



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

September 26, 2022

Mr. 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 05000361/2022-004 AND 05000362/2022-004

Dear Mr. Bauder:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted on August 22-25, 2022, at the San Onofre Nuclear Generating Station (SONGS), Units 2 and 3. The inspectors discussed the results of the inspection with you and members of your staff during the final exit meeting conducted on August 25, 2022. 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 for SONGS Units 2 and 3, occupational radiation exposure program, and radioactive waste management and transportation programs. 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 Robert Evans at 817-200-1234, or the undersigned at 817-200-1249.

Sincerely,



Signed by Warnick, Gregory
on 09/26/22

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 050-00361/2022-004;
050-00362/2022-004
w/Attachment: Supplemental Inspection Information

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 REPORT 05000361/2022-004 AND 05000362/2022-004 - SEPTEMBER 26, 2022

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 REPORT 05000361/2022-004 AND 05000362/2022-004

ADAMS ACCESSION NUMBER: **ML22255A150**

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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. 050-00361/2022-004; 050-00362/2022-004

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: August 22-25, 2022

Inspectors: Robert J. Evans, PhD, CHP, PE, Senior Health Physicist
Decommissioning, ISFSI, and Operating Reactor Branch
Division of Radiological Safety and Security

Stephanie G. Anderson, Senior Health Physicist
Decommissioning, ISFSI, and Operating Reactor Branch
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Accompanied By: Troy Johnson, 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 05000361/2022-004; 05000362/2022-004

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, Units 2 and 3. In summary, the licensee was 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 decommissioning activities in accordance with 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)

Occupational Radiation Exposure at Permanently Shutdown Reactors

- The licensee implemented an air sampling program inside the two containments in accordance with regulatory requirements and site procedures. The results of sampling suggest there were no worker uptakes or releases of significance during the inspection period. The licensee adequately implemented its occupational radiation protection program in accordance with procedures and regulatory requirements. (Section 2.2)

Solid Radioactive Waste Management and Transportation of Radioactive Materials

- The licensee's contractor conducted waste management and transportation activities in accordance with the Post-Shutdown Decommissioning Activities Report, waste management plan, and site procedures. (Section 3.2)

Report Details

Summary of Plant Status

On June 12, 2013, the Southern California Edison Company (SCE), the licensee, formally notified the NRC that it had permanently ceased power operations at the San Onofre Nuclear Generating Station (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.

The licensee submitted its Post-Shutdown Decommissioning Activities Report (PSDAR) on September 23, 2014 (ML14269A033). The PSDAR outlines the planned decommissioning activities for SONGS, Units 2 and 3. The current version of the PSDAR is dated May 7, 2020 (ML20136A339). The chosen decommissioning alternative was 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 decommissioning activities as described in the PSDAR.

By letter dated August 7, 2020 (ML20227A044), the licensee certified that all spent fuel has been 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.

During the inspection week, the ongoing activities included segmentation of the reactor vessel internals inside the two containments. The contractor was also preparing the containments for future large component removals. In addition, the contractor was conducting hot spot removal and remediation of the radwaste building. Finally, the contractor was de-watering and de-mucking the intake structure.

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

1.1 Inspection Scope

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

- Status of decommissioning and verify whether the licensee was 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 were met, as applicable to the current decommissioning status;
- Whether the licensee was 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

The PSDAR provides a high-level description of the planned decommissioning activities. At the time of the inspection, the licensee, and its decommissioning general contractor SDS were conducting decommissioning activities in accordance with the PSDAR. The inspectors discussed the current schedule with management staff and conducted site tours to observe the limited work in progress. Critical path activities included implementation of the reactor vessel internals segmentation work.

The inspectors toured the Unit 2 and Unit 3 containments and observed the status of recently completed work. The work included cutting of internal concrete floors and walls for future removal of large components and staging of contaminated equipment and radioactive trash for removal and disposal. Also, inside both containments, the decommissioning contractor, SDS, was actively performing segmentation of the reactor vessel internals. Housekeeping was found to be adequate in both containments, and the high radiation areas were being managed in accordance with technical specifications requirements. Radiological controls were consistent with regulatory requirements in the two restricted areas.

Outside of containment, the work in progress included loading of railcars with concrete rubble for offsite disposal. Also, the site was disassembling the turbine buildings. The week before the inspection, the decommissioning contractor removed the Unit 2 gantry crane from the turbine building. The inspectors observed the live video feed of this decommissioning activity. The inspectors attended meetings that included discussion of decommissioning activities as well as the current plant status for each day. The meetings provided participants with useful information about the daily status of plant activities. The inspectors discussed the site status and upcoming critical path activities with SDS management.

The inspectors conducted independent radiological surveys during plant tours using a Thermo Radeye G survey meter (Serial Number 378 with calibration due date of December 15, 2022). The inspectors confirmed that the licensee had properly posted the areas based on these independent radiological survey measurements. No high radiation area was identified that was not already posted and controlled. No radiation areas were identified outside of the radiologically restricted and posted areas.

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 Occupational Radiation Exposure at Permanently Shutdown Reactors (83750)

2.1 Inspection Scope

The purposes of this portion of the inspection were to independently gather sufficient information to: (1) ensure adequate protection of worker health and safety from exposure to radiation or radioactive material; and (2) evaluate whether the licensee adequately identifies problems and implements appropriate and timely corrective actions related to occupational radiation safety.

2.2 Observations and Findings

a. Air Sampling Program Implementation

Regulation 10 CFR 20.1501(a) states in part that each licensee shall make or cause to be made, surveys of areas, including the subsurface, that are reasonable under the circumstances to evaluate the magnitude and extent of radiation levels, concentrations or quantities of residual radioactivity, and the potential radiological hazards of the radiation levels and residual radioactivity detected. The inspectors reviewed the contractor's implementation of its air sampling program within the two containments to ensure that the program was effective in monitoring for potential exposures of workers and the public to airborne radioactive material.

At the time of the inspection, the contractor's radiological air sampling program included the plant ventilation stack radiation monitors, containment air purge radiation monitors, portable area samplers, continuous air monitors, and breathing zone samplers. The program consisted of a combination of real-time monitors and air sample filters that were analyzed after sampling. The inspectors reviewed applicable site procedures, conducted walk-downs of containment to observe the monitors and samplers in service, and observed how the contractor analyzed air filters for airborne contamination.

The inspectors reviewed site procedures for collection of air samples and analysis of the air samples and discussed these procedures with pertinent site staff. Overall, the procedures provided sufficient instructions for collection and analysis of air samples. The inspectors discussed a few possible procedural enhancements and clarifications with contractor staff. In summary, the contractor had established and implemented procedures for management of the air sampling program.

The inspectors conducted walkdowns of the two containments, in part, to observe the equipment in service. The equipment observed included the continuous air monitors, portable air samplers, and breathing zone samplers. The number of samplers in service were proportional to the work activity in progress. For example, one continuous air monitor, at least one portable air sampler, and breathing zone samplers were in use in each containment to support the reactor vessel internal segmentation project. The

contractor also had portable air samplers staged to monitor for possible effluent concentrations when the respective containment access doors were opened. The contractor had enough air samplers in service for the work in progress.

The inspectors toured the count room within the radiologically restricted area, the location where air sample filters were being analyzed. The count room was staffed with knowledgeable individuals, and the air samples were effectively managed and controlled. The count room staff conducted activities in accordance with site procedures.

Finally, the inspectors reviewed selected air sample results, in part, to ensure that there were no widespread airborne radioactivity issues. The results of recent air sampling indicated that there were no airborne issues or worker uptakes of concern.

b. Control of High Radiation Areas

Section 5.8 of technical specifications for the two units provides the administrative control requirements for high radiation areas. The inspectors conducted a walkdown of the high radiation areas in the two units, in part, to ensure compliance with technical specification requirements.

c. Review of Radiation Work Permits

The inspectors reviewed SDS Radiological Work Planning and Controls procedure, SDS-RP2-PGM-2000, "Radiological Work Planning and Controls," revision 12. The procedure adequately provided a method for evaluating planned work to determine appropriate radiation safety controls, work oversight, and radiological risk. The inspectors reviewed several radiation work permits in the area of the reactor vessel internal segmentation activities and preparations for large component removal and determined that the licensee had implemented the procedure as required.

d. Review of Recent Contamination Event

The inspectors reviewed a recent personnel contamination event. A contractor was working on the weir wall adjacent to the spent fuel pool. While performing work activities the contractor lost their balance and fell into the spent fuel pool. The contractor was immediately removed from the pool within a minute of falling. The licensee performed an internal dose assessment on the individual to determine their internal dose exposure. After a thorough assessment, the contractor was not assigned a dose, per procedure, since the individual received less than 1 mrem. The inspectors interviewed the SDS radiation protection personnel and determined that the site had appropriately performed the internal dose assessment on the individual.

2.3 Conclusion

The licensee implemented an air sampling program inside the two containments in accordance with regulatory requirements and site procedures. The results of sampling suggest there were no worker uptakes or releases of significance during the inspection period. The licensee adequately implemented its occupational radiation protection program in accordance with procedures and regulatory requirements.

3 Solid Radioactive Waste Management and Transportation of Radioactive Materials (86750)

3.1 Inspection Scope

The purposes of this portion of the inspection were to verify the effectiveness of the licensee's programs for processing, handling, storage, and transportation of radioactive material.

3.2 Observations and Findings

Section B.4 of the PSDAR describes the licensee's proposed plans for radioactive waste management including development of a waste management plan. The waste management plan is based on the evaluation of available methods and strategies for processing, packaging, and transporting radioactive materials in conjunction with the available disposal facility and associated waste acceptance criteria. The inspectors reviewed the contractor's implementation of the waste management plan, interviewed site staff, and observed activities in progress to determine if the contractor was effectively managing the waste management and transportation programs.

The contractor developed procedure SDS-WM1-PGM-0001, "Waste Management Program," revision 18, to establish the responsibilities and requirements for the management, packaging, transportation, security, and disposal of wastes. The contractor identified and implemented waste management practices for separate waste streams. The waste streams include non-radioactive, radioactive, hazardous, and non-hazardous wastes. The contractor established and implemented methods to sort, package, and ship the various wastes. The wastes were shipped by rail or truck, depending on the waste stream and location of the disposal site.

At the time of the inspection, most wastes, by weight, included very low-level radioactive wastes such as crushed concrete followed by landfill wastes and recycled wastes. The contractor was actively demolishing the two turbine buildings and separating the metal components from the concrete. The metal was being recycled, with exceptions, while the concrete was being crushed and shipped as very low-level radioactive wastes.

The inspectors discussed the contractor's program to classify and sort the wastes generated during demolition of the two turbine buildings. The building wastes were classified based in part on the historical site assessment and limited radiological characterization surveys. In addition, the contractor conducted unconditional release surveys of the structures prior to commencement of demolition activities in July 2022. The Unit 2 gantry crane was permanently removed from service just prior to the inspection. The Unit 3 gantry crane remained in service to support the removal of equipment from the Unit 3 turbine building. The Unit 3 gantry crane will be decommissioned at a later date.

The inspectors reviewed procedure SDS-LT1-PCD-1003, "Unconditional Release of Structures, Systems, and Miscellaneous Material and Equipment," revision 5, and discussed the procedure with contractor staff. The procedure described the protocols used to implement a survey program for miscellaneous material and equipment using NRC guidance documents as a reference. If the surveys indicated that the material and

equipment met the acceptance criteria, the material and equipment would be granted an unconditional release from the site.

The contractor's records indicate that about 80 separate surveys were conducted to demonstrate that the metal material and equipment in the two turbine buildings could be unconditionally released and recycled. The inspectors reviewed several representative examples of these unconditional release surveys. As part of building demolition, the concrete was separated from the metal, crushed, and shipped offsite for disposal. All shipments were checked for radioactivity levels prior to leaving the site.

The contractor continued to ship some metallic radioactive material offsite for disposal. Recent shipments included wastes from the reactor vessel internals segmentation project and included guide tubes and the upper guide structure. The inspectors observed the shipment of one cask containing low specific activity (LSA-II) material. The material included irradiated hardware removed from the reactor vessel internals. The shipping paper was developed in accordance with the waste management plan and included the required emergency response information.

The inspectors reviewed representative shipping papers and bills of lading for the various shipment types including concrete rubble, irradiated hardware, universal wastes (electronics), and hazardous wastes. Checklists were used to ensure that all requirements were reviewed, and some shipments included a second level peer review. The contractor continued to track the generation and shipment of wastes using a waste inventory tracking system.

Finally, 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.

3.3 Conclusion

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

4 **Exit Meeting Summary**

On August 25, 2022, the NRC inspectors presented the final inspection results to Doug Bauder, 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 Personnel

C. Ahola, SCE, Radiological Controls Contract Management Specialist
T. Amin, SDS, Waste Manager
A. Bates, SCE, Regulatory Affairs Manager
D. Bauder, SCE, Chief Nuclear Officer and Vice President Decommissioning
R. Besich, SCE, Chief Financial Officer
R. Corbett, SDS, Radiation Protection Manager
R. Kalman, SDS, Executive Sponsor
S. Mannon, SDS, Programs Director
L. Rafner, SCE, Regulatory Affairs
S. Sewell, SCE, Radiation Protection and Waste Contract Management
S. Enright, SDS, ALARA Special Project Manager
M. Russell, SDS, RP Engineer Manager
G. Fausett, SDS, ALARA Planner

INSPECTION PROCEDURES USED

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

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened/Closed

None

Discussed

None

LIST OF ACRONYMS

ADAMS Agencywide Documents Access and Management System
ALARA as low as is reasonably achievable
CFR *Code of Federal Regulations*
ISFSI Independent Spent Fuel Storage Installation
NRC Nuclear Regulatory Commission
PSDAR Post-Shutdown Decommissioning Activities Report
SDS SONGS Decommissioning Solutions
SCE Southern California Edison Company
SONGS San Onofre Nuclear Generating Station