



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION IV
1600 E LAMAR BLVD
ARLINGTON, TX 76011-4511

February 06, 2015

Mr. Thomas J. Palmisano, Vice President
and Chief Nuclear Officer
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

**SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION – NRC INSPECTION
REPORT 050-00361/14-005; 050-00362/14-005**

Dear Mr. Palmisano:

This refers to the inspection completed on December 31, 2014, at your permanently shut down San Onofre Nuclear Generating Station facility, Units 2 and 3. The purpose of the inspection was to determine whether decommissioning activities were being conducted safely and in accordance with U.S. Nuclear Regulatory Commission (NRC) requirements. The results of the inspection were discussed with members of your staff at the exit briefing on January 15, 2015.

During this inspection, NRC staff examined activities conducted under your license as they relate to public health and safety to confirm compliance with the Commission's rules and regulations, and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. The enclosed report presents the results of this inspection. No violations were identified, and no response to this letter is required.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the Public without redaction.

If you have any questions concerning this inspection, please contact Dr. Robert Evans, Senior Health Physicist, at 817-200-1234, or the undersigned at 817-200-1911.

Sincerely,

/RA/

Ray L. Kellar, P.E., Chief
Repository and Spent Fuel Safety Branch
Division of Nuclear Materials Safety

Docket No.: 50-361, 50-362
License No.: NPF-10, NPF-15

Enclosure:

NRC Inspection Report 050-00361/14-005; 050-00362/14-005

cc w/encl: Director, California Radiation
Control Program
R. Sholler, Southern California
Edison Company
W. Mathews III, Esquire, Southern
California Edison Company
J. Brabec, Southern California
Edison Company
E. Park, Esquire, Southern California
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DATE	01/28/15	01/29/15	02/06/15	

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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 50-361, 50-362

License: NPF-10, NPF-15

Report: 050-00361/14-005; 050-00362/14-005

Licensee: Southern California Edison

Facility: San Onofre Nuclear Generating Station, Units 2 and 3

Location: 5000 S. Pacific Coast Hwy
San Clemente, CA

Dates: October 1 through December 31, 2014

Inspectors: Robert Evans, Ph.D., C.H.P., P.E., Senior Health Physicist
Repository and Spent Fuel Safety Branch
Division of Nuclear Materials Safety

Bernadette Baca, Health Physicist
Technical Support Branch
Division of Reactor Safety

Approved By: Ray L. Kellar, P. E., Chief
Repository and Spent Fuel Safety Branch
Division of Nuclear Materials Safety

Attachment: Supplemental Inspection Information

EXECUTIVE SUMMARY

Southern California Edison
NRC Inspection Report 050-00361/14-005; 050-00362/14-005

This U.S. Nuclear Regulatory Commission (NRC) inspection was a routine, announced inspection of decommissioning activities being conducted at the San Onofre Nuclear Generating Station. In summary, the licensee was conducting site activities in accordance with procedures, license requirements, and regulations.

Organization, Management, and Cost Controls

- The licensee's operations and emergency response staffing was being maintained in accordance with license and procedural requirements. The licensee implemented the NRC-approved certified fuel handling training program in accordance with license requirements. (Section 1.2)

Self-Assessments, Audits, and Corrective Actions

- The licensee was implementing its corrective action program in the radiation protection program area in accordance with regulatory, license, and procedural requirements. (Section 2.2)

Spent Fuel Pool Safety

- The licensee had established and implemented procedures to monitor and maintain spent fuel pool water chemistry. During 2014, all chemical parameters were found to be within their respective license or procedural limits. In addition, the licensee was noted to be monitoring the spent fuel pools and support systems with routine surveillances and operator rounds. Finally, the licensee had established procedures for abnormal spent fuel pool operations including emergency water makeup. (Section 3.2)

Decommissioning Performance and Status Review

- The licensee conducted decommissioning activities in accordance with license and regulatory requirements. In particular, the licensee implemented a site characterization program in accordance with the general guidance provided in the Post-Shutdown Decommissioning Activities Report. In addition, the licensee's contractor was conducting site characterization surveys in accordance with approved work plans based on the site characterization plan. (Section 4.2)

Implementation of Radiation Protection Program

- The licensee was implementing its radiation protection program in accordance with 10 CFR Part 20, license, and procedural requirements. (Section 5.2)

Report Details

Site Status

The licensee elected to permanently shut down the San Onofre Nuclear Generating Station (SONGS) facility in June 2013. At the time of this inspection, the licensee continued to prepare for site decommissioning. These preparations included both licensing actions and in-plant activities.

With regards to licensing actions, the licensee submitted its Post-Shutdown Decommissioning Activities Report (PSDAR) to the NRC in September 2014. By separate letters, the licensee also submitted a site-specific decommissioning cost estimate and an integrated fuel management plan. On October 27, 2014, the NRC participated in a public meeting that included solicitation of public comments on the licensee's PSDAR. During the inspection period, the licensee continued to work with the NRC on its proposed revisions to the emergency plan, defueled technical specifications, quality assurance plan, and security plan.

The licensee continued to conduct work in the plant to prepare for future decommissioning. This work included installation of offsite power to support cold and dark activities and spent fuel pool (SFP) islanding, hazardous material removal from the plant, and system abandonment. The licensee was conducting a site radiological and hazardous material characterization survey, in accordance with the PSDAR, to prepare for future decommissioning and waste disposal activities. In addition, the licensee continued to conduct routine operations, maintenance and surveillance activities, effluent monitoring, and environmental monitoring as required by the license.

1 Organization, Management, and Cost Controls (36801)

1.1 Inspection Scope

The inspectors reviewed management organization and controls to ensure that the licensee was maintaining effective oversight of decommissioning activities. In particular, the inspectors reviewed recent changes to site staffing and the operator training program to ensure compliance with license requirements.

1.2 Observations and Findings

The site staffing requirements for normal operations are described in Section 5.2 of the technical specifications for both units. The NRC updated the staffing requirements by license amendments dated September 30, 2014 (ADAMS Accession No. ML14183B240). In addition, staffing requirements for emergency conditions are described in the site emergency plan and emergency plan implementing procedures. The inspectors reviewed the licensee's implementation of the revised staffing requirements.

At the time of the October 2014 onsite inspection, the licensee was required to have a minimum of 16 individuals on site, including four dedicated individuals for the fire brigade. The inspectors noted that the licensee maintained a daily log sheet to help ensure that the minimum staffing was available at all times. The shift manager turnover included a requirement to ensure that the minimum staffing was available. In summary,

the inspectors noted that the licensee was maintaining site staffing in accordance with license and procedure requirements.

The inspectors also reviewed the licensee's implementation of its recently revised operator training program. Sections 5.3.2 of technical specifications for both units state that an NRC-approved training and retraining program for the certified fuel handlers (CFHs) shall be maintained. The NRC approved the licensee's proposed CFH training program by letter dated August 1, 2014 (ML13268A165). The inspectors reviewed the licensee's implementation of this new training program requirement.

At the time of the inspection, the licensee had implemented the CFH training program which essentially replaced its former reactor operator training program. In addition, the licensee administratively converted about a dozen senior reactor operators to CFHs. The inspectors discussed the licensee's administrative action with technical experts in the NRC's program office. In summary, regulation 10 CFR 55.43(b)(7) specifically states that senior reactor operators had to be trained as fuel handlers. Therefore, the licensee's administrative action to convert all senior reactor operators to CFHs, without additional training, was acceptable to the NRC staff. However, the inspectors noted that the licensee could not administratively convert the reactor operators to CFHs without additional training. The licensee had not converted any reactor operators to CFHs; although, some certified operators (former reactor operators) were being trained to become CFHs.

1.3 Conclusions

The licensee's operations and emergency response staffing was being maintained in accordance with license and procedural requirements. The licensee implemented the NRC-approved CFH training program in accordance with license requirements.

2 Self-Assessments, Audits, and Corrective Actions (40801)

2.1 Inspection Scope

The inspectors reviewed the licensee's corrective action program, focusing on the radiation protection area, to ensure that the licensee had implemented the program in accordance with quality assurance program requirements.

2.2 Observations and Findings

Regulation 10 CFR 50, Appendix B, Section XVI, "Corrective Action," requires measures to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management.

The inspectors reviewed administrative procedures SO123-XV-50, "Corrective Action Program," Revision 31, that control the identification, evaluation, and resolution of problems for non-conformances, material or programmatic deficiencies, and conditions

adverse to quality or safety, Procedure SO123-XII-18.1, "Audit Program," Revision 17, and NRC Inspection Report 050-00361/14-004; 050-00362/14-004 (ML14321A900) dated November 17, 2014, in determining the licensee's ability to adequately and timely identify, resolve, and prevent conditions adverse to quality.

The inspectors also reviewed recent quality assurance audits and surveillances (NOD 50, 89, 113, and 186) to determine if the quality assurance program was proactively analyzing the effect of changes in the status of decommissioning and if the resolution of resulting observations, findings, or weaknesses was adequately addressed. In addition, the inspectors reviewed the following audit and assessments to determine whether they are critical of licensee performance and whether the effective corrective actions, as required, were initiated to improve performance:

- Radioactive Material Control, Snapshot and Gap Analysis dated May 31, 2012
- Dosimetry Program dated August 20, 2012
- Sealed Source Control Program dated January 31, 2013
- Decommissioning Program Audit dated May 29, 2013
- Radiation Protection and Radioactive Material Control dated August 22, 2013

The inspectors reviewed the following Nuclear Notifications to assess the licensee's ability to identify, resolve, and prevent problems: 202798863, 202853365, 203043828, 203044434, 203044572, 203044053, 203047829, 203047802, 203049304, and 203053049. In addition, the inspectors reviewed audits and assessments for the identification of problems, weaknesses, and the quality of the radiation protection program and its subprograms and that the corrective actions, as required, were timely and technically acceptable.

2.3 Conclusions

The licensee was implementing its corrective action program in the radiation protection program area in accordance with regulatory, license, and procedural requirements.

3 Spent Fuel Pool Safety (60801)

3.1 Inspection Scope

The inspectors verified the safe storage of spent fuel in the Units 2 and 3 spent fuel pools (SFPs). Specifically, the inspectors reviewed the licensee's implementation of its SFP water chemistry and operational oversight programs.

3.2 Observations and Findings

The chemistry requirements for the SFPs are provided in the license and site procedures. Technical specifications provide a limit for pool boron concentration, while site procedures provide limits for other chemical constituents and gamma radioactivity. Procedure SO123-III-1.1.23, "Chemistry Procedure," Revision 62, provides the chemical parameters, sampling frequencies, and limits for the SFP water chemistry. The inspectors compared sample results for 2014 to the technical specifications and procedure limits.

The licensee sampled the two SFPs for boron concentration and gamma radioactivity on a weekly basis. With a technical specifications limit of 2,000 parts per million for boron concentration, the licensee's records indicate that boron concentrations in the two SFPs have remained above 2,700 parts per million since January 2014. The gamma radioactivity levels in the two pools have trended upwards since February 2014, but continued to remain below the administrative limit of 1.0 E-3 microcuries per milliliter.

The licensee also established administrative limits for chloride, fluoride, and sulfate. The licensee sampled the pools on a monthly frequency for these three chemical constituents. The chloride, fluoride, and sulfate concentrations in both pools have remained well below the administrative limit of 150 parts per billion during 2014. Finally, the licensee sampled the pool water on a quarterly frequency for aluminum, calcium, magnesium, and silica concentrations. The licensee's sample results indicate that none of the samples exceeded the respective administrative limits in 2014.

The inspectors reviewed the licensee's routine oversight of the two SFPs. The licensee's oversight included routine surveillances and operator rounds to monitor the status of the two pools. The inspectors reviewed the licensee's records and interviewed plant operators. The inspectors also observed a plant operator conducting a routine operator round. The inspectors confirmed that the plant operator rounds included review of pertinent pool parameters including cleanup system pressures, pool temperature, and pool levels. At the time of the inspection, all pool parameters were found to be within license or procedure limits. The inspectors concluded that the licensee continued to maintain the two pools in accordance with approved procedures and continued to maintain routine oversight of the pools.

Finally, the inspectors reviewed the licensee's emergency procedures for the two SFPs. These procedures included the abnormal operating Procedure SO23-13-23, "Loss of Spent Fuel Pool Cooling," Revision 15. The inspectors interviewed operators and concluded that alternate cooling water sources were available if the spent fuel pool experienced a loss of cooling or loss of water volume.

3.3 Conclusions

The licensee had established and implemented procedures to monitor and maintain SFP water chemistry. During 2014, all chemical parameters were found to be within their respective license or procedure limits. In addition, the licensee was noted to be monitoring the SFPs and support systems with routine surveillances and operator rounds. Finally, the licensee had established procedures for abnormal SFP operations including emergency water makeup.

4 **Decommissioning Performance and Status Review (71801)**

4.1 Inspection Scope

The inspectors evaluated whether the licensee was conducting decommissioning activities in accordance with license and regulatory requirements.

4.2 Observations and Findings

The licensee submitted the PSDAR to the NRC by letter dated September 23, 2014, as required by regulation 10 CFR 50.82(a)(4)(i). Section II.D.6 of the PSDAR provides the site characterization requirements. The licensee planned to conduct a site characterization to help identify, categorize, and quantify the radiological, regulated, and hazardous wastes at the site. The results of the site characterization will be used, in part, to develop controls and procedures for removing and disposing of the radioactive and non-radioactive waste material from the plant. During the inspection, the inspectors reviewed the licensee's implementation of its site characterization program.

A contractor conducted a historical site assessment on behalf of the licensee during May-August 2014. This study was conducted to determine the nature and extent of potential impacts from radiological and non-radiological hazardous material. The site was divided into 15 areas. In each area, the licensee established preliminary classifications using the guidance provided in NUREG-1575, Revision 1, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). The areas were classified as non-impacted or impacted Class 1, Class 2, or Class 3. The licensee plans to update these preliminary classifications based on the results of scoping and site characterization surveys. The historical site assessment was in draft during the inspection, and the inspectors plan to review the document during a future inspection.

The inspectors conducted a limited review of the licensee's site characterization plan, developed by a contractor on behalf of the licensee. This document provides the requirements and instructions for conducting the site characterization surveys. The licensee's contractor started the site characterization surveys in September 2014. At the time of the inspection, the licensee had completed the site characterization surveys of the switchyard and northern owner controlled area. The licensee was conducting the characterization surveys of the turbine buildings during the inspection period. The inspectors observed the contractors conducting the surveys, and compared the work to the instructions provided in the survey plan and work instructions. The surveys included measurement of ambient gamma radiation levels, measurement of surface contamination levels, and collection of concrete core and soil samples. The inspectors plan to review the site characterization sample results during a future inspection. In summary, the inspectors noted that the licensee was conducting the characterization surveys in the turbine building in accordance with guidance provided in the site characterization plan and implementing procedures.

The licensee plans to complete the site characterization surveys by April 2015 and finalize the site characterization report about a month later. The licensee informed the inspectors that some of the site characterization data may be used in the final status survey report, depending on the area surveyed and the results of the characterization survey. The inspectors will continue to review this program area during future inspections.

4.3 Conclusions

The licensee conducted decommissioning activities in accordance with license and regulatory requirements. In particular, the licensee implemented a site characterization program in accordance with the general guidance provided in the PSDAR. In addition,

the licensee's contractor was conducting site characterization surveys in accordance with approved work plans based on the site characterization plan.

5 Implementation of Radiation Protection Program (42700, 83726, 83728)

5.1 Inspection Scope

The inspectors evaluated whether the licensee has established and is maintaining adequate programmatic controls and procedures that reasonably ensure compliance with the requirements of 10 CFR Part 20 to maintain exposures as-low-as-is-reasonably-achievable (ALARA).

5.2 Observations and Findings

The inspectors assessed the licensee's radiation protection program implementation to ensure that the requirements and commitments provided in 10 CFR Part 20, technical specifications, PSDAR, Offsite Dose Calculation Manual, and Procedure SO123-VII-20, "Radiation Protection Program," Revision 22, were met. In addition, the inspectors reviewed program procedures to ensure they were adequate and applicable to current onsite practices and activities. The inspectors discussed radiation protection program changes with the licensee to determine if the changes continue to meet current commitments.

The inspectors reviewed the following administrative procedures and NRC Inspection Report to determine the licensee's ability to adequately and timely identify, resolve, and prevent conditions adverse to quality with regard to radiation protection:

- SO123-XV-50, "Corrective Action Program," Revision 31
- SO123-XII-18.1, "Audit Program," Revision 17
- NRC Inspection Report 050-00361/14-004; 050-00362/14-004 dated November 17, 2014 (ML14321A900)

The inspectors also assessed the licensee's performance with regard to monitoring and control of and maintaining radiation exposures ALARA through observation of work activities, discussion with supervisors and technicians, and a review of the following procedures:

- SO123-VII-20.10.3, "Health Physics ALARA Work Plans and Micro ALARA Plans," Revision 7
- SO123-VII-20.11, "Access Control Program," Revision 4
- SO123-VII-20.16, "Direct Radiation Exposure Controls and Monitoring," Revision 12
- SO123-VII-20.4.1, "ALARA Design Change Review," Revision 5
- SO123-VII-20.6, "External Occupational Exposure Monitoring," Revision 13
- SO123-VII-20.6.1, "Calculation of Dose from Skin Contaminations," Revision 6
- SO123-VII-20.7, "Internal Occupational Exposure Monitoring," Revision 10

The inspectors reviewed selected daily planning packages, which included current and estimated doses of station divisions, and ALARA Committee Meeting minutes to ensure sufficient management oversight and commitment to working ALARA.

In addition, the inspectors reviewed the following procedures to determine if the licensee was using, maintaining, and calibrating equipment and instruments to meet regulatory requirements and licensee commitments:

- SO123-VII-20.14.1, "Radiation Protection Instrumentation Program," Revision 11
- SO123-VII-20.14.2.1, "Operation of Common Portable Survey Instruments," Revision 16
- SO123-VII-20.14.2.2, "Performance Testing of Portable Survey Instruments," Revision 15

Finally, the inspectors reviewed Procedures SO123-ODCM, "San Onofre Nuclear Generation Station Offsite Dose Calculation Manual," Revisions 6 and 7, and SO123-III-5.20, "Control of the Offsite Dose Calculation Manual and Assessing Changes to the Effluent Program," Revision 20, to ensure the licensee's current practices for monitoring and reporting releases of effluent and radioactive material continued to meet regulatory requirements and commitments.

5.3 Conclusions

The licensee was implementing its radiation protection program in accordance with 10 CFR Part 20, license, and procedural requirements.

6 **Exit Meeting**

On January 15, 2015, the inspectors presented the final inspection results to members of the licensee's staff. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INSPECTION INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Adler, Principle Manager, Nuclear Engineering Programs
C. Ahola, Radiation Protection Manager
L. Bosch, Manager, Oversight and Nuclear Safety Concerns
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M. Reitzler, Manager, Work Control
R. Quam, Manager, Security
S. Sarver, Manager, Security Operations
M. Shackelford, Manager, Training
R. Sholler, Shutdown Plant Manager
A. Sterdis, Manager, Regulatory Affairs

INSPECTION PROCEDURES USED

IP 36801	Organization, Management, and Cost Controls
IP 40801	Self-Assessments, Audits, and Corrective Actions
IP 42700	Plant Procedures
IP 60801	Spent Fuel Pool Safety
IP 71801	Decommissioning Performance and Status Review
IP 83726	Control of Radioactive Materials and Contamination, Surveys, and Monitoring
IP 83728	Maintaining Occupational Exposures ALARA

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
CFH	certified fuel handlers
CFR	Code of Federal Regulations
IP	Inspection Procedure
NRC	U.S. Nuclear Regulatory Commission
PSDAR	Post-Shutdown Decommissioning Activities Report
SFP	spent fuel pool
SONGS	San Onofre Nuclear Generating Station