



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

October 22, 2020

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 05000361/2020-003 AND 05000362/2020-003

Dear Mr. Bauder:

This letter refers to the U.S. Nuclear Regulatory Commission's (NRC's) inspection conducted on September 21-24, 2020 at the San Onofre Nuclear Generating Station (SONGS), Units 2 and 3. The NRC inspectors discussed the results of this inspection with members of your staff during a final teleconference exit meeting conducted on September 24, 2020. 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 license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of site meetings, performance of independent radiation measurements, and interviews with personnel. Specifically, the inspectors reviewed decommissioning planning activities for SONGS Units 2 and 3, effectiveness of all personnel exposure monitoring, and implementation of the effluent and environmental programs. Within the scope of the inspection, no violations were identified and a response to this letter is not required.

In accordance with 10 CFR 2.390 of the NRC's "Agency 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 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.

D. Bauder

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If you have any questions regarding this inspection report, please contact Chris Steely at 817-200-1432, or the undersigned at 817-200-1249.

Sincerely,

Gregory G. Warnick, Chief  
Reactor Inspection Branch  
Division of Nuclear Materials Safety

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

Enclosure:  
Inspection Report 05000361/2020-003; 05000362/2020-003  
w/Attachment: Supplemental Information

SAN ONOFRE NUCLEAR GENERATING STATION - NRC INSPECTION REPORT  
 05000361/2020-003; 05000362/2020-003 - DATED OCTOBER 22, 2020

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

Docket Nos.: 05000361; 05000362

License Nos.: NPF-10; NPF-15

Report Nos.: 05000361/2020-003; 05000362/2020-003

Licensee: Southern California Edison Company

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

Location: 5000 South Pacific Coast Highway, San Clemente, California

Inspection Dates: September 21-24, 2020

Inspectors: Chris D. Steely  
Health Physicist  
Reactor Inspection Branch  
Division of Nuclear Materials Safety

Stephanie G. Anderson  
Senior Health Physicist  
Reactor Inspection Branch  
Division of Nuclear Materials Safety

Accompanied By: Gregory G. Warnick, Chief  
Reactor Inspection Branch  
Division of Nuclear Materials Safety

Approved By: Gregory G. Warnick, Chief  
Reactor Inspection Branch  
Division of Nuclear Materials Safety

## EXECUTIVE SUMMARY

San Onofre Nuclear Generating Station, Units 2 and 3  
NRC Inspection Report 05000361/2020-003; 05000362/2020-003

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, Units 2 and 3. In summary, the licensee was conducting these activities in accordance with site procedures, license requirements, and applicable NRC regulations.

Within the scope of the inspection, no violations were identified.

### Decommissioning Performance and Status Review at Permanently Shutdown Reactors

- The licensee continued to conduct decommissioning in accordance with the general guidance provided in the Post-Shutdown Decommissioning Activities Report. The licensee implemented an oversight program to ensure that contractors conducted decommissioning work activities in accordance with procedural requirements as well as licensee expectations. The licensee implemented operational, radiological, and housekeeping programs to ensure safe storage of spent fuel. (Section 1.2)

### Occupational Radiation Exposure

- The licensee effectively implemented its “As Low As is Reasonably Achievable” (ALARA) program in accordance with procedures and regulatory requirements. The work activities at the site were implemented as provided in the radiation work permits and ALARA reviews. Radiation surveys were performed adequately to identify the hazards present as required by 10 CFR 20.1501, “Surveys and Monitoring”. (Section 2.2)

### Radioactive Waste Treatment, and Effluent and Environmental Monitoring

- The licensee implemented and maintained the effluent monitoring and control systems for calendar year 2019 in accordance with the Offsite Dose Calculation Manual (ODCM). The licensee’s program met the appropriate regulatory requirements set forth in the ODCM for sample collection methodology and locations, quality control and quality assurance of the program, and comparison of data results to pre-operational data results. (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 by letter that it had permanently ceased power operations at the San Onofre Nuclear Generating Station (SONGS), Units 2 and 3, effective June 7, 2013. The licensee's letter is available in the Agencywide Documents Access and Management System (ADAMS) under (ADAMS Accession No. ML131640201). By letters dated June 28, 2013 (ADAMS Accession No. ML13183A391), and July 22, 2013 (ADAMS Accession No. ML13204A304), the licensee informed the NRC that the reactor fuel had been permanently removed from SONGS, Units 3 and 2, reactor vessels as of October 5, 2012, and July 18, 2013, respectively.

Upon docketing of these certifications, and pursuant to Title 10 of the *Code of Federal Regulations* (CFR) 50.82(a)(2), the SONGS, Units 2 and 3, facility operating licenses no longer authorized operation of the reactors or emplacement or retention of fuel into the reactor vessels. In response to the licensee's amendment request, the NRC issued the permanently defueled technical specifications on July 17, 2015 (ADAMS Accession No. 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 (ADAMS Accession No. ML14269A033), which is required to be submitted within 2 years following permanent cessation of operations under 10 CFR 50.82(a)(4). The PSDAR outlines the decommissioning activities for SONGS, Units 2 and 3. By letter dated August 20, 2015 (ADAMS Accession No. ML15204A383), the NRC informed the licensee that the PSDAR contained the information required by 10 CFR 50.82(a)(4)(i). In the current plant configuration, the number of operable systems and credible accidents/transients is significantly less than for a plant authorized to operate the reactor or emplace or retain fuel in the reactor vessel. The most recent version of the PSDAR is dated May 7, 2020 (ADAMS Accession No. ML20136A339).

The licensee submitted a license amendment request dated December 15, 2016 (ADAMS Accession No. ML16355A015), to revise the Permanently Defueled Emergency Plan (PDEP) into an Independent Spent Fuel Storage Installation (ISFSI) Only Emergency Plan (IOEP), and to revise the emergency action level (EAL) scheme into ISFSI-Only EALs for SONGS, Units 1, 2, and 3 ISFSI. The proposed changes reflect the new status of the facility, as well as the reduced scope of potential radiological accidents, since all of the spent fuel has been moved to dry cask storage within the onsite ISFSI.

The NRC issued amendments to the SONGS operating licenses to allow transition to an IOEP and EAL scheme on November 30, 2017 (ADAMS Accession No. ML17310B482). The NRC inspectors determined that the SONGS IOEP and associated changes provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the SONGS facility. The changes were reviewed, and appropriate conforming changes were properly addressed in the applicable revision and sections of the SONGS Updated Final Safety Analysis Report.

License Amendment 169 (Unit 1), 237 (Unit 2), and 230 (Unit 3) were submitted on December 15, 2016, (ADAMS Accession No. ML16355A014) and approved by the NRC by

letter dated January 9, 2018 (ADAMS Accession No. ML17345A657). These license amendments changed the operating licenses and technical specifications to reflect the removal of all spent nuclear fuel from the SONGS, Units 2 and 3 Spent Fuel Pools (SFPs) and its transfer to dry cask storage within an onsite ISFSI. These changes fully reflect the permanently shutdown status of the decommissioning facility, as well as the reduced scope of structures, systems, and components necessary to ensure plant safety since all spent fuel has been moved to the SONGS ISFSI.

The changes also made conforming revisions to the SONGS, Unit 1 technical specifications and combined them with the SONGS, Units 2 and 3 technical specifications. This license amendment became effective as of the date the licensee submitted a written notification to the NRC that all spent nuclear fuel assemblies had been transferred out of the SONGS SFPs and placed in storage within the onsite ISFSI. In a letter to the NRC dated August 7, 2020 (ADAMS Accession No. ML20227A044) the licensee has certified that all spent fuel has been removed from the SFPs of Units 2 and 3. Accordingly, SONGS has entered their ISFSI-Only Technical Specifications (TS), Emergency Plan (EP), and Security Plan on August 10, 2020.

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

The California Environmental Quality Act is the state equivalent of the federal National Environmental Policy Act. For SONGS, the California State Lands Commission (CSLC) performed the California Environmental Quality Act review, which was triggered by the need to establish the final disposition for the offshore conduits that are under a CSLC lease. On February 11, 2019, the Final Environmental Impact Report was released by the CSLC. The CSLC held a public meeting on March 21, 2019, to consider the Final Environmental Impact Report and a lease application to decommission the offshore infrastructure associated with SONGS, Units 2 and 3. On October 17, 2019, the California Coastal Commission approved, with conditions, the Coastal Development Permit to begin decontamination and dismantlement of the above grade structures at SONGS, which authorized active decommissioning activities at the site. Now that all spent fuel has been removed from the SFPs to the ISFSI, SDS has begun active decommissioning of the site.

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

### **1.1 Inspection Scope**

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

- Status of ongoing decommissioning activities and planning for future activities;
- Operability and functionality of systems necessary for safe decommissioning such as radioactive effluent monitoring, and radiation protection monitors and alarms;
- Status of field conditions and decommissioning activities; and

- Status of facility housekeeping.

## 1.2 Observations and Findings

The licensee submitted its PSDAR on September 23, 2014, as required under 10 CFR 50.82(a)(4). The PSDAR provides the general dates for each decommissioning phase implementation period and associated activities for that period. The licensee stated that the implementation of the activities described under each period may overlap and not necessarily be implemented consecutively. Currently the site has entered period 4, "D&D (Decontamination and Dismantlement) Dry Storage," which begins with the completion of fuel transfer and extends through the completion of D&D work.

The inspectors interviewed SDS responsible personnel regarding the progress of the hazard mitigation activities and determined that the planned activities were developed in accordance with procedures and regulatory requirements. 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 also discussed with SDS senior management the schedule for the upcoming decommissioning activities at the site.

The inspectors reviewed the organizational structure of both the licensee and contractor. During interviews the inspection team discussed staffing as it currently stands and how it will change in the next year based on planned decommissioning activities. The staffing appears to be appropriate to current site conditions with future changes consistent with the decommissioned activities discussed and as outlined in the PSDAR.

The inspectors performed tours of the facilities, both SFPs and containment of Unit 2 in order to view the preparations for the reactor vessel internals segmentation project that is scheduled to begin in the second quarter of 2021. Plant staff appeared to be knowledgeable of site conditions and based on observations, the inspectors determined that the licensee was adequately maintaining the material condition of the facilities, as well as the systems, structures, and components that supported spent fuel safety.

The inspectors conducted independent radiological surveys during site tours. The inspectors measured the ambient gamma exposure rates using a Thermo Scientific Radeye G (Serial No. 30728, Calibration Due Date 12/16/20). The inspectors observed and discussed radiological postings with the licensee including current radiological boundaries. Housekeeping was adequate for the work in progress.

## 1.3 Conclusion

The licensee continued to conduct decommissioning activities in accordance with the general guidance provided in the PSDAR. The licensee implemented an oversight program to ensure that contractors conducted decommissioning work activities in accordance with procedural requirements as well as licensee expectations. The licensee implemented operational, radiological, and housekeeping programs to ensure safe storage of spent fuel.



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

### **2.1 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 is adequate and licensee management supported radiological protection planning;
- Training and qualifications of personnel is adequate for the radiation protection organization;
- Personal dosimetry for external exposure meets requirements;
- Management and administrative controls of external radiation exposure will meet requirement and is 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;
- Survey and monitoring activities are performed as required;
- Control of radioactive materials and contamination meets requirements; and
- Effective implementation of the ALARA program.

### **2.2 Observations and Findings**

The licensee transitioned the Radiation Protection Program over to SDS on October 26, 2017, at which time SDS assumed the implementation of the radiation protection and ALARA programs at the facility. SCE Nuclear Oversight assessed the Radiation Protection Program under an assessment titled "2019 Radiation Protection Program Annual Review," dated March 3, 2020. Overall, the licensee concluded the assessment areas were satisfactory. The licensee focused on the areas of control of radioactive material, radiation work permit dose estimating, SONGS groundwater protection initiative, and the radiochemistry count room performance. Based on a review of the licensee's assessment report, the inspectors determined that the licensee had performed a thorough assessment with supporting documentation and examples, identified valuable improvement opportunities, and identified areas requiring corrections that had been entered in the corrective action program.

The inspectors reviewed the SDS ALARA program procedure SDS-RP2-PGM-1000, "Station ALARA Committee," Revision 4. The procedure adequately specified the responsibilities and frequency of meetings by the ALARA committee, provided the considerations for developing dose goals, and the expectations for reviewing ALARA plans. The inspectors reviewed several ALARA committee meeting minutes and determined that the licensee had implemented the procedure as required.

The inspectors reviewed several ALARA work plans and associated radiation work permits. The inspectors concluded there were adequate instructions via licensee procedures and radiation work permits to workers, and controls established to minimize contamination and establish dose reduction measures appropriate for the work activities. In addition, the inspectors assessed area radiological conditions in the facility, including postings and general housekeeping.

The inspectors reviewed the annual ALARA Report for calendar year 2019, which SDS issued on March 3, 2020. The overall station dose was significantly less than the projected dose due to asbestos sampling and delays in achieving approval to start decommissioning. Based on the limited work activities, the SDS electronic dosimeter dose for calendar year 2019 was approximately .372 Roentgen (rem). At the time of the inspection the ALARA dose report for calendar year 2020, up to September 22, 2020, was approximately 5.2 rem for non-fuel transfer operations and 11.6 rem for fuel transfer operations.

The inspectors reviewed the SDS procedures for internal dose assessment including SDS-RP3-PCD-1002, "Internal Dose Assessment," Revision 3, SDS-RP3-PCD-1008, "Bioassay Monitoring," Revision 4, SDS-RP1-PGM-1000, "Radiation Protection Program," Revision 10; and SDS-RP3-PCD-1009, "Bioassay Sampling (In Vitro)," Revision 2. Based on review of these procedures, the inspectors determined that the licensee had adequately addressed the elements for an internal exposure monitoring program.

### 2.3 Conclusion

The licensee effectively implemented its ALARA program in accordance with procedures and regulatory requirements. The work activities at the site were implemented as provided in the radiation work permits and ALARA reviews. Radiation surveys were performed adequately to identify hazards present as required by 10 CFR 20.1501, "Surveys and Monitoring".

## **3 Radioactive Waste Treatment, and Effluent and Environmental Monitoring (84750)**

### 3.1 Inspection Scope

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

- Radioactive waste treatment systems are maintained and operated to keep offsite doses ALARA;
- Licensee effective controls, monitors, and quantifies releases of radioactive materials in liquid, gaseous, and particulate forms to the environment; and
- Radiological environmental programs are effectively implemented to ensure effluent releases are being adequately performed as required to minimize public dose.

### 3.2 Observations and Findings

Prior to implementation of the ISFSI-Only Technical Specification, the previous amendment to the TS, Section 5.5.2 for the two licenses require the licensee to establish, implement, and maintain the Offsite Dose Calculation Manual (ODCM). The ODCM provided detailed guidance for monitoring and controlling liquid and gaseous effluents, as well as calculating offsite doses. In addition, TS Section 5.7.1 requires the licensee to submit annual radiological environmental and radioactive effluent release reports to the NRC. The 2019 annual radioactive effluent release report was submitted on April 28, 2020 (ADAMS Accession No. ML20132A116). The 2019 annual radiological environmental operating report was submitted on May 12, 2020 (ADAMS Accession No. ML20136A407).

The annual radioactive effluent release report documented the gaseous and liquid effluents for 2019. The inspectors reviewed the annual report and compared the data and information provided against the requirements in the ODCM. The licensee calculated the quarterly doses at the site boundary in accordance with the ODCM, and the results were less than 1 millirem (mrem) based on liquid and airborne effluent releases and direct radiation measurements.

The annual radioactive effluent release report also documented the shipments performed during calendar year 2019. The licensee's decommissioning contractor SDS, made two shipments of solid waste to the EnergySolutions disposal site in Clive, Utah. The licensee's decommissioning contractor SDS, maintains a contract with vendor Bear Creek Operations that provides volume reduction services. No shipments were made from SDS to Bear Creek Operations for volume reduction in calendar year 2019. The inspectors confirmed there were no shipments of resins or irradiated components during calendar year 2019.

The inspectors reviewed the annual radiological environmental operating report for 2019 and concluded that the licensee had collected the required samples of environmental media and measured radiation levels in the environment at the specified locations around the facility and performed the analyses in accordance with the ODCM. The environmental and exposure monitoring data results continued to represent background levels around the facility; and therefore, there was no accumulation of radioactivity in the environment as a result of licensed activities.

The licensee performed the annual land-use census as required by the ODCM, in which the results were documented in the annual radiological environmental operating report. There were no changes necessary in the sampling media or sampling locations in response to the annual land-use census. In addition, the inspectors reviewed the interlaboratory comparison results and noted the program contained the appropriate radioisotopes for current plant conditions and it was performed as required.

The SDS decommissioning contractor installed a stand-alone liquid radwaste processing (LRWP) skid system that is used to process liquids currently stored onsite and liquids generated during the entire decommissioning activities at the site. The inspectors conducted a walk-down with SDS personnel to observe the liquid pathways at the facility, including the installed LRWP skid system. The inspectors examined the configuration, flow path, and associated procedures for the LRWP skid. The inspectors reviewed the last administrative values for the radwaste liquid effluent, Unit 2 turbine

plant sump, and north industrial yard drain sump and concluded that the unity rule was maintained as required by the ODCM.

The licensee documented and tracked each deviation from the ODCM as required by Section 5.0 of the ODCM. Deviations from the ODCM were associated with external factors not within the control of the licensee. The licensee stated that the 2019 deviations had no meaningful impact on the radiological environmental monitoring program and did not compromise the validity of the reported conclusions. The inspectors concluded that the deviations were within the criteria of the ODCM and did not impact the ODCM program.

### 3.3 Conclusion

The licensee implemented and maintained the effluent monitoring and control systems for calendar year 2019 in accordance with the ODCM. The licensee's program met the appropriate regulatory requirements set forth in the ODCM for sample collection methodology and locations, quality control and quality assurance of the program, and comparison of data results to pre-operational data results.

## 4 **Exit Meeting Summary**

On September 24, 2020, the NRC inspectors presented the final inspection results to Mr. 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 with the exception of all SDS procedures and documents reviewed during the inspection, which were marked as proprietary.

**SUPPLEMENTAL INSPECTION INFORMATION**  
**KEY POINTS OF CONTACT**

Licensee Personnel

A. Bates, SCE, Regulatory Affairs and Oversight Manager  
S. Mannon, SDS, Regulatory Affairs Manager  
S. Enright, SDS, ALARA Special Projects Manager  
T. Kaiser, SDS, Project Director Decommissioning and Deconstruction  
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W. Hampton, SDS, ODCM Remp Specialist  
N. Hansen, SDS, ODCM Remp Specialist  
J. Sophie, SDS, Containment Systems Removal Project Manager  
R. Kalman, SDS, Operations Project Director

**INSPECTION PROCEDURES USED**

IP 71801 Decommissioning Performance and Status Review at Permanently Shutdown Reactors  
IP 83750 Occupational Radiation Exposure  
IP 84750 RadWaste Treatment, Effluent and Environmental Monitoring

**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	<i>Code of Federal Regulations</i>
CSLC	California State Lands Commission
D&D	Decontamination and Dismantlement
EAL	Emergency Action Level
EP	Emergency Plan
IOEP	ISFSI-Only Emergency Plan
ISFSI	Independent Spent Fuel Storage Installation
LRWP	Liquid RadWaste Processing
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PDEP	Permanently Defueled Emergency Plan
PSDAR	Post-Shutdown Decommissioning Activities Report
SDS	SONGS Decommissioning Solutions
SCE	Southern California Edison Company
SFP	Spent Fuel Pool
SONGS	San Onofre Nuclear Generating Station
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report