-
	HPSI-P019	650	≥ 2103		-
	LPSI-P015	-	-		≥ 406.1
	LPSI-P016	-	-		≥ 406.1
SR 3.5.2.6	Deleted				
SR 3.5.2.7	Verify each ECCS automatic valve in the flow path actuates to the correct position on an actual or simulated actuation signal.			24 months	
SR 3.5.2.8	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.			24 months	
SR 3.5.2.9	Verify each LPSI pump stops on an actual or simulated actuation signal.			24 months	

(continued)

(continued)

Table 3.7.1-2 (page 1 of 1)  
Main Steam Safety Valves (Lift Settings)

VALVE NUMBER		LIFT SETTING*
Steam Generator #1	Steam Generator #2	(psig)
2PSV-8401	2PSV-8410	1085
2PSV-8402	2PSV-8411	1092
2PSV-8403	2PSV-8412	1099
2PSV-8404	2PSV-8413	1106
2PSV-8405	2PSV-8414	1113
2PSV-8406	2PSV-8415	1120
2PSV-8407	2PSV-8416	1127
2PSV-8408	2PSV-8417	1134
2PSV-8409	2PSV-8418	1140

\* The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure. Each MSSV has an as-found tolerance of +2%/-3%. Following testing according to LCO 5.5.2.10, MSSVs will be set within +/-1% of the specified lift setpoint.

(continued)

5.7 Reporting Requirements (continued)

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5.7.1.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

- 3.b.2 Letter, O. D. Parr (NRC) to A. E. Scherer (CE), dated December 9, 1975 (NRC Staff Review of the Proposed Combustion Engineering ECCS Evaluation Model Changes)  
  
(Methodology for Specification 3.2.1 for Linear Heat Rate)
- 4.a.1 "Calculative Methods for the C-E Small Break LOCA Evaluation Model," CENPD-137P, August 1974
- 4.a.2 "Calculative Methods for the C-E Small Break LOCA Evaluation Model," CENPD-137, Supplement 1-P, January 1977
- 4.a.3 "Calculative Methods for the ABB C-E Small Break LOCA Evaluation Model," CENPD-137, Supplement 2-P-A, April 1998
- 4.b.1 Letter, K. Kniel (NRC) to A. E. Scherer (CE), dated September 27, 1977 (Evaluation of Topical Report CENPD-133, Supplement, 3-P and CENPD-137, Supplement 1-P)  
  
(Methodology for Specification 3.2.1 for Linear Heat Rate)
- 4.b.2 Letter, T. H. Essig (NRC) to I. C. Rickard (ABB), "Acceptance for Referencing of the Topical Report CENPD-137(P), Supplement, 2, 'Calculative Methods for the C-E Small Break LOCA Evaluation Model' (TAC M95687)," December 16, 1997.
- 5. "Modified Statistical Combination of Uncertainties," CEN-356(V)-P-A, May 1988  
  
(Methodology for Specifications 3.2.4 for Departure From Nucleate Boiling Ratio, and 3.2.5 for Axial Shape Index)
- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal-mechanical limits, core thermal hydraulic limits, Emergency Core Cooling System (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.

(continued)

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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 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 154  
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 June 8, 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. 154, 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: February 22, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 154

FACILITY OPERATING LICENSE NO. NPF-15

DOCKET NO. 50-362

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.1-21  
3.5-6  
3.7-4  
5.0-28

INSERT

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3.5-6  
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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.9.1	Verify the boron concentration in the BAMU tank(s) is within limits.	7 days
SR 3.1.9.2	Verify the volume of borated water contained in the BAMU tank(s) is within limits.	7 days
SR 3.1.9.3	Verify that each flow path is operable and that each valve (manual, power operated or automatic, that is not locked, sealed, or otherwise secured) in the above required flow paths is in its correct position.	31 days
SR 3.1.9.4	Verify that each automatic valve in the above required flow paths actuates to its correct position on an SIAS test signal.	24 months
SR 3.1.9.5	Verify each charging pump is OPERABLE.	In accordance with the Inservice Testing Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 163 TO FACILITY OPERATING LICENSE NO. NPF-10

AND AMENDMENT NO. 154 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 June 8, 1999, Southern California Edison Company (SCE or the licensee) requested amendments to San Onofre Nuclear Station (SONGS) Units 2 and 3 to change the Technical Specifications (TSs) to reflect the following:

1. Delete the TS 3.5.2, "ECCS - Operating," requirement for charging pump operability. The current surveillance requirement (SR) requires that each charging pump develops a flow of greater than or equal to 40 gallons per minute, based upon the credit for charging flow that was taken in the original small-break loss-of-coolant accident (SBLOCA) analysis. The amendment request is to delete all credit for the charging system as an emergency core cooling system (ECCS) component. The corresponding Bases of TS 3.5.2 would also be revised to delete all references to the charging system being a requirement for the ECCS.
2. Ensure the operability of the charging pumps for emergency boration by adding SR 3.1.9.5, which verifies each charging pump is operable in accordance with the Inservice Testing Program, to TS 3.1.9.
3. Revise TS 3.7.1, "Main Steam Safety Valves (MSSVs)," Table 3.7.1-2, to change the as-found tolerance on MSSVs 2(3)-PSV-8401 and 2(3)-PSV-8410 from +1 percent/-3 percent to +2 percent/-3 percent of the lift setting. TS Table 3.7.1-2 specifies that all MSSVs other than 2(3)-PSV-8401 and 2(3)-PSV-8410 have an as-found lift tolerance of +2 percent/-3 percent. The as-found tolerance on MSSVs 2(3)-PSV-8401 and 2(3)-PSV-8410 was specified to be +1 percent/-3 percent because the SBLOCA event was not reanalyzed to support changing the tolerance on these valves to +2 percent/-3 percent. The current SBLOCA reanalysis supports an as-found lift tolerance of +2 percent/-3 percent on MSSVs 2(3)-PSV-8401 and 2(3)-PSV-8410. The amendment

request proposes removal of footnote “\*” to TS Table 3.7.1-2, which imposes the +1 percent/-3 percent as-found tolerance on MSSVs 2(3)-PSV-8401 and 2(3)-PSV-8410.

4. Revise TS 5.7.1.5, “Core Operating Limits Report (COLR),” to list the ABB Combustion Engineering (ABB-CE) Supplement 2 Model (S2M) SBLOCA evaluation model as an acceptable method for determining linear heat rate.

## 2.0 EVALUATION

### 2.1 Charging Pump Operability

In the current analysis of a postulated SBLOCA, the flow from one charging pump is credited as a part of the total ECCS flow for accident mitigation. The licensee has performed a reanalysis of the SBLOCA assuming the charging flow is unavailable. The licensee’s calculations were performed for four break sizes that would result in the most limiting hot rod cladding temperatures. We have reviewed the results of the licensee’s reanalysis and find that the assumptions used in the analysis are conservative, and the methods used for this analysis have been approved by the staff as discussed in Section 2.3 of this safety evaluation. The results of the licensee’s analysis indicate that the San Onofre 2 and 3 ECCS, without taking credit for the charging flow, satisfies the acceptance criteria of 10 CFR 50.46.

The results of the SBLOCA reanalysis support the licensee-proposed changes to the ECCS TSs relative to the requirement of charging pumps. Based on the acceptable results of the new SBLOCA analysis for San Onofre, we conclude that it is acceptable to delete the TS 3.5.2, “ECCS - Operating” requirement for charging pump operability and to delete all references to the charging system being a part of ECCS from the Bases of TS 3.5.2, “ECCS - Operating.”

### 2.2 SR For Charging System

In conjunction with the proposed changes in TS 3.5.2 and its Bases, the licensee has proposed changes to delete SR 3.5.2.6 as a part verification for ECCS and has proposed a new SR 3.1.9.4 for the verification of charging pump operability in accordance with the Inservice Testing Program to assure that the charging pumps are operable as part of a boration system controlled by TS 3.1.9, “Boration System - Operating.” The staff concludes that these proposed changes are acceptable since the charging pumps do not serve the required safety function as a part of ECCS based on the results of new SBLOCA analysis.

### 2.3 Main Steam Safety Valve Setpoint Tolerance

The SONGS design includes nine MSSVs in each of the two main steam lines. The main function of MSSVs is to provide overpressure protection to the steam generators and associated equipment in the secondary system. In addition, when the normal heat sink provided by the condenser and circulating water system is not available, MSSVs prevent overpressurization of the primary reactor coolant system by providing a passive heat sink for the primary coolant. The pressure setpoint of these MSSVs is staggered to such that only those valves needed for pressure relief will actuate. The operability of the MSSVs ensures that the secondary system pressure will not exceed 110 percent of its design pressure of 1100 psia

(1210 psia) during the limiting design-basis accident. A minimum of one operable MSSV per steam generator is sufficient to remove decay heat.

To meet the MSSV design functions, the actual MSSV lift setpoint must be less than or equal to the limiting lift setpoint assumed in the overpressurization analyses. Accordingly, TS Table 3.7.1-2 specifies the lift setting pressure and tolerances for the nine MSSVs. The footnotes to setpoint TS Table 3.7.1-2 indicate that each MSSV has an as-found lift setpoint tolerance of +2 percent (upper limit) and -3 percent (lower limit) with the exception of the lowest pair of MSSVs with the lowest lift setpoint in Units 2 and 3, MSSVs 2(3) PSV-8401 and 2(3) PSV-8410. Footnote "\*\*\*\*" indicates that these valves will have an as-found setpoint tolerance of +1 percent /-3 percent. The licensee proposes to delete foot note "\*\*\*\*" such that valves 2(3) PSV-8401 and 2(3) PSV-8410 will have the same as-found lift setpoint tolerance of +2 percent (upper limit) and -3 percent (lower limit) as the other MSSVs. (This change raises the upper limit of as-found setting tolerance from +1 percent to +2 percent and the lower limit remains unchanged at -3 percent.)

Raising the upper limit of lift setpoint pressure would affect the initial condition for the design-basis SBLOCA analysis. In support of its request to raise the upper limit of as-found setting tolerance from +1 percent to +2 percent, the licensee reanalyzed the design-basis SBLOCA assuming +2 percent /-3 percent as-found setting tolerance on the opening of MSSVs 2(3) PSV-8401 and 2(3) PSV-8410 valves. The licensee's June 8, 1999, submittal, Attachment J, Table 15.6-18 shows the initial conditions used in its SBLOCA reanalysis. The table shows an initial value for the lowest MSSV setpoint pressure of 1122 psia (1100 psia plus 2 percent tolerance). The licensee's analyses used the NRC-approved ABB Combustion Engineering's SBLOCA evaluation model, CENPD-1 37(P), Supplement 2, "Calculative Methods for the C-E Small Break LOCA Evaluation Model" (ABB-CE S2M SBLOCA analysis methodology). By its letter dated December 16, 1997, the NRC approved referencing and use of the ABB-CE S2M SBLOCA analysis methodology. The revised SBLOCA analysis resulted in a peak cladding temperature (PCT) of 1884 °F which is less than the 10 CFR 50.46 PCT limit of 2200 °F. Since the reanalysis with the proposed +2 percent upper limit as-found tolerance for the pair of MSSVs with the lowest lift setpoint was based on NRC-approved methodology and satisfied the limits of 10 CFR 50.46, the staff finds the proposed raising of as-found tolerance to +2 percent to be acceptable.

#### 2.4 Core Operating Report

The licensee proposed changes to TS 5.7.1.5, "Core Operating Limits Report (COLR)," to list the ABB-CE S2M SBLOCA evaluation model as an acceptable method for determining linear heat rate. Since the ABB-CE S2M SBLOCA evaluation model has been previously approved by the staff in NRC letter dated December 16, 1997, we find that the licensee-proposed change of TS 5.7.1.5 is acceptable.

### 3.0 SUMMARY

The staff concludes that the proposed changes to SONGS Units 2 and 3 TS 3.5.2, "ECCS-Operating," SR 3.1.9.5 to TS 3.1.9, "Boration Systems - Operating," TS 3.7.1, "Main Steam Safety Valves (MSSVs)," Table 3.7.1-2, and TS 5.7.1.5, "Core Operating Limits Report (COLR)," and the associated Bases are 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

With one exception, the amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or 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 (64 FR 35210). With respect to the exception noted above, these amendments change reporting or record keeping requirements. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and (c)(10). 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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