

March 9, 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 (SONGS), UNITS 2 AND 3 -  
ISSUANCE OF AMENDMENTS RE: EXTEND LICENSE EXPIRATION DATE  
(TAC NOS. MA7348 AND MA7349)

Dear Mr. Ray:

The Commission has issued the enclosed Amendment No. 166 to Facility Operating License No. NPF-10 and Amendment No. 157 to Facility Operating License No. NPF-15 for San Onofre Nuclear Generating Station (SONGS), Units 2 and 3, respectively. These amendments are in response to your application dated December 13, 1999, as supplemented February 24, 2000 (PCN-507).

The amendments revise the expiration date of SONGS Units 2 and 3 licenses to February 16, 2022, and November 15, 2022, respectively.

A copy of our related Safety Evaluation is 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. 166 to NPF-10  
2. Amendment No. 157 to NPF-15  
3. Safety Evaluation

cc w/encls: See next page

March 9, 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 (SONGS), UNITS 2 AND 3 -  
ISSUANCE OF AMENDMENTS RE: EXTEND LICENSE EXPIRATION DATE  
(TAC NOS. MA7348 AND MA7349)

Dear Mr. Ray:

The Commission has issued the enclosed Amendment No. 166 to Facility Operating License No. NPF-10 and Amendment No. 157 to Facility Operating License No. NPF-15 for San Onofre Nuclear Generating Station (SONGS), Units 2 and 3, respectively. These amendments are in response to your application dated December 13, 1999, as supplemented February 24, 2000 (PCN-507).

The amendments revise the expiration date of SONGS Units 2 and 3 licenses to February 16, 2022, and November 15, 2022, respectively.

A copy of our related Safety Evaluation is 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. 166 to NPF-10  
2. Amendment No. 157 to NPF-15  
3. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION

File Center	JKilcrease, RIV	GHill (4)
PUBLIC	LSmith, RIV	LHurley, RIV
PDIV-2 Rdg	OGC	ACRS
SRichards (clo)	WBeckner	DThatcher
KWichman	FAkstulewicz	KManoly

\*No major changes to SE  
\*\* See previous concurrence

To receive a copy of this document, indicate "C" in the box										
OFFICE	PDIV-2/PM	C	PDIV-D/LA	C	*SRXB	**EMCB	**EMEB	**EEIB		
NAME	LRaghavan:lcc		CJamerson		JWermiel	BElliott for KWichman	KManoly for Elmbro*	DThatcher for JCalvo**		
DATE	03/08/00		03/08/00		2/24/00	2/29/00	2/28/00	2/9/00		
To receive a copy of this document, indicate "C" in the box										
	OGC	C	PDIV-2/SC	C						
NAME	RHoefling NLO w/changes		SDembek							
DATE	3/7/00		03/08/00							

San Onofre Nuclear Generating Station, Units 2 and 3

cc:

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

Mr. Steve Hsu  
Radiologic Health Branch  
State Department of Health Services  
Post Office Box 942732  
Sacramento, CA 94327-7320

Mr. Douglas K. Porter  
Southern California Edison Company  
2244 Walnut Grove Avenue  
Rosemead, CA 91770

Mr. Ed Bailey, Radiation Program Director  
Radiologic Health Branch  
State Department of Health Services  
Post Office Box 942732 (MS 178)  
Sacramento, CA 94327-7320

Mr. David Spath, Chief  
Division of Drinking Water and  
Environmental Management  
P. O. Box 942732  
Sacramento, CA 94234-7320

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

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

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

Alan R. Watts, Esq.  
Woodruff, Spradlin & Smart  
701 S. Parker St. No. 7000  
Orange, CA 92668-4720

Mr. Dwight E. Nunn, Vice President  
Southern California Edison Company  
San Onofre Nuclear Generating Station  
P.O. Box 128  
San Clemente, CA 92674-0128

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

Mr. Robert A. Laurie, Commissioner  
California Energy Commission  
1516 Ninth Street (MS 31)  
Sacramento, CA 95814

Regional Administrator, Region IV  
U.S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011-8064

Mr. Michael Olson  
San Onofre Liaison  
San Diego Gas & Electric Company  
P.O. Box 1831  
San Diego, CA 92112-4150

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. 166  
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 December 13, 1999, as supplemented February 24, 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, Facility Operating License No. NPF-10 is hereby amended as indicated in the attachment to this license amendment.
3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RAI*

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

Attachment: Changes to the Operating License

Date of Issuance: March 9, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 166

FACILITY OPERATING LICENSE NO. NPF-10

DOCKET NO. 50-361

Replace the following pages of Operating License No. NPF-10 with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

REMOVE  
Page 14

INSERT  
Page 14

- G. SCE shall report any violations of the requirements contained in Section 2, items C(1), C(3) through C(13), C(15) through C(22), and F of this license within 24 hours by telephone and confirm by telegram, mailgram, or facsimile transmission to the NRC Regional Administrator, Region IV, or his designee, no later than the first working day following the violation, with a written followup report within fourteen (14) days.
- H. SCE shall notify the Commission, as soon as possible but not later than one hour, of any accident at this facility which could result in an unplanned release of quantities of fission products in excess of allowable limits for normal operation established by the Commission.
- I. SCE shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.
- J. This license is effective as of the date of issuance and shall expire at midnight on February 16, 2022.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed By  
Harold R. Denton

Harold R. Denton, Director  
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Appendix A (Technical Specifications)
- 2. Appendix B (Environmental Protection Plan)
- 3. Appendix C (Antitrust Conditions)

Date of Issuance: February 16, 1982

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. 157  
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 December 13, 1999, as supplemented February 24, 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, Facility Operating License No. NPF-15 is hereby amended as indicated in the attachment to this license amendment.
3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

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

Attachment: Changes to the Operating License

Date of Issuance: March 9, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 157

FACILITY OPERATING LICENSE NO. NPF-15

DOCKET NO. 50-362

Replace the following pages of Operating License No. NPF-15 with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

REMOVE  
Page 12

INSERT  
Page 12

- E. SCE shall fully implement and maintain in effect all provisions of the Commission-approved physical security guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The plans, which may contain Safeguards Information protected under 10 CFR 73.21, are entitled: "San Onofre Nuclear Generating Station, Units 1, 2, and 3 Physical Security Plan," with revisions submitted through April 22, 1988; "San Onofre Nuclear Generating Station, Units 1, 2, and 3 Security Force Training and Qualification Plan," with revisions submitted through October 22, 1986; and "San Onofre Nuclear Generating Station, Units 1, 2, and 3, Safeguards Contingency Plan," with revisions submitted through December 29, 1987. Changes made in accordance with 10 CFR 73.55 shall be implemented in accordance with the schedule set forth therein.
- F. This license is subject to the following additional condition for the protection of the environment:
- Before engaging in activities that may result in a significant adverse environmental impact that was not evaluated or that is significantly greater than that evaluated in the Final Environmental Statement, SCE shall provide a written notification of such activities to the NRC Office of Nuclear Reactor Regulation and receive written approval from that office before proceeding with such activities.
- G. SCE shall report any violations of the requirements contained in Section 2, items C(1), C(3) through C(11), C(13) through C(22), and F of this license within 24 hours by telephone and confirm by telegram, mailgram, or facsimile transmission to the NRC Regional Administrator, Region IV, or his designee, no later than the first working day following the violation, with a written followup report within fourteen (14) days.
- H. SCE shall notify the Commission, as soon as possible but not later than one hour, of any accident at this facility which could result in an unplanned release of quantities of fission products in excess of allowable limits for normal operation established by the Commission.
- I. SCE shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.
- J. This license is effective as of the date of issuance and shall expire at midnight on November 15, 2022.

---

\*On September 29, 1983, the Safeguards Contingency Plan was made a separate, companion document to the Physical Security Plan pursuant to the authority of 10 CFR 50.54.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 166 TO FACILITY OPERATING LICENSE NO. NPF-10  
AND AMENDMENT NO. 157 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 December 13, 1999, as supplemented February 24, 2000, Southern California Edison (SCE or the licensee) submitted a request for changes to the operating licenses for its San Onofre Nuclear Generating Station (SONGS), Units 2 and 3.

SONGS Units 2 and 3 are currently licensed to operate 40 years commencing with the issuance of their construction permits on October 18, 1973. Presently, the operating licenses (OLs) for both units expire on October 18, 2013. The licensee seeks an extension of the license term for SONGS Units 2 and 3 to allow them to operate until 40 years from the issuance of their respective OLs. SONGS Units 2 and 3 OLs were issued on February 16, 1982, and November 15, 1982, respectively. Thus the proposed change would extend the license terms for SONGS Unit 2, to February 16, 2022, and for SONGS Unit 3, to November 15, 2022. This action would extend the period of operation to the full 40 years provided by the Atomic Energy Act.

The licensee's February 24, 2000, letter provided clarifications and additional information that were within the scope of the original *Federal Register* notice and did not change the staff's initial proposed no significant hazards determination.

## 2.0 DISCUSSION

Section 103.c of the Atomic Energy Act of 1954 provides that a license is to be issued for a specified period not exceeding 40 years. The regulations in 10 CFR 50.51 specify that each license will be issued for a fixed period of time not to exceed 40 years from date of issuance. Also, 10 CFR 50.56 and 10 CFR 50.57 allow the issuance of an OL pursuant to 10 CFR 50.51 after the construction of the facility has been substantially completed, in conformity with the construction permit and when other provisions specified in 10 CFR 50.57 are met. The

currently licensed term for SONGS is 40 years, commencing with the issuance of the construction permit on October 18, 1973 for SONGS Units 2 and 3. Accounting for the time that was required for plant construction, this represents an effective operating license term of less than 32 years for Units 2 and 3. Consistent with Section 103.c of the Atomic Energy Act and Sections 50.51, 50.56 and 50.57 of the Commission's regulations, the licensee, by its application of December 13, 1999, as supplemented February 24, 2000, seeks extension that would permit the units to operate for the full 40-year design-basis lifetime. The proposed extension is also consistent with the Commission policy stated in a memorandum dated August 16, 1982, from William Dircks, Executive Director for Operations, to the Commissioners, and as evidenced by the issuance of over 50 such extensions to other licensees.

### 3.0 EVALUATION

The NRC staff has evaluated the safety issues associated with issuance of the proposed license amendments that would allow approximately an additional 8 years of plant operation. The issues addressed consist of additional radiation exposure to the facility operating staff, impacts on the offsite population, nonradiological impacts, and general aging of plant structures and equipment. The impact of additional radiation exposure to the facility operating staff and the impact on the general population in the vicinity of SONGS, and the nonradiological impacts are addressed in the environmental assessment dated February 24, 2000.

The licensee's request for extension of the operating licenses is based primarily on two facts: (1) the design, fabrication, construction, testing, and performance requirements for structures, systems and components important to safety at SONGS are consistent with 10 CFR Part 50, Appendix A, General Design Criteria for Nuclear Power Plants. The Updated Final Safety Analysis Report (UFSAR) Section 3.1 states that SONGS "design complies with all general design criteria with no exceptions," and (2) SONGS Units 2 and 3 were designed, licensed, and constructed for a 40-year service life. The details are discussed below.

#### 3.1 Reactor Vessel

The design of the reactor vessel and its internals considered the effects of 40 years of operation at full power and a comprehensive vessel material surveillance program is maintained in accordance with 10 CFR Part 50, Appendix H, that ensures the fracture toughness requirements of Appendix G are met. As stated in the UFSAR, reactor vessel surveillance capsules are provided for post-irradiation testing of Charpy V-notch and tensile specimens. To provide for continued compliance with 10 CFR 50, Appendix H, the licensee plans to submit a surveillance capsule withdrawal schedule to the NRC by May 31, 2000, and request approval of that schedule in accordance with 10 CFR 50, Appendix H, Section III.B.3.

The Pressurized Thermal Shock (PTS) rule, 10 CFR 50.61, "Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events," adopted on July 23, 1985, establishes screening criteria that define a limiting level of embrittlement beyond which operation cannot continue without further plant-specific evaluation. The screening criteria are given in terms of reference temperature,  $RT_{PTS}$ . The PTS rule was amended on May 15, 1991. The amended rule changed the method of calculating embrittlement to the method recommended in Regulatory Guide 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials," and requires licensees to consider the effect of reactor vessel operating temperature and surveillance results on the calculated  $RT_{PTS}$  value.

On May 19, 1995, the NRC issued Generic Letter 92-01, Revision 1, Supplement I, "Reactor Vessel Structural Integrity," and requested licensees to perform a review and assessment of their reactor pressure vessel structural integrity relative to the requirements of Appendices G

and H to 10 CFR Part 50, 10 CFR 50.60, and 10 CFR 50.61 requirements. In response, SCE submitted its results of its assessments of the reactor pressure vessel structural integrity of SONGS Units 2 and 3 and indicated that it meets the requirements of Appendices G and H to 10 CFR Part 50, 10 CFR 50.60, and 10 CFR 50.61 (September 9, 1992, as supplemented August 16, 1995). The licensee's analysis showed that, based on a capacity factor of 80 percent, the projected  $RT_{PTS}$  value for the limiting reactor vessel beltline plate material at the end of 40 years after issuance of the respective operating licenses are 146.5 °F for Unit 2 (February 16, 2022) and 124.6 °F for Unit 3 (November 15, 2022). The  $RT_{PTS}$  value for Unit 2 would be 123.5°F less than the PTS Rule 10 CFR 50.61 screening criterion of 270 °F for the beltline material. The licensee's analysis accounts for the proposed license extensions intended to recapture the construction period. Hence, the PTS screening criteria would not be exceeded as a result of revising the OL expiration dates. In accordance with 10 CFR 50.61, SCE will update the  $RT_{PTS}$  values whenever changes in core loadings, surveillance measurements, or other information indicates a significant change in the projected values.

Section IV.A.1.a. of 10 CFR Part 50, Appendix G, requires that reactor vessel beltline materials must have Charpy upper-shelf energy in the transverse direction for base material and along the weld for weld material according to the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), of no less than 75 ft-lb (102 J) initially and must maintain Charpy upper-shelf energy throughout the life of the vessel of no less than 50 ft-lb (68 J), unless it is demonstrated in a manner approved by the Director, Office of Nuclear Reactor Regulation, that lower values of Charpy upper-shelf energy will provide margins of safety against fracture equivalent to those required by Appendix G of Section XI of the ASME Code. UFSAR Table 5.3-2 shows the end-of-life projected fracture toughness data for all of the plate and weld belt line materials and they comply with the 10 CFR Part 50, Appendix G, requirements.

Periodic reactor vessel inservice inspection and testing requirements provide further assurance that any degradation will be identified in a timely manner. By letter dated August 5, 1996, the NRC staff noted that the licensee's the RPV integrity data for SONGS Units 2 and 3 to be complete. Since the review and approval of the licensee's assessment of projected embrittlement of the SONGS reactor vessels was previously conducted for compliance with 10 CFR 50.61, a separate assessment for the purpose of these proposed amendments will not be performed.

The NRC staff also reviewed the pressure vessel fluence value at the end of the proposed 40 calendar years of operation and the associated value of the  $RT_{PTS}$  for the critical element at the beltline region of either unit. The licensee stated that both units were built and are operated in exactly the same way. The licensee proposed that the limiting element from either unit be applied to both. Thus, C6404-5 from Unit 2 (which exhibits the largest  $RT_{PTS}$  at the end of the proposed license expiration date) is considered the limiting element for both units.

The information concerning the projected fluence values was derived from the analysis in the reactor vessel surveillance capsule report for the 97° capsule removed at 4.33 effective full power years (EFPYs) of operation from Unit 3 (See WCAP-12920, "Analysis of the Southern California Edison Company San Onofre Unit 3 Reactor Vessel Surveillance Capsule Removed from the 97° Location," by E. Terek et al., Westinghouse Electric Corporation, March 1991). The 97° capsule is the most recent available from either unit.

The methodology used in the analysis complies with staff recommendations and the provisions of the version of Draft Guidance DG-1053 "Calculational Endosymmetry Methods for

Determining Pressure Vessel Neutron Fluence” (previously DG-1025), available at the time the analysis was performed, i.e., in 1991. The difference, if the same analysis was run today would be to use ENDF/B-VI-based cross sections. This would make a difference in neutron transport through iron. However, because the SONGS units do not have a thermal shield, the amount of iron from the edge of the core to the pressure vessel is minimal and therefore, the differences in the analyses are expected to be insignificant.

Comparison of the measured dosimetry data to the corresponding calculated values indicated excellent agreement. This reinforces the credibility of the calculated value of the peak fluence at the inside surface of the pressure vessel to be  $4.2 \times 10^{19} \text{n/cm}^2$  at 32 EFPYs which is equivalent to the 40 calendar years of operation in the proposed license amendments.

The licensee’s February 24, 2000, letter contains the estimates for the 32 EFPY (total of 40 calendar years of operation) value of the  $RT_{PTS}$  for the limiting element for both units (plate C6404-5 of Unit 2); the estimated limiting value is stated to be 146.5 °F. This is very low (compared to the 270 °F screening criterion of 10 CFR 50.61) and provides a very large margin for either unit. Because of this large margin considerations of calculational uncertainty due to cross sections or experimental uncertainty become unnecessary.

The staff finds that the estimated fluence value is acceptable because the calculational methodology complies with staff recommendations and accepted practice. In addition, the projected  $RT_{PTS}$  value for the limiting plate is 146.5 °F, which has a very large margin compared to the 10 CFR 50.61 screening criterion of 270 °F. Therefore, the proposed fluence value is acceptable.

### 3.2 Structures

SONGS critical plant structures (the containment liner encased within a concrete shell, the internal concrete and steel structures, and the other safety-related structures such as the safety equipment building, intake structure, and auxiliary buildings) and supports were designed to various codes and standards applicable at the time of plant construction, and the NRC’s General Design Criteria. The design basis, fabrication, construction and quality assurance criteria for the plants were reviewed and found acceptable by the NRC staff in its original Safety Evaluation Report dated February 1981. Industrial experience with such structures and supports confirms that a service life in excess of 40 years can be anticipated.

SONGS has an established maintenance and inspection program by which it regularly inspects concrete surfaces and protective coatings under 10 CFR 50.65 (the Maintenance Rule) and other inservice inspection (ISI) requirements to assess the condition of structures and complete required repairs in accordance with the applicable codes. Such periodic inspection and testing provide reasonable assurance that structural integrity remains adequate throughout the operating life of the plant, including the proposed extension period.

### 3.3 Mechanical Equipment

With regard to equipment lifetime, SONGS Units 2 and 3 were designed, licensed, and constructed for a 40-year service life. The reactor coolant system components and support systems were analyzed for the integrated effects of radiation damage and cyclic loadings (with added margin) that could reasonably be expected to occur in a 40-year lifetime. Surveillance and maintenance practices were implemented in accordance with the ASME Code for Inservice Inspection and Inservice Testing of Pumps and Valves, a maintenance program satisfying

10 CFR 50.65 requirements, and the facility technical specifications (TS). These TS are part of the plant's operating license and have been approved by the NRC, as are all subsequent changes to the TS. The specific provisions and requirements for ASME Code testing are set forth in 10 CFR 50.55a. Although this does not mean that some components will not require replacement during the plant life time, the design features and ISI programs that are in place will facilitate inspection and testability of structures, systems, and equipment, and provide reasonable assurance that any unexpected degradation in plant equipment will be identified and corrected. Some of the major components already replaced at SONGS include the 3<sup>rd</sup> point heaters, high-pressure turbine diaphragms, low-pressure turbines, and the salt water cooling pumps. These upgrades were performed to either increase the efficiency and/or the reliability of plant systems.

### 3.3 Environmental Qualification of Electrical Equipment

Aging analysis has been performed for all safety-related electrical equipment in accordance with 10 CFR 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants," identifying qualified lifetimes for this equipment. These lifetimes have been incorporated into plant equipment maintenance and replacement practices to ensure that all safety-related electrical equipment remains qualified and available to perform its safety-related function regardless of the overall age of the plant. The staff's safety evaluation for environmental qualification (EQ) of safety-related electrical equipment (License Amendment Nos. 60 and 49 for SONGS Units 2 and 3, respectively) was issued on August 14, 1987 in which the staff documented SONGS' compliance with 10 CFR 50.49 requirements.

### 4.0 SUMMARY OF FINDINGS

The staff published its original safety evaluation for SONGS Units 2 and 3 on October 20, 1972. While changes have been made to the plant design since the original plant construction was completed, each of these changes that involved an unreviewed safety question has been reviewed and approved by the staff with the details being documented in the staff's related safety evaluation. Further, as required by 10 CFR 50.71(e), these changes and their effect on accident analyses, if any, are routinely updated in the UFSAR. Based on the ongoing review process, the staff has not identified any concerns associated with approval of the proposed amendments to extend the expiration date of the licenses that are not already addressed by licensee commitments, operating procedures, and license requirements.

The NRC staff concluded in the Environmental Assessment that the annual radiological effects during the additional years of operation that would be authorized by the proposed license amendments are not more than were previously estimated in the Final Environmental Statement, and are acceptable.

The staff concludes from its considerations of the design, operation, testing, and monitoring of the mechanical equipment, structures, and the reactor vessel that an extension of the operating licenses for SONGS Units 2 and 3 to a 40-year service life is consistent with the UFSAR, Safety Evaluation Reports, and submittals made by the licensee, and that there is reasonable assurance that the units will be able to continue to operate safely for the additional period authorized by these amendments. Issues associated with plant degradation and population changes have been adequately addressed.

In summary, the staff finds that the extension of the operating licenses for SONGS Units 2 and 3 to allow 40-year service life is consistent with the Final Environmental Statement and the



Safety Evaluation Report for SONGS Units 2 and 3 and that the Commission's previous findings are not changed.

#### 5.0 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.

#### 6.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32, and 51.35, an environmental assessment and finding of no significant impact was published in the *Federal Register* on February 24, 2000 (65 FR 9301) for these amendments. Accordingly, based upon the environmental assessment, the Commission has determined that issuance of these amendments will not have a significant effect on the quality of the human environment.

#### 7.0 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.

Principal Contributor: L. Raghavan, NRR

Date: March 9, 2000