



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

May 31, 2023

Doug Bauder
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 050-00361/2023-003 AND 050-00362/2023-003**

Dear Doug Bauder:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted on May 1-4, 2023, at the San Onofre Nuclear Generating Station, Units 2 and 3. The inspectors discussed the results of the inspection with you and members of your staff during the final exit meeting on May 4, 2023. The inspection results are documented in the enclosure to this letter.

This inspection examined activities conducted under your license as they relate to public health and safety, the common defense and security, and to confirm compliance with the Commission's rules and regulations, and with the conditions of your licenses. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, performance of independent radiation measurements, and interviews with personnel. Specifically, the inspectors reviewed decommissioning activities in progress at Units 2 and 3, solid radioactive waste management and transportation of radioactive material, and occupational radiation exposure. Within the scope of the inspection, no violations were identified, and no response to this letter is required.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, the 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 Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC's Website 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 regarding this inspection report, please contact Ms. Stephanie Anderson at 817-200-1213, or the undersigned at 817-200-1249.

Sincerely,



Signed by Warnick, Gregory
on 05/31/23

Gregory G. Warnick, Chief
Decommissioning, ISFSI, and Operating
Reactor Branch
Division of Radiological Safety and Security

Docket Nos. 50-361; 50-362
License Nos. NPF-10; NPF-15

Enclosure:
Inspection Report 050-00361/2023-003;
050-00362/2023-003
w/Attachment: Supplemental Inspection Information

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ADAMS ACCESSION NUMBER: **ML23146A162**

☒ SUNSI Review By: SGA	ADAMS: ☒ Yes ☐ No	☐ Sensitive ☒ Non-Sensitive	☐ Non-Publicly Available ☒ Publicly Available	Keyword NRC-002
OFFICE	DRSS/DIOR	DRSS/DIOR	C:DIOR	
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DATE	05/30/23	05/30/23	05/31/23	

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**U.S. NUCLEAR REGULATORY COMMISSION
REGION IV**

Docket Nos.	050-00361; 050-00362
License Nos.	NPF-10; NPF-15
Report Nos.	050-00361/2023-003; 050-00362/2023-003
Licensee:	Southern California Edison Company
Facility:	San Onofre Nuclear Generating Station, Units 2 and 3
Location:	5000 South Pacific Coast Highway San Clemente, California
Dates:	May 1-4, 2023
Inspectors:	Stephanie G. Anderson, Senior Health Physicist Decommissioning, ISFSI, and Operating Reactor Branch Division of Radiological Safety and Security Dominic L. Antonangeli, Health Physicist Decommissioning, ISFSI, and Operating Reactor Branch Division of Radiological Safety and Security
Approved By:	Gregory G. Warnick, Chief Decommissioning, ISFSI, and Operating Reactor Branch Division of Radiological Safety and Security
Attachment:	Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

San Onofre Nuclear Generating Station, Units 2 and 3
NRC Inspection Report 05000361/2023-003; 05000362/2023-003

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 (SONGS), Units 2 and 3. In summary, the licensee and its decommissioning contractor were conducting activities in accordance with site procedures, license requirements, and applicable NRC regulations.

Decommissioning Performance and Status Review at Permanently Shutdown Reactors

- The licensee was implementing the decommissioning activities in accordance with the regulations and license requirements. The inspectors determined that the licensee was adequately controlling decommissioning activities and radiological work areas at the facility. (Section 1.2)

Solid Radioactive Waste Management and Transportation of Radioactive Materials

- The licensee's contractor conducted waste management and transportation activities in accordance with the waste management plan, and site procedures. (Section 2.2)

Occupational Radiation Exposure at Permanently Shutdown Reactors

- The licensee adequately implemented its occupational radiation protection program in accordance with their procedures and applicable regulatory requirements. (Section 3.2)

Report Details

Summary of Plant Status

On June 12, 2013, the Southern California Edison Company, the licensee, formally notified the NRC that it had permanently ceased power operations at SONGS, Units 2 and 3, effective June 7, 2013 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML131640201). By letters dated June 28, 2013 (ML13183A391), and July 22, 2013 (ML13204A304), the licensee informed the NRC that the reactor fuel had been permanently removed from the Units 3 and 2 reactor vessels as of October 5, 2012, and July 18, 2013, respectively. The NRC subsequently issued the permanently defueled technical specifications on July 17, 2015 (ML15139A390), along with revised facility operating licenses to reflect the permanent cessation of operations at SONGS, Units 2 and 3.

As required by Title 10 the *Code of Federal Regulations* (10 CFR) 50.82(a)(4), the licensee submitted its Post Shutdown Decommissioning Activities Report (PSDAR) to the NRC on September 23, 2014 (ML14269A033). The PSDAR outlines the planned decommissioning activities. The current version of the PSDAR is dated May 7, 2020 (ML20136A339). The licensee chose to implement the decommissioning alternative DECON. DECON is the removal or decontamination of equipment, structures, or portions of the facility and site that contain radioactive contaminants to levels that permit termination of the license.

On December 20, 2016, the licensee announced the selection of AECOM and EnergySolutions as the decommissioning general contractor. The joint venture between the two companies was called SONGS Decommissioning Solutions (SDS). The SDS organization manages most decommissioning activities as described in the PSDAR.

By letter dated August 7, 2020 (ML20227A044), the licensee certified that all spent fuel was removed from both Units 2 and 3. Accordingly, SONGS entered their Independent Spent Fuel Storage Installation (ISFSI) Only Technical Specifications, Emergency Plan, and Security Plan on August 10, 2020. After removal of all spent fuel from the two units, SDS started decommissioning work within the two containment buildings and spent fuel pool (SFP) rooms.

During the inspection week, the activities in progress included continued segmentation of the reactor vessel internals inside the two containments. The decommissioning contractor was also in the process of loading the greater-than-Class C (GTCC) waste canisters inside both containments. Additionally, the contractor was making preparations inside the Unit 3 Fuel Handling Building (FHB), to start the removal of fuel racks in the upcoming weeks. Demolishing the Unit 3 turbine building continued and the licensee continued to backfill parts of the Unit 3 intake structure with flowable fill for previously surveyed portions of the intake structure.

1 Decommissioning Performance and Status Review at Permanently Shutdown Reactors (IP 71801)

1.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel to assess the licensee's performance in the following areas:

- Status of decommissioning and verify whether the licensee is conducting decommissioning and maintenance activities in accordance with regulatory and license requirements;
- Licensee awareness of work activities to assess their control and conduct of decommissioning;
- Status of the licensee's decommissioning staffing, personnel qualifications, and training requirements, including that of the contracted workforce, to ensure that license requirements are met, as applicable to the current decommissioning status;
- Progress and changes that potentially impact decommissioning financial assurance, to supplement information for the Financial Assurance Branch (FAB) to support and ensure a thorough financial analysis review of the annual decommissioning trust fund reported by the licensee.
- Whether the licensee is identifying problems related to decommissioning and maintenance activities at an appropriate threshold and entering them into the corrective action program;
- Performed plant tours to assess field conditions and decommissioning activities; and
- Observed and assessed the status of facility housekeeping.

1.2 Observations and Findings

Section II.A of the PSDAR provides a description of the decommissioning periods. The site is currently in Period 4. Period 4 begins with the completion of fuel transfer operations and extends through the end of the decommissioning and decontamination work. At the time of the inspection, the licensee and its decommissioning general contractor SDS were conducting decommissioning activities in accordance with the general guidance provided in Section II.B.1 of the PSDAR. The inspectors discussed the current schedule with decommissioning management staff and conducted site tours to observe work in progress.

The contractor was actively segmenting the reactor vessel internals in both containments. The vessel internals were being segmented, in part, to separate the greater-than-Class C (GTCC) wastes from the remainder of the material. The GTCC wastes were being loaded into storage liners and are currently in the process of being transferred and stored at the onsite Independent Spent Fuel Storage Installation (ISFSI). The remainder of the vessel internals will be packaged for disposal as radioactive wastes. The inspectors concluded that the contractors were conducting the work in accordance with approved procedures.

The inspectors toured the Unit 2 and Unit 3 containments and observed general work in progress while evaluating the material condition inside containment. The work included cutting of interferences for future removal of large components, removing the GTCC

waste inside containments, removing additional piping on the reactor coolant system piping for disposal. Housekeeping was adequate in both containments, and the radiological controls were consistent with regulatory requirements in the two restricted areas.

Section II.B.3 of the PSDAR provides a description of the planned decommissioning and dismantlement activities. Material with contamination below the applicable radiological limits may be released for unrestricted disposition including recycling, while radioactive contaminated material will be packaged and shipped to a low-level waste disposal facility. The Unit 2 turbine building had been demolished prior to the onsite inspection. The work in progress during the inspection included demolition of the Unit 3 turbine building. The contractor was separating the metal from the concrete debris for recycling. The concrete was being packaged and disposed as very low-level radioactive waste. The inspectors noted that the decommissioning work was being conducted with an emphasis on personnel safety.

The inspectors evaluated the licensee's decommissioning cost planning and assessment, being an important part of the decommissioning process. The inspectors determined that the licensee's cost planning and assessment were inclusive of current and planned major decommissioning activities as identified in the PSDAR. The inspectors also determined that licensee funding and expenditures were tracking as planned by the licensee with no significant deviations to expenditures up to current date nor major deviations from the decommissioning schedule.

1.3 Conclusion

The licensee was implementing the decommissioning activities in accordance with the regulations and license requirements. The inspectors determined that the licensee was adequately controlling decommissioning activities and radiological work areas at the facility.

2 Solid Radioactive Waste Management and Transportation of Radioactive Material (IP 86750)

2.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel to assess the licensee's performance in the following areas:

- Whether the licensee provided detailed instructions and operating procedures for transfer, packaging, and transport of low-level radioactive waste;
- Whether the material was properly classified, described, packaged, marked, and labeled for transportation;
- Effectiveness of the licensee's programs for processing, handling, storage, and transportation of radioactive material;

- Whether the licensee is identifying problems related to radioactive waste storage, processing, and transportation activities at an appropriate threshold and entering them into the corrective action program;
- Whether the licensee used updated and audited procedures when scaling factors or correlation factors are used to quantify the concentration of hard-to-detect radionuclides; and
- Whether shipments made by the licensee were in compliance with NRC and Department of Transportation regulations.

2.2 Observations and Findings

The inspectors interviewed site staff and observed select activities in progress to determine if the contractor was effectively managing waste management and transportation programs.

The inspectors reviewed four radioactive waste shipping packages, three Class B shipments and one Class A shipment. The inspectors verified each shipment was appropriately characterized, classified, and prepared in accordance with site procedures.

Additionally, the inspectors observed the licensee staff marking, labeling, and placarding 10 rail cars at the onsite rail spur of non-exempt quantities to ensure they were consistent with the information in the shipping documentation and site procedures. The inspectors also validated that staged rail cars were marked and labeled as empty containers, in accordance with the U.S. Department of Transportation regulations.

The inspectors reviewed the contractor's training program for selected staff supporting the radwaste management and transportation programs. The inspectors noted that training was adequate, up to date, and implemented in accordance with site procedures.

Finally, the inspectors reviewed condition reports and the licensee appears to be effectively writing condition reports to address problems as they occur with corresponding corrective actions developed and implemented with a focus on preventing reoccurrence.

2.3 Conclusion

The licensee's contractor conducted waste management and transportation activities in accordance with the waste management plan, and site procedures.

3 **Occupational Radiation Exposure at Permanently Shutdown Reactors (IP 83750)**

3.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel to assess the licensee's performance in the following areas:

- Planning and preparation for radiation work were adequate and licensee management supported RP planning;
- Training and qualifications of personnel were adequate for the radiation protection organization;
- Internal/External dosimetry procedures and processes meet requirements;
- Management and administrative controls of external radiation exposure meet requirements and are designed to maintain exposures “As Low As is Reasonably Achievable” (ALARA);
- Processes or other engineering controls are used to the extent possible to limit concentrations of airborne radioactive materials; and
- Source term has been appropriately characterized and work practices reflect current conditions.

3.2 Observations and Findings

The inspectors reviewed the annual radiation protection program review performed by SDS under “Nuclear Oversight Assessment Report - Radiation Protection Program,” dated March 2022. Overall, SDS concluded the assessment areas were satisfactory. The inspectors verified that the licensee had performed an adequate assessment and identified improvement opportunities that had been entered in the corrective action program. The inspectors reviewed staffing levels and On-the-Job training and Task Performance Evaluation for Basic and Advanced Radiation Protection Technician qualifications and discussed with appropriate SDS personnel.

The inspectors reviewed condition reports associated with radiation protection over the past year and found that the site had adequately identified and resolved deficient items generally with thorough documentation. The inspectors reviewed the SDS Radiological Work Planning and Controls procedure SDS-RP2-PGM-2000, “Radiological Work Planning and Controls,” revision 13. The procedure adequately provided a method for evaluating planned work to determine appropriate radiological controls, work oversight, and corresponding radiological risk. The inspectors reviewed several radiation work permits (RWPs), ALARA plans, and work packages, including available paperwork relating to reactor vessel segmentation with both unit’s containment buildings and vacuum cleaning of the Unit 2 fuel handling building and determined the licensee had implemented the procedure as required.

The inspectors toured Unit 2 containment, Unit 3 containment, and both FHBs and assessed area radiological conditions in the facilities, including radiological postings and housekeeping. Additionally, while out in the field, inspectors verified several air samplers and radiation protection instrumentation for up-to-date calibration, source checks, correct placement, and material condition as applicable. During the tours, the inspectors conducted independent radiological surveys using a ThermoScientific Radeye G survey

meter (Serial No. 374 with calibration due date of March 31, 2024). The inspectors observed radiation protection inform workers of radiological conditions, conduct a high radiation area briefing, and a few pre-job briefs for workers about to perform activities on the site. The inspectors observed a calibration of a Ludlum 3 ion chamber in accordance with the site procedures. The inspectors determined that radiological conditions, radiological briefings, and instrumentation conditions were adequate.

The inspectors reviewed one personnel contamination event record and verified that no new internal dose assessment had been performed since the last inspection period. The inspectors reviewed the sites evaluation for neutron monitoring contained in technical support document number, TSD-18-079, "Neutron Dosimetry Evaluation at SONGS," revision 1. Inspectors also looked at neutron dosimetry evaluations for the ISFSI location under technical support document, SDS-RP1-TSD-22-11, revision 1. The inspectors found the support documents application of neutron correction factors, evaluation of neutron monitoring instruments, and neutron dosimetry to be used at the site to be adequate. The inspectors reviewed the recently completed technical support document, SDS-RP1-TSD-22-16, revision 0, on a change in site practice that allows workers to keep their dosimetry stored on their work badges. Inspectors found the technical evaluation in-depth and adequate to ensure that no impacts to their dosimetry monitoring of workers would occur.

3.3 Conclusion

The licensee adequately implemented its occupational radiation protection program in accordance with their procedures and applicable regulatory requirements.

4 **Exit Meeting Summary**

On May 4, 2023, the inspectors presented the final inspection results to the Chief Nuclear Officer and Vice President Decommissioning and other 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 except for certain SDS procedures and documents which were marked as proprietary.

SUPPLEMENTAL INSPECTION INFORMATION

KEY POINTS OF CONTACT

Licensee and Contractor Personnel

A. Bates, SCE, Regulatory Affairs Manager
D. Bauder, SCE, Chief Nuclear Officer and Vice President Decommissioning
V. Bilovsky, SCE, Decommissioning Project Director
R. Corbett, SDS, Radiation Protection Manager
R. Kalman, SDS, Executive Sponsor
J. Madigan, SCE, Nuclear Oversight and Safety Culture Manager
S. Mannon, SDS, Regulatory Affairs Manager
M. Morgan, SCE, Licensing Engineer
L. Rafner, SCE, Regulatory Affairs
S. Sewell, SCE, Radiation Protection and Waste Manager

INSPECTION PROCEDURES USED

IP 71801	Decommissioning Performance and Status Review at Permanently Shutdown Reactors
IP 86750	Solid Radioactive Waste Management and Transportation of Radioactive Materials
IP 83750	Occupational Radiation Exposure at Permanently Shutdown Reactors

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Discussed

None

Closed

None

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As is Reasonably Achievable
CFR	<i>Code of Federal Regulations</i>
FHB	Fuel Handling Building
GTCC	greater-than-Class C
ISFSI	Independent Spent Fuel Storage Installation
NRC	Nuclear Regulatory Commission
PSDAR	Post Shutdown Decommissioning Activities Report
RWP	Radiation Work Permit
SDS	SONGS Decommissioning Solutions
SFP	spent fuel pool
SONGS	San Onofre Nuclear Generating Station