

December 20, 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 RE: POSITIVE REACTIVITY ADDITIONS WHEN
SHUT DOWN (TAC NOS. MB0057 AND MB0058)

Dear Mr. Ray:

The Commission has issued the enclosed Amendment No. 175 to Facility Operating License No. NPF-10 and Amendment No. 166 to Facility Operating License No. NPF-15 for San Onofre Nuclear Generating Station, Units 2 and 3, respectively. The amendments are in response to your application dated September 22, 2000, (PCN-520), and revise Technical Specifications (TSs) 3.1.10, 3.3.9, 3.3.13, 3.4.5, 3.4.6, 3.4.7, 3.4.8, 3.8.2, 3.8.5, 3.8.8, 3.8.10, 3.9.2, 3.9.4 and 3.9.5. The amendments allow small, controlled safe insertions of positive reactivity while in shutdown modes.

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 by Jack Cushing for/

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. 175 to NPF-10
2. Amendment No. 166 to NPF-15
3. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION:

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PDIV-2 r/f
G. Hill (4)
RidsNrrDlpmLpdiv (S.Richards)
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RidsOgcRp
RidsRgn4MailCenter (C.Marschall,
L.Hurley, D.Bujol)
P. Gill
D. Thatcher

SRXB memo dated 10/16/00
RTSB memo dated 11/7/00

Accession No: ML0037

OFFICE	PDIV-2/PM	PDIV-2/RM	PDIV-2/LA	SC:RTSB	OGC	PDIV-2/SC
NAME	JCushing:am	LRaghavan	CJamerson	RDentig		SDembek
DATE	12/4/00	12/7/00	12/1/00	12/4/00	12/19/00	12/20/00

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concur with editorial comments

NR-058

San Onofre Nuclear Generating Station, Units 2 and 3

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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. 50-361

SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 175
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 September 22, 2000, 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. 175, 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 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: December 20, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 175

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

INSERT

3.1-22	3.1-22
3.3-40	3.3-40
3.3-51	3.3-51
3.4-16	3.4-16
3.4-17	3.4-17
3.4-18	3.4-18
3.4-19	3.4-19
3.4-21	3.4-21
3.4-23	3.4-23
3.4-24	3.4-24
3.4-25	3.4-25
3.8-18	3.8-18
3.8-27	3.8-27
3.8-36	3.8-36
3.8-40	3.8-40
3.9-2	3.9-2
3.9-6	3.9-6
	3.9-6a
3.9-9	3.9-9

3.1 REACTIVITY CONTROL SYSTEMS

3.1.10 Boration Systems - Shutdown

LCO 3.1.10 One RCS boron injection flow path shall be OPERABLE.

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. No boron injection flow path OPERABLE.	<p>A.1 -----NOTE----- Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. -----</p> <p>Suspend all operations involving CORE ALTERATIONS or positive reactivity changes.</p>	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>-----NOTE----- Only required when the Refueling Water Storage Tank (RWST) is the source of borated water and the outside temperature is < 40°F or > 100°F. -----</p>	
SR 3.1.10.1 Verify RWST temperature is within limits.	24 hours
SR 3.1.10.2 Verify volume of available borated water is within limits.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. CRIS Manual Trip, Actuation Logic, or required control room airborne radiation monitors inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies.</p>	<p>B.1 -----NOTE----- Place CREACUS in isolation mode if automatic transfer to isolation mode inoperable. ----- Place one CREACUS train in emergency mode.</p>	<p>Immediately</p>
	<p><u>OR</u></p> <p>B.2.1 Suspend movement of irradiated fuel assemblies.</p>	<p>Immediately</p>
	<p><u>AND</u></p> <p>B.2.2 -----NOTE----- Limited plant control operations are allowed provided the changes are accounted for in the calculated SDM. ----- Suspend positive reactivity additions.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.3.9.1 Perform a CHANNEL CHECK on the required control room airborne radiation monitor channel.</p>	<p>12 hours</p>

(continued)

3.3 INSTRUMENTATION

3.3.13 Source Range Monitoring Channels

LCO 3.3.13 Two channels of source range monitoring instrumentation shall be OPERABLE.

APPLICABILITY: MODES 3, 4, and 5, with the reactor trip circuit breakers open or Control Element Assembly (CEA) Drive System not capable of CEA withdrawal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 -----NOTE----- Limited plant control operations are allowed provided the changes are accounted for in the calculated SDM. ----- Suspend all operations involving positive reactivity additions.	Immediately
	<u>AND</u> A.2 Perform SDM verification in accordance with SR 3.1.1.2, if $T_{avg} > 200^{\circ}F$, or SR 3.1.2.1, if $T_{avg} \leq 200^{\circ}F$.	4 hours <u>AND</u> Once per 12 hours thereafter

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops - MODE 3

LCO 3.4.5 Two RCS loops shall be OPERABLE and one RCS loop shall be in operation.

-----NOTE-----
All reactor coolant pumps may be de-energized for ≤ 1 hour per 8 hour period, provided:

- a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
-

APPLICABILITY: MODE 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RCS loop inoperable.	A.1 Restore required RCS loop to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 4.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. No RCS loop OPERABLE. <u>OR</u> No RCS loop in operation.	C.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	<u>AND</u> C.2 Initiate action to restore one RCS loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.5.1 Verify required RCS loop is in operation.	12 hours
SR 3.4.5.2 Verify secondary side water level in each steam generator \geq 50% (wide range).	12 hours
SR 3.4.5.3 Verify correct breaker alignment and indicated power available to the required pump that is not in operation.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops - MODE 4

LCO 3.4.6 Two loops or trains consisting of any combination of RCS loops and shutdown cooling (SDC) trains shall be OPERABLE and at least one loop or train shall be in operation.

-----NOTES-----

1. All reactor coolant pumps (RCPs) and SDC pumps may be de-energized for ≤ 1 hour per 8 hour period, provided:
 - a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
2. No RCP shall be started with any RCS cold leg temperature $\leq 256^{\circ}\text{F}$ unless:
 - a. Pressurizer water volume is $< 900 \text{ ft}^3$, or
 - b. Secondary side water temperature in each steam generator (SG) is $< 100^{\circ}\text{F}$ above each of the RCS cold leg temperatures.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One required RCS loop inoperable.</p> <p><u>AND</u></p> <p>Two SDC trains inoperable.</p>	<p>A.1 Initiate action to restore a second loop or train to OPERABLE status.</p>	<p>Immediately</p>
<p>B. One required SDC train inoperable.</p> <p><u>AND</u></p> <p>Two required RCS loops inoperable.</p>	<p>B.1 Be in MODE 5.</p>	<p>24 hours</p>
<p>C. Required RCS loop(s) or SDC train(s) inoperable.</p> <p><u>OR</u></p> <p>No RCS loop or SDC train in operation.</p>	<p>C.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.</p> <p><u>AND</u></p> <p>C.2 Initiate action to restore one loop or train to OPERABLE status and operation.</p>	<p>Immediately</p> <p>Immediately</p>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops - MODE 5, Loops Filled

LCO 3.4.7 At least one of the following loop(s)/trains listed below shall be OPERABLE and in operation:

- a. Reactor Coolant Loop 1 and its associated steam generator and at least one associated Reactor Coolant Pump;
- b. Reactor Coolant Loop 2 and its associated steam generator and at least one associated Reactor Coolant Pump;
- c. Shutdown Cooling Train A; or
- d. Shutdown Cooling Train B

One additional Reactor Coolant Loop/shutdown cooling train shall be OPERABLE, or

The secondary side water level of each steam generator shall be greater than 50% (wide range).

-----NOTES-----

- 1. All reactor coolant pumps (RCPs) and pumps providing shutdown cooling may be de-energized for ≤ 1 hour per 8 hour period, provided:
 - a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.2; and
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
- 2. One required SDC train may be inoperable for up to 2 hours for surveillance testing provided that the other SDC train or RCS loop is OPERABLE and in operation.
- 3. One required RCS loop may be inoperable for up to 2 hours for surveillance testing provided that the other RCS loop or SDC train is OPERABLE and in operation.

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No SDC train/RCS loop in operation.	B.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.2.	Immediately
	<u>AND</u> B.2 Initiate action to restore required SDC train/RCS loop to operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.7.1 Verify at least one RCS loop or SDC train is in operation.	12 hours
SR 3.4.7.2 Verify required SG secondary side water level is > 50% (wide range).	12 hours
SR 3.4.7.3 Verify the second required RCS loop, SDC train or steam generator secondary is OPERABLE.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops - MODE 5, Loops Not Filled

LCO 3.4.8 Two shutdown cooling (SDC) trains shall be OPERABLE and at least one SDC train shall be in operation.

-----NOTES-----

1. All SDC pumps may be de-energized for ≤ 15 minutes when switching from one train to another provided:
 - a. The core outlet temperature is maintained $> 10^\circ\text{F}$ below saturation temperature;
 - b. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.2; and
 - c. No draining operations to further reduce the RCS water volume are permitted.
2. The pump providing shutdown cooling may be de-energized for ≤ 1 hour per 8 hour period provided:
 - a. The core outlet temperature is maintained $> 10^\circ\text{F}$ below saturation temperature; and
 - b. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.2.
3. One SDC train may be inoperable for ≤ 2 hours for surveillance testing provided the other SDC train is OPERABLE and in operation.
4. 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 provided the reactor has been sub-critical for a period > 24 hours and the RCS is fully depressurized and vented in accordance with LCO 3.4.12.1.

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	<u>AND</u>	
	A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately
	<u>AND</u>	
B. One required DG inoperable.	B.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	B.2 Suspend movement of irradiated fuel assemblies.	Immediately
	<u>AND</u>	
	B.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately
	<u>AND</u>	
	B.4 Initiate action to restore required DG to OPERABLE status.	Immediately

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 DC electrical power subsystem shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown."

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One battery or associated control equipment or cabling inoperable.</p>	<p>A.1 Declare affected required feature(s) inoperable.</p>	<p>Immediately</p>
	<p><u>OR</u></p>	
	<p>A.2.1 Suspend CORE ALTERATIONS.</p>	<p>Immediately</p>
	<p><u>AND</u></p>	
	<p>A.2.2 Suspend movement of irradiated fuel assemblies.</p>	<p>Immediately</p>
<p><u>AND</u></p>		
<p>A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.</p>	<p>Immediately</p>	
<p><u>AND</u></p>		
<p>(continued)</p>		

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters - Shutdown

LCO 3.8.8 Required inverters shall be OPERABLE to support the onsite Class 1E AC vital bus electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown."

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more required inverters inoperable.</p>	<p>A.1 Declare affected required feature(s) inoperable.</p>	<p>Immediately</p>
	<p><u>OR</u></p>	
	<p>A.2.1 Suspend CORE ALTERATIONS.</p>	<p>Immediately</p>
	<p><u>AND</u></p>	
	<p>A.2.2 Suspend movement of irradiated fuel assemblies.</p>	<p>Immediately</p>
<p><u>AND</u></p>		
<p>A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.</p>	<p>Immediately</p>	
<p><u>AND</u></p>		
<p>(continued)</p>		

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems - Shutdown

LCO 3.8.10 The necessary portion of AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required AC, DC, or AC vital bus electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
<u>AND</u>		
A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately	
<u>AND</u>		
		(continued)

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

LCO 3.9.2 Two source range monitors (SRMs) shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SRM inoperable.	A.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u> A.2 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
B. Two SRMs inoperable.	B.1 Initiate actions to restore one SRM to OPERABLE status.	Immediately
	<u>AND</u> B.2 Perform SR 3.9.1.1.	4 hours <u>AND</u> Once per 12 hours thereafter

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.

-----NOTES-----
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 introduction into the RCS, coolant with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1.
- 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 reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. SDC loop requirements not met.</p>	<p>A.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1.</p> <p><u>AND</u></p>	<p>Immediately</p>

(continued)



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. 166
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 September 22, 2000, 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. ¹⁶⁶, 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 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: December 20, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 166

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

INSERT

3.1-22	3.1-22
3.3-40	3.3-40
3.3-51	3.3-51
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3.4-17	3.4-17
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3.9-2	3.9-2
3.9-6	3.9-6
	3.9-6a
3.9-9	3.9-9

3.1 REACTIVITY CONTROL SYSTEMS

3.1.10 Boration Systems - Shutdown

LCO 3.1.10 One RCS boron injection flow path shall be OPERABLE.

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. No boron injection flow path OPERABLE.	<p>A.1 -----NOTE----- Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. -----</p> <p>Suspend all operations involving CORE ALTERATIONS or positive reactivity changes.</p>	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>-----NOTE----- Only required when the Refueling Water Storage Tank (RWST) is the source of borated water and the outside temperature is < 40°F or > 100°F. -----</p>	
SR 3.1.10.1 Verify RWST temperature is within limits.	24 hours
SR 3.1.10.2 Verify volume of available borated water is within limits.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. CRIS Manual Trip, Actuation Logic, or required control room airborne radiation monitors inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies.</p>	<p>B.1 -----NOTE----- Place CREACUS in isolation mode if automatic transfer to isolation mode inoperable. -----</p>	
	<p>Place one CREACUS train in emergency mode.</p>	Immediately
	<p><u>OR</u></p>	
	<p>B.2.1 Suspend movement of irradiated fuel assemblies.</p>	Immediately
	<p><u>AND</u></p>	
	<p>B.2.2 -----NOTE----- Limited plant control operations are allowed provided the changes are accounted for in the calculated SDM. -----</p>	
	<p>Suspend positive reactivity additions.</p>	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.3.9.1 Perform a CHANNEL CHECK on the required control room airborne radiation monitor channel.</p>	12 hours

(continued)

3.3 INSTRUMENTATION

3.3.13 Source Range Monitoring Channels

LCO 3.3.13 Two channels of source range monitoring instrumentation shall be OPERABLE.

APPLICABILITY: MODES 3, 4, and 5, with the reactor trip circuit breakers open or Control Element Assembly (CEA) Drive System not capable of CEA withdrawal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 -----NOTE----- Limited plant control operations are allowed provided the changes are accounted for in the calculated SDM. ----- Suspend all operations involving positive reactivity additions.	Immediately
	AND A.2 Perform SDM verification in accordance with SR 3.1.1.2, if $T_{avg} > 200^{\circ}F$, or SR 3.1.2.1, if $T_{avg} \leq 200^{\circ}F$.	4 hours AND Once per 12 hours thereafter

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops - MODE 3

LCO 3.4.5 Two RCS loops shall be OPERABLE and one RCS loop shall be in operation.

-----NOTE-----
All reactor coolant pumps may be de-energized for ≤ 1 hour per 8 hour period, provided:

- a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
-

APPLICABILITY: MODE 3.

ACTIONS		
CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RCS loop inoperable.	A.1 Restore required RCS loop to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 4.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. No RCS loop OPERABLE. <u>OR</u> No RCS loop in operation.	C.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	<u>AND</u> C.2 Initiate action to restore one RCS loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.5.1 Verify required RCS loop is in operation.	12 hours
SR 3.4.5.2 Verify secondary side water level in each steam generator \geq 50% (wide range).	12 hours
SR 3.4.5.3 Verify correct breaker alignment and indicated power available to the required pump that is not in operation.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops - MODE 4

LCO 3.4.6 Two loops or trains consisting of any combination of RCS loops and shutdown cooling (SDC) trains shall be OPERABLE and at least one loop or train shall be in operation.

-----NOTES-----

1. All reactor coolant pumps (RCPs) and SDC pumps may be de-energized for ≤ 1 hour per 8 hour period, provided:
 - a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
2. No RCP shall be started with any RCS cold leg temperature $\leq 246^{\circ}\text{F}$ unless:
 - a. Pressurizer water volume is $< 900 \text{ ft}^3$, or
 - b. Secondary side water temperature in each steam generator (SG) is $< 100^{\circ}\text{F}$ above each of the RCS cold leg temperatures.

APPLICABILITY: MODE 4.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops - MODE 5, Loops Filled

LCO 3.4.7 At least one of the following loop(s)/trains listed below shall be OPERABLE and in operation:

- a. Reactor Coolant Loop 1 and its associated steam generator and at least one associated Reactor Coolant Pump;
- b. Reactor Coolant Loop 2 and its associated steam generator and at least one associated Reactor Coolant Pump;
- c. Shutdown Cooling Train A; or
- d. Shutdown Cooling Train B

One additional Reactor Coolant Loop/shutdown cooling train shall be OPERABLE, or

The secondary side water level of each steam generator shall be greater than 50% (wide range).

-----NOTES-----

- 1. All reactor coolant pumps (RCPs) and pumps providing shutdown cooling may be de-energized for ≤ 1 hour per 8 hour period, provided:
 - a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.2; and
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
- 2. One required SDC train may be inoperable for up to 2 hours for surveillance testing provided that the other SDC train or RCS loop is OPERABLE and in operation.
- 3. One required RCS loop may be inoperable for up to 2 hours for surveillance testing provided that the other RCS loop or SDC train is OPERABLE and in operation.

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No SDC train/RCS loop in operation.	B.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.2.	Immediately
	<u>AND</u> B.2 Initiate action to restore required SDC train/RCS loop to operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.7.1 Verify at least one RCS loop or SDC train is in operation.	12 hours
SR 3.4.7.2 Verify required SG secondary side water level is > 50% (wide range).	12 hours
SR 3.4.7.3 Verify the second required RCS loop, SDC train or steam generator secondary is OPERABLE.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops - MODE 5, Loops Not Filled

LCO 3.4.8 Two shutdown cooling (SDC) trains shall be OPERABLE and at least one SDC train shall be in operation.

- NOTES-----
1. All SDC pumps may be de-energized for ≤ 15 minutes when switching from one train to another provided:
 - a. The core outlet temperature is maintained $> 10^\circ\text{F}$ below saturation temperature;
 - b. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.2; and
 - c. No draining operations to further reduce the RCS water volume are permitted.
 2. The pump providing shutdown cooling may be de-energized for ≤ 1 hour per 8 hour period provided:
 - a. The core outlet temperature is maintained $> 10^\circ\text{F}$ below saturation temperature; and
 - b. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.2.
 3. One SDC train may be inoperable for ≤ 2 hours for surveillance testing provided the other SDC train is OPERABLE and in operation.
 4. 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 provided the reactor has been sub-critical for a period > 24 hours and the RCS is fully depressurized and vented in accordance with LCO 3.4.12.1.
-

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<p>A.2.2 Suspend movement of irradiated fuel assemblies.</p> <p><u>AND</u></p> <p>A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.</p> <p><u>AND</u></p> <p>A.2.4 Initiate action to restore required offsite power circuit to OPERABLE status.</p>	<p>Immediately</p> <p>Immediately</p> <p>Immediately</p>
B. One required DG inoperable.	<p>B.1 Suspend CORE ALTERATIONS.</p> <p><u>AND</u></p> <p>B.2 Suspend movement of irradiated fuel assemblies.</p> <p><u>AND</u></p> <p>B.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.</p> <p><u>AND</u></p> <p>B.4 Initiate action to restore required DG to OPERABLE status.</p>	<p>Immediately</p> <p>Immediately</p> <p>Immediately</p> <p>Immediately</p>

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 DC electrical power subsystem shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown."

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One battery or associated control equipment or cabling inoperable.</p>	<p>A.1 Declare affected required feature(s) inoperable.</p>	<p>Immediately</p>
	<p><u>OR</u></p>	
	<p>A.2.1 Suspend CORE ALTERATIONS.</p>	<p>Immediately</p>
	<p><u>AND</u></p>	
	<p>A.2.2 Suspend movement of irradiated fuel assemblies.</p>	<p>Immediately</p>
<p><u>AND</u></p>		
<p>A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.</p>	<p>Immediately</p>	
<p><u>AND</u></p>		
<p>(continued)</p>		

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters - Shutdown

LCO 3.8.8 Required inverters shall be OPERABLE to support the onsite Class 1E AC vital bus electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown."

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required inverters inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
<u>AND</u>		
A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately	
<u>AND</u>		
		(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems - Shutdown

LCO 3.8.10 The necessary portion of AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more required AC, DC, or AC vital bus electrical power distribution subsystems inoperable.</p>	<p>A.1 Declare associated supported required feature(s) inoperable.</p>	<p>Immediately</p>
	<p><u>OR</u></p>	
	<p>A.2.1 Suspend CORE ALTERATIONS.</p>	<p>Immediately</p>
	<p><u>AND</u></p>	
	<p>A.2.2 Suspend movement of irradiated fuel assemblies.</p>	<p>Immediately</p>
<p><u>AND</u></p>		
<p>A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.</p>	<p>Immediately</p>	
<p><u>AND</u></p>		
		<p>(continued)</p>

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

LCO 3.9.2 Two source range monitors (SRMs) shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SRM inoperable.	A.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u> A.2 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
B. Two SRMs inoperable.	B.1 Initiate actions to restore one SRM to OPERABLE status.	Immediately
	<u>AND</u> B.2 Perform SR 3.9.1.1.	4 hours <u>AND</u> Once per 12 hours thereafter

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.

-----NOTES-----

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 introduction into the RCS, coolant with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1.
- 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 reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. SDC loop requirements not met.</p>	<p>A.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1.</p> <p><u>AND</u></p>	<p>Immediately</p> <p>(continued)</p>



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 175 TO FACILITY OPERATING LICENSE NO. NPF-10
AND AMENDMENT NO. 166 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 September 22, 2000, Southern California Edison (SCE, the licensee), requested changes to the San Onofre Nuclear Generating Station, Units 2 and 3, Technical Specifications (TSs). The proposed amendments would revise 14 TSs relating to positive reactivity additions while in shutdown modes. The proposed changes clarify TSs involving positive reactivity additions to the shutdown reactor. The proposed changes would allow small, controlled, safe insertions of positive reactivity while in shutdown modes.

San Onofre Units 2 and 3 adopted the standard TS (STS) in 1996 under Amendments 127 and 116 for Units 2 and 3, respectively. The industry and the Nuclear Regulatory Commission (NRC) staff have been working through the Technical Specifications Task Force (TSTF) to upgrade the improved STS NUREGs and as a result, generic changes known as TSTFs have been developed. The TSTFs, once approved by the NRC, can be used as models by licensees in amendment requests to improved STS.

The proposed 14 TS changes are from the TSTF process developed by the industry and the NRC. The proposed changes conform closely to TSTF-286 Revision 2 of the industry TSTF. TSTF-286 Revision 2 revises most Actions requiring "Suspend operations involving positive reactivity additions" to allow minimum reactivity additions due to temperature fluctuations or operations which are necessary to maintain fluid inventory within the required shutdown margin (SDM) or refueling boron concentration, as applicable. TSTF-286 Revision 2 was approved by the NRC staff in a letter dated July 6, 2000 (Beckner, W. D., USNRC, to J. Davis, Nuclear Energy Institute). The licensee provided plant-specific differences between the proposed changes and TSTF-286 Revision 2 in Table 2 of its September 22, 2000, submittal.

2.0 EVALUATION

The change in TSTF-286 is to revise (1) Actions that require "Suspend operations involving positive reactivity additions," (2) various Notes precluding reduction in boron concentration, and (3) RCS isolated loop startup limit such that the isolated loop will be at a boron concentration greater than or equal to the operating loop(s). The revision would instead limit the introduction into the RCS of reactivity more positive than that required to meet the required SDM or refueling boron concentrations, as applicable. Additionally, the remaining Actions that require suspension of positive reactivity changes have a Bases addition to clarify that the intent is a "net" positive reactivity operation.

The Actions that preclude positive reactivity changes and/or reduction in boron concentration are intended to ensure either no power increases, or continued margin to core criticality operations. During conditions in which these Actions may be required by current TSs, various unit operations must be continued: RCS inventory must be maintained, and RCS temperature must be controlled. These activities necessarily involve addition to the RCS of cooler water and may involve inventory makeup from sources that are at boron concentrations less than RCS concentration, thus constituting small positive reactivity changes precluded by the current TS. However, if the worst-case overall effect on the core would still assure SDM is maintained, then these activities need not be precluded.

In its application, SCE stated the same justification for San Onofre Units 2 and 3 as that provided by the staff for approving the TSTF and stated above. The licensee proposed the same changes to the TSs that are given in the TSTF with a few plant-specific exceptions.

2.1 TS Changes

TS 3.1.10, Boration Systems - Shutdown, currently prohibits the addition of any positive reactivity to the reactor while in shutdown Modes 5 and 6. Since temperature changes in the RCS impose reactivity changes by means of the moderator temperature coefficient, this TS would be revised to allow plant temperature changes provided the temperature change is accounted for in the calculated SDM. Small changes in RCS temperature are unavoidable and so long as the required SDM is maintained during these changes, any positive reactivity additions will be limited to acceptable levels. This change was not incorporated in TSTF-286 Revision 2 since NUREG-1432 does not have a Limiting Condition for Operation (LCO) for Boration Systems - Shutdown. This is a plant-specific change. The staff finds the proposed change acceptable.

TS 3.3.9 and TS 3.3.13 currently prohibit any positive reactivity additions to the shutdown reactor. These TSs would be modified by a Note allowing controlled plant operations that may result in limited reactivity additions (e.g., temperature or boron fluctuations associated with RCS inventory management or temperature control) provided they are accounted for in the calculated SDM. This would maintain the required SDM and limit any potential reactivity additions to acceptable levels. The proposed change is consistent with the wording in the TSTF Bases for LCO 3.3.9 and 3.3.13. Therefore, the staff finds the proposed changes acceptable.

TS 3.4.5, TS 3.4.6, TS 3.4.7, TS 3.4.8, TS 3.9.4, and TS 3.9.5 currently prohibit operations that would cause any reduction of the RCS boron concentration. These TSs would be revised to prohibit operations that would cause introduction into the RCS of coolant with boron concentration less than that which would meet SDM requirements. The revision would allow introduction into the RCS of coolant at a lower boron concentration than the RCS provided the lower concentration is greater than the concentration required to preserve the required SDM. Additions of makeup water to the RCS are routinely required. If the makeup water is at a lower boron concentration than the RCS, it would result in a positive reactivity addition. In addition, water in the refueling water storage tank of the same boron concentration as the RCS may appear to be at a slightly lower boron concentration due to chemistry sampling uncertainties. However, makeup to the RCS under these circumstances is a safe operation provided the makeup boron concentration is greater than the concentration required to preserve the required SDM. Proposed changes to TS 3.4.5, TS 3.4.6, and TS 3.9.5 are the same as that approved in TSTF-286 Revision 2. Proposed changes to TS 3.4.7 and TS 3.4.8 do not combine LCOs 3.1.1 and 3.1.2 as assumed in TSTF-286 Revision 2. Otherwise, the proposed changes to TS 3.4.7 and TS 3.4.8 are consistent with TSTF-286 Revision 2. The proposed change to TS 3.9.4 is consistent with TSTF-286 Revision 2 except for the Note format. The TSTF has one continuous Note, whereas the proposed TS has the provisions of the Note distributed in a, b, c, and d. Therefore, the staff finds the proposed changes acceptable.

TS 3.8.2, TS 3.8.5, TS 3.8.8, TS 3.8.10, and TS 3.9.2 currently require suspension of operations involving positive reactivity additions under certain conditions. These TSs would be modified to suspend operations involving positive reactivity additions only if they could result in loss of required SDM or boron concentration. By maintaining SDM or required boron concentration, small, controlled, safe insertions of positive reactivity would be allowed. The proposed changes to TS 3.8.2, TS 3.8.5, TS 3.8.8, TS 3.8.10, and TS 3.9.2 are the same as that approved in TSTF-286 Revision 2. Therefore, the staff finds the proposed changes acceptable.

2.2 Summary

The staff has reviewed the licensee's submittal and supporting documentation. Based on the consideration discussed above, the staff has concluded that the proposed revision to 14 specific TSs is acceptable.

3.0 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.

4.0 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

(65 FR 60984). 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.

5.0 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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