

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

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Report No: 50-206/99-11

Licensee: Southern California Edison Co.
P.O. Box 128
San Clemente, California

Facility: San Onofre Nuclear Generating Station, Unit 1

Location: San Clemente, California

Dates: July 19-22, 1999

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Attachment: Supplemental Information

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EXECUTIVE SUMMARY

San Onofre Nuclear Generating Station (SONGS) NRC Inspection Report 50-206/99-11

This routine, announced inspection of Unit 1 included review of the licensee's decommissioning status, management, organization, cost controls, spent fuel pool operations, 10 CFR 50.59 safety evaluations, radiation protection, radwaste treatment, effluent monitoring, environmental monitoring, and surveillance and maintenance programs.

Decommissioning Status, Performance, Management, Organization, and Cost Controls

- The SONGS Unit 1 facility remained in SAFSTOR as described in the licensee's post shutdown decommissioning activities report (PSDAR) and technical specifications. The licensee had established a decommissioning project organization to begin planning for decommissioning of Unit 1, including moving the Unit 1 spent fuel to dry cask storage. The licensee planned to start dismantlement and demolition activities beginning in the year 2000 (Section 1).
- The licensee's organization and lines of responsibility complied with the PSDAR and technical specifications. The organization and staffing were appropriate for Unit 1's decommissioning and defueled condition (Section 1).
- Facility material condition, housekeeping, and cleanliness were excellent. A detailed tour within containment and the spent fuel pool areas verified that structures, systems, and components continued to contribute to the safe storage of spent fuel (Section 1).
- The licensee had implemented a fire protection and prevention program that met license requirements. No abnormal fire loading conditions were identified (Section 1).
- A high quality control room pre-job brief for the containment inspection and facility tour contributed to the safe and successful accomplishment of this activity (Section 1).

Radiation Protection

- The radiation protection program met requirements and was appropriate for Unit 1's shutdown and defueled condition. Radioactive material, radiation work activities, and radiation areas were being controlled in accordance with the applicable requirements (Section 2).

Spent Fuel Pool Monitoring

- The Unit 1 spent fuel pool was in compliance with technical specifications for water level, temperature, and chemistry. The water clarity and condition of the spent fuel pool structures were observed during a walkdown of the facility. No problems or concerns were identified (Section 3).

10 CFR 50.59 Safety Evaluations

- The licensee had adequately documented changes to the Unit 1 facility as required by 10 CFR 50.59 (Section 4).

Quality Assurance and Self-Assessment

- The licensee's quality assurance programs were effective in ensuring that activities related to Unit 1 decommissioning that are important to safety were properly implemented and independently verified (Section 5).

Radwaste Treatment, Effluent, and Environmental Monitoring

- The licensee's annual effluent release report, radiological environmental monitoring program, and effluent monitoring program met the requirements of the technical specifications and offsite dose calculation manual. Unit 1 effluent releases and direct radiation doses to the public were significantly less than the annual limit of 100 millirem specified in 10 CFR Part 20.1301 (Section 6).

Surveillance and Maintenance

- The licensee's surveillance and general maintenance programs for Unit 1 were found to be adequate (Section 7).

Report Details

1 Decommissioning Performance and Status Review at PSRs (71801) and Organization, Management, and Cost Controls (36801)

1.1 Inspection Scope

The inspection was conducted to verify that the SONGS Unit 1 programs for maintaining the facility in a SAFSTOR status were adequate and were being implemented effectively. The inspectors conducted plant tours and held discussions with licensee management regarding future decommissioning, including plans for an independent spent fuel storage installation (ISFSI). Additionally, the licensee's organization was reviewed for any management changes since the last inspection.

The inspectors toured the facility to assess the status of various structures, systems, and components important to maintaining the facility in a SAFSTOR condition. This effort involved tours of the radiologically controlled area, containment, control room, and the spent fuel pool building. Inspections included an assessment of housekeeping, fire hazards, radiation material control, access control and lighting.

1.2 Observations and Findings

a. Summary of Plant Status and Cost Controls

SONGS is a three unit site of which Unit 1 was permanently shutdown. Unit 1 began commercial operation on January 1, 1968, and was permanently shutdown on November 30, 1992. Since that date, the licensee had defueled the reactor and placed Unit 1 in SAFSTOR. The Unit 1 spent fuel was stored onsite in the Units 1, 2, and 3 spent fuel pools and at an offsite facility in Morris, Illinois. Unit 1's license was amended for possession-only status in March 1993. The licensee submitted a decommissioning plan to the NRC on November 1994. Under the provisions of decommissioning regulations issued in August 1988, the decommissioning plan became the post shutdown decommissioning activity report (PSDAR). The licensee submitted an updated PSDAR to the NRC on December 15, 1998. On August 27, 1998, a defueled safety analysis report (DSAR) was submitted to the NRC to meet the requirements of 10 CFR 50.71(e)(4).

The licensee recently established a decommissioning project organization to plan the SONGS Unit 1 decommissioning, radioactive waste storage, and dry fuel storage programs. Discussions held with licensee management revealed the following:

- The licensee received permission from the California Public Utilities Commission to use Unit 1's estimated \$543 million decommissioning fund.

- Plans include the construction of an onsite independent spent fuel storage installation (ISFSI). Currently, 188 Unit 1 spent fuel assemblies are stored in Units 2 and 3 spent fuel pools. There is insufficient spent fuel storage capacity at SONGS to support Units 2 and 3 operations beyond the year 2004.
- Dismantlement activities are scheduled to begin by January 2000 and will start with the demolition of the diesel generator building.
- A number of license amendment requests and 10 CFR 50.59 plant design change reviews will have to be implemented during the first half of year 2000 to support Unit 1 decommissioning. Some of the proposed changes will impact the license based documents, programs, facilities, and equipment for Units 2 and 3.

The inspectors reviewed the licensee's schedules and plans detailing Unit 1 decommissioning. Also reviewed was a list of Units 1, 2, and 3 facility systems, programs, plans, and procedures that will have to be changed to support the start of Unit 1 decommissioning.

b. Organization, Staffing, and Cost

The licensee's organization was reviewed against the requirements of Technical Specification D6.2, which defined lines of authority and responsibilities. Technical Specification, Table D6.2-1, "Minimum Shift Crew Composition," listed the minimum required shift composition. The licensee's shift staffing assignments met the requirements of Table D6.2-1.

Over 100 individuals supported the Unit 1 SAFSTOR operations during 1998 and 1999. At least 25 individuals were directly assigned to Unit 1. The departments involved with Unit 1 included decommissioning, dry fuel storage, operations, maintenance, emergency preparedness, station technical, chemistry, health physics, security, training, site support, nuclear engineering and construction, nuclear oversight, nuclear regulatory affairs, and nuclear project management. Most workers assigned to Unit 1 were also involved with the programs at Units 2 and 3. Since the last inspection, the licensee had added a dedicated Unit 1 decommissioning management team to the site organization.

A review of selected procedures indicated that the licensee had established an organization that had defined responsibilities that were consistent with the PSDAR and the technical specifications. Interviews with selected managers indicated that the procedures were being implemented in a manner that ensured the safety of the Unit 1 spent fuel. SONGS also maintained the experience level with much of its Unit 1 staff by cross-training with Unit 2 and 3.

The inspectors noted the number of onsite crew members on duty and observed the conduct of operations. At least one individual qualified to stand watch in the control room was in the control room area as required by the technical specifications. The actual number of personnel that were on duty during the inspection met or exceeded the minimum total established in the technical specifications.

c. Containment Inspection and Facility Tour

The licensee conducts a tour of the Unit 1 containment at least quarterly to assess the material status of the containment structures, systems, and components. Most systems inside containment were not active and were not necessary for the safe storage of spent fuel. Inspections of containment are important to verify that conditions have not degraded to a point representing an unsafe radiological or facility situation. Systems that penetrate containment, such as fire water and component cooling water were isolated with closed valves or blind flanges. Some containment systems, such as the reactor vessel and system low points contained water; however, no pressurized water existed. With the exception of telephone communication supply power, the licensee shuts off electrical power to containment when the containment is closed. The licensee had conducted a Unit 1 containment entry and inspection on July 15, 1999, in accordance with SO1-4-25, "Ventilation System Operation." This procedure included a checklist to ensure important systems were inspected.

During the containment entry, operations personnel performed a containment inspection, tested the containment sump level alarm, and performed a fire system alignment check. The control room shift supervisor and the senior operator on shift conducted a pre-entry briefing using Procedure S023-0-44, "Professional Operator Development Program.". The shift supervisor also provided a briefing on procedure SO1-4-44, "Containment Access System Operation," focusing on precautions, prerequisites, and the procedure steps that would be performed. The detailed pre-entry briefing was conducted to assure all personnel understood entry and egress requirements, command and control responsibilities, and communications. Prior to entry, the shift supervisor assured proper containment ventilation, purge duration, temperature, and humidity and stressed the importance of both personnel and plant safety. Plant management observed the briefing, questioned key personnel concerning their duties, and provided insight to the safe completion of this activity.

The inspectors toured accessible areas within containment, except for the reactor annulus space due to radiation protection considerations. In areas inspected, unfettered access was afforded to all components and systems. Permanent lighting within containment was sufficient to support a thorough inspection of the areas toured. Transient material such as scaffolding, tools, and waste containers were appropriately stored and segregated representing good material control. Floors, horizontal surfaces, and corners within containment were free of excessive dirt or waste. No excessive corrosion was identified on any systems, indicating that the surfaces had not been wet. Containment sump motors were in good material condition and free of trash that could potentially clog the sump pumps during operation.

The inspectors performed a detailed inspection during the tour to identify water leakage from systems or free standing water, both of which would indicate a problem. Floors, systems, and components were observed to be dry. No standing water or indication of residue from evaporated water was observed. Observation of the fuel transfer blind flange and the horizontal surfaces adjacent to and surrounding the reactor head flange verified that surfaces were dry. There was no standing water in these areas or leakage

from the transfer tube blind flange that could possibly indicate a degradation in the spent fuel pool boundary integrity.

The inspectors observed that the containment contained low combustible loading. This included fire loading such as electrical cabling, oil on components and equipment, use of fire-resistant scaffolding, and miscellaneous pump and motor-operated valve oils. Combustibles observed in containment included plastic bags used for controlling radioactive contamination, tygon hoses, and articles used for housekeeping. Inspectors determined that materials in containment did not represent an adverse fire loading.

The inspectors toured the auxiliary facility with personnel who routinely performed equipment checks of the auxiliary building, spent fuel pool cooling and component cooling water systems. Good material conditions, unfettered access, and good housekeeping were noted. The inspectors determined that the component cool water system, which cools the spent fuel pool cooling water via a heat exchanger was operational.

1.3 Conclusions

The licensee's organization and lines of responsibility complied with the technical specification and the PSDAR. The organization and staffing were appropriate for Unit 1's shut down and defueled condition.

Facility material condition, housekeeping and cleanliness were excellent. A detailed tour of containment revealed that structures, systems, and components continue to contribute to the safe storage of spent fuel and demonstrate appropriate material integrity. The licensee had implemented a fire protection and prevention program that met license requirements.

The inspectors concluded that the pre-job briefing contributed to the safe accomplishment of the containment entry. Activities within containment were conducted safely, illustrating the effectiveness of the preplanning. Appropriate management oversight was provided.

2 **Occupational Radiation Exposure During (83750)**

2.1 Inspection Scope

The inspectors reviewed licensee activities to determine the adequacy of the radiation protection program for Unit 1's defueled operations and to determine whether the licensee was in compliance with the requirements of Technical Specification D6.11. Areas reviewed included the radiation protection procedures, survey records, and as low as is reasonably achievable (ALARA) reviews. The inspectors also reviewed the adequacy of the licensee's radiation protection program pertaining to inspecting the Unit 1 containment.

2.2 Observations and Findings

a. Radiation Protection and ALARA

The inspectors reviewed ALARA planning and radiation exposure permits developed for work activities conducted in late 1998 and 1999. The SONGS Unit 1 ALARA goal was 1 person-rem per year for both 1998 and 1999. For 1998, 0.7 person-rem had been expended. For 1999, the Unit 1 collective personnel dose through July was 2.6 person-rem. The health physics staff had received 1.9 person-rem performing Unit 1 decommissioning characterization work. The collective dose projected through the remainder of 1999 was 17.1 person-rem (16.9 person-rem for decommissioning activities and 0.2 person-rem for routine activities). The licensee did not intend to revise the Unit 1 ALARA goal. It was not SONGS policy to revise ALARA goals due to emergent work.

The radiation exposure permits issued for Unit 1 containment entries and maintenance activities in 1998 and 1999 were reviewed. Also reviewed were the Unit 1 survey log records, area plot plans, and survey pre-job planning cards. Detailed periodic radiation and contamination surveys had been performed in accordance with the licensee's radiation survey procedures.

The Unit 1 ALARA pre-job meetings included radiation safety topics. Key radiological considerations were presented by the lead health physics technician, including known hot spots, expected loose surface contamination and general area radiation levels. The radiation exposure permits were reviewed in detail and found to include a good overall radiological perspective, including ALARA considerations. The radiation exposure dose estimates were predetermined based on previous containment radiation surveys and were included in the pre-job briefings to provide the participants with reference values while performing their duties. Health physics technicians provided direct oversight of the activities within containment.

Inspectors observed health physics technicians and plant personnel implementing safe radiation protection practices. During the Unit 1 facility tour of the containment and spent fuel pool, radiation exposure levels measured by inspectors were in agreement with the licensee's survey records and postings. The inspectors noted that individual exposures during past containment tours were 5-6 millirem. During this containment tour, personnel exposures were approximately 3 millirem. Health physics personnel attributed the reduction in dose to water shielding from additional water added to the steam generators. The inspectors determined that detailed work planning and radiation protection pre-job briefings were adequate for the tasks being performed. Radiation exposure permits and ALARA evaluations had been adequately completed by radiation protection staff.

2.3 Conclusions

The radiation protection program met requirements and was appropriate for Unit 1's shutdown and defueled condition. Radioactive materials, radiation work activities, and radiation areas were being controlled in accordance with the requirements of 10 CFR Part 20 and Technical Specifications D6.11 and D6.12.

3 **Spent Fuel Pool Safety at Permanently Shutdown Reactors (60801)**

3.1 Inspection Scope

The inspectors conducted a walkdown of the spent fuel pool and performed a review of numerous daily logs and records to verify compliance with the technical specifications.

3.2 Observations and Findings

The Unit 1 spent fuel pool had 216 available slots for spent fuel. Of these, 207 contained spent fuel assemblies, four contained trash containers, and four slots contained mixed oxide fuel. Licensing requirements for the spent fuel pool were specified in Sections D3.1 and D4.1 of the technical specifications and included water level, temperature, chemistry and periodic surveillances.

A walkdown of the spent fuel pool area was conducted. The water clarity was excellent. The recirculation system was observed to be functioning. The facility appeared orderly and was properly posted. No materials were observed near the spent fuel pool where they could fall into the pool. The facility structure appeared in good condition. No obvious deterioration of the building was evident.

SONGS Unit 1 demonstrated compliance with PSDAR requirements for the spent fuel pool using Operating Instruction S01-12.1-4, "Control Room Daily Log," Attachment 1: Surveillances. Data was collected and recorded on the daily surveillance logs by both the day shift and the night shift crew. Trending graphs were reviewed which covered the period from late 1994 through June 1999.

Technical Specification D3.1.1, "Spent Fuel Pool Temperature," required the pool water to be maintained at less than 150°F. Technical Specification D4.1 required daily verification of the spent fuel pool water temperature. A review of surveillance data indicated temperatures were typically maintained near 70°F prior to July 1998 and at least one spent fuel pool cooling train was functional on a daily basis. However, during this inspection of the spent fuel pool, it was noted that the temperature was well above ambient. The licensee stated that the temperature was approximately 100° F. The technical specification limit was 150°F. The high temperature was due to both trains of the component cooling water system being out-of-service due to maintenance activities. The component cooling water system removes heat from the spent fuel pool cooling system. The inspectors noted that Technical Specification D3.1.1 B required at least one spent fuel pool cooling train be functional. The action associated with this technical specification states: "With no functional spent fuel pool cooling train, suspend fuel

handling operations and initiate action within 1-hour to return a spent fuel pool cooling train to functional status prior to the spent fuel pool temperature reaching 150°F."

Though not explicitly contained in the Unit 1 technical specifications, the licensee provided documentation that was submitted with the technical specifications in a letter dated May 12, 1993, and subsequently approved by the NRC. In that submittal, discussions by the licensee on the Unit 1 spent fuel pool cooling system stated that at least one spent fuel pool cooling train will normally be functional (commercial grade) during the permanently defueled mode. If a common train maintenance or testing is required, both cooling trains may be removed from service. When such maintenance or testing is planned, the work planning will provide for the return of a least one train to service prior to the time the spent fuel pool water temperature would be projected to reach 150°F." The inspectors noted that since decay heat in the pool was insufficient to elevate the temperature to 150°F due to ambient losses, it would be possible to continue indefinitely without spent fuel pool cooling using this interpretation. The licensee stated that despite the low decay heat levels, returning the spent fuel pool cooling system to a functional status was a priority. The system was restored to a functional status during the time the inspectors were present on site.

Technical Specification D3.1.2 required the spent fuel pool water level to be maintained at an elevation of not less than 40 feet 3 inches. Technical Specification D4.1 required daily verification. A review of the daily surveillance data indicated that water level was typically maintained near 40 feet 9 inches and at no time was it below 40 feet 3 inches.

Technical Specification D3.1.3 established upper limits for chlorides and fluorides in the spent fuel pool water of 0.15 parts/million (ppm). Technical Specification D4.1 required monthly chemical analysis. A review of the chemical analysis data trending report indicated that for the past 12 months, the chlorides and fluorides were maintained below 0.05 ppm, with typical readings of less than 0.01 ppm. The data had been plotted based on weekly analysis data. The spent fuel pool boron concentration was maintained at a minimum of 2000 ppm at all times when fuel assemblies were present. For the past year, the licensee had tracked and maintained boron levels in the SFP at 2110 to 2140 ppm.

The status of the spent fuel pool liner was discussed with the licensee. The leakage into the spent fuel pool liner well had been relatively steady over the previous year at approximately four gallons per week.

3.3 Conclusion

The Unit 1 spent fuel pool was in compliance with technical specifications for water level, temperature, and chemistry. The water clarity and condition of the SFP structures were observed during a walkdown of the facility. No problems or concerns were identified.

4 10 CFR 50.59 Safety Evaluation Program (37001) and Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors (37801)

4.1 Inspection Scope

The inspectors reviewed the licensee's upper tier documents and implementing procedures associated with the 10 CFR 50.59 safety review process. The inspectors also reviewed several 10 CFR 50.59 screening reviews and safety evaluations of plant modifications and procedural changes.

Observations

The licensee's guidance for determining when a 10 CFR 50.59 evaluation was required was contained in procedure SO123-XV-44. This document referred to various implementing procedures depending on the nature of the change (e.g., plant modifications, procedure changes, changes to licensing basis documents, software changes). Implementing procedures SO123-XXX-5.2, "Control of Licensing Document Changes;" SO123-XXIV-10.9, "Design Process Flow and Control, SONGS Units 1, 2 & 3;" and SOV123-VI-1.3, "Changes to Procedures," were reviewed and found to provide adequate instructions for performing 10 CFR 50.59 evaluations. Unit 1 specific implementing procedures SO1-XXIV-10.10, "Unit 1 Post Shutdown Configuration Control" and SO1-XXVIII-2.1, "Development, Review, Approval, Issuance and Closure of Decommissioning Work Package Scope Documents and Decommissioning Work Packages," were also reviewed and found to provide clear instructions regarding 10 CFR 50.59 reviews applicable to Unit 1 decommissioning. The licensing basis document used for the safety reviews was the DSAR.

The inspectors reviewed several plant change authorizations, maintenance orders, and procedure changes prepared by the licensee for assessment of 10 CFR 50.59 implementation. Specifically, plant change authorizations 97-SEC-1, 100-AFW-2, 104-RMS-13, 105-ELE-10, 108-ELE-12, 103- LTG-3, 99-EP-1, 102-ELE-10; maintenance order NCR 970801135; procedure changes SO1-3-1 (Rev 3) and SO1-VIII-30 (TCN 3-1) were reviewed and determined to be complete, accurate, and in compliance with 10 CFR 50.59.

One of the primary considerations in determining the need for a 10 CFR 50.59 evaluation for changes to Unit 1 structures, systems, and components (SSC) was whether or not the SSC was required to be operational. Systems required to be operational were considered important to safety for Unit 1. A detailed listing of the Unit 1 SSC quality classifications was provided in document M-37560, "Unit 1 Q-List." Specifically, SSCs identified as quality class systems required to be operational included; 1) the spent fuel pool cooling system pressure boundary, 2) spent fuel pool and liner, 3) auxiliary feedwater tank and piping to the spent fuel pool, 4) 10 CFR Part 20 compliance SSCs, 5) fire protection equipment required to support Units 2 and 3, and 6) communication systems needed to support emergency situations. The inspectors performed a cursory review of the Unit 1 Q-List and found that the classification of systems required to be operational was consistent with the definitions

provided in the licensee's quality assurance program requirements (TQAM 8A, 8B, and 8C).

Conclusions

The inspectors found that the licensee had adequately documented changes to the facility as required in 10 CFR 50.59.

5 Self-Assessment, Auditing, and Corrective Action at Permanently Shutdown Reactors (40801)

5.1 Inspection Scope

The inspectors reviewed selected quality assurance program audits, action requests generated as the result of audit findings, and onsite review committee proceedings. The inspectors also reviewed the onsite organization to verify consistency with the technical specifications and the DSAR.

5.2 Observations

The inspectors reviewed the quality assurance programmatic audits for the following programs:

- radiological environmental monitoring program (report #SCES-910-99)
- non-radiological effluent and environmental controls program (report #SCES-811-98)
- radiological effluent control program (report #SCES-809-98)
- nuclear engineering design organization implementation of the topical quality assurance manual requirements for Unit 1 and Unit 1 defueled configuration controls (report #SCES-720-97)
- operational surveillances (report #SCES-803-98)
- HP/radiation protection (report #SCES-808-98)

The audits were extensive, thorough, detailed, and the findings were well documented. The audits evaluated site wide programs and were not segregated on a unit basis; therefore, the inspectors were unable to note any trends relative to Unit 1 activities. The inspector observed one audit report related to operational surveillances (report #SOS-031-99) where a minor documentation problem was identified. However, it was not clear how the licensee planned to resolve the problem. After discussions with the licensee's quality assurance management, an action request was generated to ensure the observation was tracked to completion.

The inspectors reviewed over 30 action requests generated for Unit 1 as a result of observations and findings from quality assurance audits over the last year. The action requests program documented observations and problems on matters important to safety involving degraded human or equipment performance. The inspectors also reviewed the licensee's onsite safety review committee proceedings and confirmed that committee activities were being conducted in compliance with the Unit 1 technical specifications.

The inspectors reviewed the Unit 1 onsite organizations as specified in the technical specifications and the DSAR. In preparation for active decommissioning and dismantlement activities, the licensee was modifying the onsite organization. The inspectors considered this to be a positive change. Because the new organization, responsibilities and qualifications had not yet been formally established, a future NRC inspection will verify that the technical specifications and DSAR have been appropriately updated to reflect the new organizational structure. This will be tracked as an inspection followup item (IFI 50-206/9911-01).

5.3 Conclusions

The licensee's quality assurance programs were effective in ensuring that activities related to Unit 1 decommissioning that were important to safety were properly implemented and independently verified.

6 **Radwaste Treatment, Effluent and Environmental Monitoring (84750) and Review of Periodic and Special Reports (90713)**

6.1 Scope

The licensee's radwaste treatment, radiation effluent release, and environmental monitoring programs were reviewed for compliance with the technical specification. Radiation effluent monitor calibration records were reviewed to determine compliance with the 18-month calibration frequency identified in tables 4.2 and 4.4 of the offsite dose calculation manual. The inspectors also reviewed the SONGS 1998 radiological environmental monitoring program, the 1998 annual radioactive effluent release report, and the 1998 annual radiological operating report to verify compliance with Technical Specifications D6.8.1(I), D6.8.4(b), and D6.9.1.3.

6.2 Observations and Findings

The operations department health physics division was responsible for onsite contamination and release events. The chemistry division was responsible for the monitoring of effluent release pathways to the environment and maintaining effluent radiation monitors operational.

Changes to the offsite dose calculation manual, the gaseous radwaste treatment system, and uncontrolled or unplanned releases at Unit 1 were reported in the 1998 annual radioactive effluent release report in compliance with the requirements of the

technical specifications. Licensee records indicated that effluent monitors had been calibrated as required by the offsite dose calculation manual. Inspectors reviewed the operational status of liquid and gaseous effluent radiation monitors and the radiation effluent monitor surveillance and operability records. Records indicated that the effluent radiation monitors had been maintained in compliance with the offsite dose calculation manual. The reviews and evaluations had been performed by qualified individuals and reviewed by the appropriate managers. The inspectors determined from the annual radioactive effluent release report that releases offsite from Unit 1 gaseous and liquid effluents and direct radiation had resulted in doses to the public that were significantly less than the 10 CFR 20.1301 annual limit of 100 millirem.

There were no major changes reported in the 1998 radiological environmental monitoring program or annual radiological operating report that affected Unit 1. The annual radioactive effluent release report and annual radiological operating report were generated as described in the offsite dose calculation manual and technical specification. Environmental data analysis was appropriately explained and graphically trended within the 1998 annual radiological operating report. Inspectors reviewed the land use census data that was included in the 1998 annual radiological operating report and determined that the licensee had appropriately assessed the land use around the facility, including documenting significant changes.

6.3 Conclusions

The licensee's annual radioactive effluent release report and environmental and effluent monitoring programs met the requirements of the technical specifications and offsite dose calculation manual. Unit 1 effluent releases and direct radiation had resulted in doses to the public that were significantly less than the 10 CFR Part 20 annual limit of 100 millirem.

7 **Maintenance and Surveillance at PSRs (62801)**

7.1 Scope

Maintenance and surveillance activities at SONGS Unit 1 related to spent fuel pool operations and radiation effluent monitoring were reviewed. Successful completion and documentation of the licensee's surveillance requirements required by technical specifications D3.1, D3.2, D3.3 for spent fuel operations and compliance with offsite dose calculation manual sections 4.1 and 4.3 for gaseous and liquid radiation monitoring was confirmed.

7.2 Observations and Findings

a. Surveillance Test

The inspectors reviewed the licensee's surveillance tracking database that identified all surveillance tests that had been conducted at SONGS Unit 1 from August 1998 through June 1999. The inspector reviewed the following surveillance procedures:

- SO1-12.1-4, "Control Room Daily Log Sheet"
- SO1-12.1-7, "Process and Effluent Monitoring Channel Check"
- SO1-12.2-13, "Miscellaneous Technical/Non-Technical Specification Level Surveillances"
- SO1-12.3-41, "Radiation Monitoring System Monthly Checks"

Additionally, the inspectors noted that the licensee conducted surveillance testing on the Unit 1 fire suppression systems. Records of surveillance tests that were completed in 1999 were reviewed and found to meet the technical specification requirements.

b. Maintenance Activities

The inspectors reviewed the maintenance program at SONGS Unit 1. This included a review of the licensee's list of maintenance orders completed since the last inspection. Activities included scheduled inspecting, cleaning and testing of plant equipment, and unscheduled troubleshooting and repair activities. The status of maintenance activities past, present, and future were contained in the decommissioning planning packages, work week reports, and work authorization letters.

The licensee had adequately prioritized maintenance activities and provided a status on the activities still underway. The licensee used action requests, work authorizations and maintenance orders to identify problems, investigate and analyze the problem, provide specific work instructions, authorize the release of equipment and place the equipment back into service. Several action requests, work authorizations and maintenance orders that had been generated in association with repair of bearing problems with a Unit 1 pump were reviewed. No issues or concerns were identified with the maintenance program activities.

c. 10 CFR 50.65 Maintenance Rule

The inspectors reviewed the licensee's 10 CFR 50.65 maintenance rule program for SONGS Unit 1. The licensee had evaluated the SONGS Unit 1 program against the requirements of 10 CFR 50.65 and the guidance in Regulatory Guide 1.160, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Plants." Unit 1 SSCs that were applicable to the maintenance rule had been incorporated in the licensee's Units 1, 2, and 3 "Maintenance Rule Scoping Summary Matrix," document STS-SO123-2001. This document identified the following Unit 1 SSCs as being within the scope of the maintenance rule: electrical switchyard, spent fuel pool cooling, structures supporting spent fuel storage, and fire protection systems. Eight procedures had been developed to implement the maintenance rule including procedure SO123-XIV-5.3.1, "Scoping for the Maintenance Rule." Procedure SO123-XIV-5.3.4, "Maintenance Rule Expert Panel," established a group of licensee staff that monitored maintenance rule issues for the site, including Unit 1.

7.3 Conclusions

The licensee's surveillance and general maintenance programs for Unit 1 were found to be adequate.

8 **Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management at the exit meeting on July 22, 1999. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspectors.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

B. Boos, Quality Assurance Supervisor
R. Clark, Manager, Quality Engineering, Operations, and Programs
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D. Dick, Chemistry/Effluent Supervisor
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S. Root, Manager, Special Projects
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INSPECTION PROCEDURES (IP) USED

IP 36801	Organization, Management, and Cost Controls at PSRs
IP 37001	10 CFR 50.59 Safety Evaluation Program
IP 37801	Safety REviews, Design Changes, and Modifications
IP 40801	Self Assessment, Auditing, and Corrective Actions
IP 60801	Spent Fuel Pool Safety
IP 62801	Maintenance and Surveillance
IP 71801	Decommissioning Performance and Status Review at PSRs
IP 83750	Occupational Radiation Exposure
IP 84750	Radwaste Treatment, Effluent and Environmental Monitoring
IP 90713	Review of Periodic and Special Reports

ITEMS OPENED AND CLOSED

Opened

50/206/9901-01 IFI Organization and Staffing

Closed

None

LIST OF ACRONYMS USED

ALARA	As Low As is Reasonably Achievable
CCW	Component Cooling Water
DSAR	Decommissioning Safety Analysis Report
IP	Inspection Procedure
ISFSI	Independent Spent Fuel Storage Installation
NEDO	Nuclear Engineering Design Organization
PDTS	Permanently Defueled Technical Specification
PPM	parts per million
PSDAR	Post Shutdown Decommissioning Activities Report
SCE	Southern California Edison
SSC	Systems, Structures, and Components
SFP	Spent Fuel Pool
SONGS	San Onofre Nuclear Generating Station
UFSAR	Updated Final Safety Analysis Report