



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

June 9, 2017

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 05000361/2017-002 AND 05000362/2017-002**

Dear Mr. Palmisano:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted on May 8-11, 2017, at the San Onofre Nuclear Generating Station, Units 2 and 3. The NRC inspector discussed the results of this inspection with you and other members of your staff during an onsite final exit meeting conducted on May 11, 2017. The inspection results are documented in the enclosure to this inspection report.

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 activities, and interviews with personnel. Specifically, the inspector reviewed the synchronous condenser activities, Unit 2 and 3 spent fuel safety, radioactive waste treatment and effluent monitoring program, occupational radiation exposure, and the training and qualification effectiveness for the Operations and Radiation Protection programs.

Based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation related to the licensee's failure to maintain the Certified Fuel Handler training program as required by Technical Specifications 5.3.2. The licensee identified the finding, initiated a prompt evaluation and took adequate corrective actions. Since this issue was entered into your corrective action program, was of very low safety significance, the violation was non-repetitive and not willful, then this violation is being treated as a Non-Cited Violation (NCV), in accordance with Section 2.3.2 of the NRC Enforcement Policy. This NCV is described in the subject inspection report.

You are not required to respond to this letter unless the description herein does not accurately reflect your corrective actions or your position. However, if you contest the violation or significance of the NCV, you should provide a response within 30-days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to: (1) the Regional Administrator, Region IV, and (2) the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

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.

If you have any questions regarding this inspection report, please contact Rachel Browder at 817-200-1452, or the undersigned at 817-200-1549.

Sincerely,

*/RA/*

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

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

Enclosure:  
Inspection Report 05000361/2017-002;  
05000362/2017-002  
w/Attachment: Supplemental Information

**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket Nos. 05000361; 05000362

License Nos. NPF-10; NPF-15

Report Nos. 05000361/2017-002; 05000362/2017-002

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 8-11, 2017

Inspector: Rachel S. Browder, C.H.P., Senior Health Physicist  
Fuel Cycle and Decommissioning Branch  
Division of Nuclear Materials Safety

Assisted By: Shiattin Makor, Reactor Inspector  
Engineering Branch 2  
Division of Reactor Safety

Accompanied By: Ray L. Kellar, P.E., Chief  
Fuel Cycle and Decommissioning Branch  
Division of Nuclear Materials Safety

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

Enclosure

## EXECUTIVE SUMMARY

San Onofre Nuclear Generating Station, Units 2 and 3  
NRC Inspection Report 05000361/2017-002; 05000362/2017-002

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 was conducting these activities in accordance with site procedures, license requirements, and applicable NRC regulations, with one exception as described in Section 5.2 of this report.

### Decommissioning Performance

- The licensee had initiated excavation activities in the southern portion of the switchyard and construction of the soil nail wall in support of the synchronous condenser construction. The licensee's survey results and the NRC composite soil sample confirmatory data indicated that the excavated soil was indistinguishable from background radiological levels and therefore met the unrestricted use criteria established under 10 CFR 20.1402. Based on the survey results, the excavated soil was unconditionally released from the site. The inspector concluded that the licensee was monitoring and maintaining liquids at the site in accordance with the Updated Final Safety Analysis Report (UFSAR). (Section 1.2)

### Spent Fuel Pool Safety

- The SONGS Units 2 and 3 spent fuel pools were being maintained in accordance with technical specifications and procedural requirements. The licensee was safely storing spent fuel in wet storage. (Section 2.2)

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

- The licensee maintained effluent monitoring and control systems as required. The effluent flow paths and monitoring systems reviewed aligned with descriptions in the Offsite Dose Calculation Manual (ODCM) and were calibrated, functional, and the alarm setpoints met regulatory requirements. The licensee's effluent monitoring program was being conducted in accordance with the appropriate regulatory requirements as prescribed by the SONGS ODCM. (Section 3.2)

### Occupational Radiation Exposure

- The licensee effectively implemented its "*As Low As is Reasonably Achievable*" ALARA program in accordance with procedures and regulatory requirements. The licensee demonstrated initiatives to implement methods and practices to maintain doses ALARA. Based on a review of the dose history, ALARA 2016 Annual Report, and ALARA committee meeting reports, the inspector concluded that issues, events, or problems were identified and resolved to preclude possible issues in the area of radiological controls. The licensee was adequately implementing its radiological survey program in accordance with 10 CFR 20.1501. (Section 4.2)

### Training and Qualification Effectiveness

- The NRC determined that one Severity Level IV Non-Cited violation (NCV) of Technical Specifications, Section 5.3.2, occurred based on the licensee's identification of the failure to maintain an NRC approved training and retraining program for Certified Fuel Handlers. The licensee was implementing its Radiation Protection Training program in accordance with its procedures and regulatory requirements. (Section 5.2)

## Report Details

### Summary of Plant Status

On June 12, 2013, Southern California Edison (SCE), the licensee, formally notified the NRC by letter that it had permanently ceased power operations at Units 2 and 3, effective June 7, 2013, (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 Units 3 and 2, respectively. The licensee submitted its PSDAR on September 23, 2014, (ML14269A033). In response to the licensee's amendment request, the NRC 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.

On March 11, 2016, (ML16055A522) the NRC issued two revised facility operating licenses for SONGS Units 2 and 3, in response to the licensee's amendment request dated August 20, 2015, (ML15236A018). The license amendment allowed for the licensee to revise its Updated Final Safety Analysis Report (UFSAR) to reflect the significant reduction of decay heat loads in the SONGS Units 2 and 3 spent fuel pools (SFPs) resulting from the elapsed time since the permanent shutdown of the units in 2012. The revisions support design basis changes made by the licensee associated with the implementation of "cold and dark" plant status as described in the PSDAR.

The NRC approved exemptions from certain emergency planning requirements in 10 CFR 50.47(b), 10 CFR 50.47(c)(2) and 10 CFR Part 50, Appendix E, Section IV, which became effective on June 4, 2015, (ML15082A204). The licensee submitted a license amendment request dated December 15, 2016, (ML16355A015) to revise the Permanently Defueled Emergency Plan (PDEP) into an Independent Spent Fuel Storage Installation (ISFSI)-Only Emergency Plan, and to revise the Emergency Action Level (EAL) scheme into an ISFSI-only EAL for the SONGS Units 1, 2, and 3. The proposed changes were submitted to the NRC for approval prior to implementation, as required under 10 CFR 50.54(q)(4) and 10 CFR 72.44(f). The license amendment request is under review by the NRC's Office of Nuclear Security and Incident Response.

The spent fuel was being safely stored in the two spent fuel pools. The licensee had completed the installation of the 12-kilovolt, non-safety and seismic Category III, electrical ring bus and associated equipment that will facilitate decommissioning of various plant systems. The excavation and removal of soil from the southern portion of the electrical switchyard to support the San Diego Gas and Electric synchronous condenser was being conducted during the on-site inspection. In addition, the licensee was constructing the independent spent fuel storage installation expansion and the new security building, which is inspected by the regional NRC office under separate programs.

## **1 Decommissioning Performance (71801)**

### **1.1 Inspection Scope**

The inspector evaluated whether the licensee and its contracted workforce were conducting decommissioning activities in accordance with the license and regulatory requirements.

### **1.2 Observations and Findings**

The licensee notified the NRC by letter dated March 3, 2015, (ML15071A018) of its proposed plans to construct the San Diego Gas and Electric synchronous condenser in the southern portion of the electrical switchyard to compensate for the elimination of SONGS power generation. Since that time, the licensee had performed a radiological characterization survey and collected the NRC split soil samples in the switchyard for confirmatory measurements. The results from those surveys and analyses were documented in previous inspection reports issued between July 2015 and October 2016. The survey results demonstrated that the underlying soil was not radioactively contaminated at detectable levels.

The NRC had previously reviewed the licensee's "Material Release Work Plan" for the excavation and soil release project and concluded it was acceptable as documented in a previous inspection report dated December 16, 2015, (ML15350A205). The inspector determined that the licensee was implementing radiological surveys and sampling of the excavated soils in accordance with the "Material Release Work Plan" and licensee Procedures, SO123-VII 20.9.2, "Material Release Surveys" and SO123-VII-20.9.3, "Surveys for Release of Liquids, Sludges, Slurries, and Sands." The inspector reviewed the licensee's scanning results and soil sample analysis results of the excavated areas and soldier pile wall. The instruments reviewed were Ludlum 2350-1 ratemeters (serial numbers 201179, 246975, and 192610) that were calibrated to a National Institute for Standards and Technology (NIST) traceable source (cesium-137) on an annual basis by Safety and Ecology Corporation, a State of Tennessee licensee. In addition, the ratemeter instruments used a 2x2 sodium iodide (NaI) detector, which was calibrated with the corresponding ratemeter. The calibration verified reproducibility over a multi-point scale. The soil samples were analyzed by GEL Laboratories, which is the vendor that also performed the quality-related environmental analysis for the licensee's Radiological Environmental Monitoring Program (REMP). The licensee's survey and soil sample analysis results demonstrated that the excavated soils in the southern portion of the switchyard met the unrestricted use criteria established under 10 CFR 20.1402.

In addition to scanning and soil sample analyses performed by the licensee, composite soil samples were analyzed by NRC's contract laboratory for verification. The composite soil samples were provided through chain-of-custody to the NRC's contractor laboratory, Oak Ridge Associated Universities (ORAU) for analysis. The samples were analyzed by gamma spectroscopy for the radionuclides of concern, which were cobalt-60 (Co-60) and cesium-137 (Cs-137). The sample results were reported in pico-Curies per gram (pCi/g) and are summarized in the table below, with the corresponding ADAMS accession number for the respective ORAU report.

Soil Sample	Sample Description	Results (pCi/g)		Collection Date	Report Date	ADAMS Accession No.
		Co-60	Cs-137			
1*	Nail Wall 00001	< 0.034	< 0.028	December 7, 2016	January 12, 2017	ML17012A407
2*	Nail Wall 00002	< 0.033	< 0.030	January 5, 2017	February 1, 2017	ML17038A437
3	Nail Wall 00003	0.004	< 0.036	January 26, 2017	March 2, 2017	ML17079A355
4	Nail Wall 00004	0.027	< 0.035	February 15, 2017	March 20, 2017	ML17079A344
5	Nail Wall 00006	< 0.033	0.002	March 21, 2017	April 10, 2017	ML17100B158
6	Soldier Pile Wall 00007	< 0.036	< 0.031	April 4, 2017	May 15, 2017	ML17135A420
7	Nail Wall 00005	< 0.034	< 0.028	March 30, 2017	May 15, 2017	ML17135A420
8	Cast in place wall 00008	< 0.038	< 0.040	March 30, 2017	May 15, 2017	ML17135A420
9	Dead end Strct 00009	< 0.044	< 0.038	April 25, 2017	May 15, 2017	ML17135A421
10	Dead end Strct 00010	< 0.032	< 0.027	April 26, 2017	May 15, 2017	ML17135A421

\* previously documented in inspection report (2017-001)

The licensee had excavated approximately 23,943 cubic yards of soil from the switchyard location where the Synchronous Condenser was planned to be constructed. Based on the surveys and soil sample analysis results, the excavated soil was unconditionally released from the licensee in accordance with the licensee's Procedures SO123-VII-20.9.2, "Material Release Surveys" and SO123-VII-20.9.3, "Surveys for Release of Liquids, Sludges, Slurries, and Sands" and the Radiological Characterization Plan.

The licensee continued to store liquids in tanks at the site until a processing skid is obtained and placed in service to allow more routine processing as specified in the UFSAR, Section 11.1. The licensee was implementing the liquid waste system as specified in the UFSAR by collecting any liquid waste that was generated since the plant shutdown. Operations tracked the amount of liquids being held in the tanks and could move water to different storage tanks and processing paths, as needed. The UFSAR specified the following liquid waste tanks and each one's capacity. The licensee provided the current percent (%) capacity of each tank.

Component	Identifier	Capacity (gallons)	Indicator Location	Percent Capacity (%)	
				2-Feb-17	9-May-17
Chemical Waste Tank	T-064	25,000	CDAS	85	70
Radwaste Primary Tank	T-065	60,000	RW Control Room	86	87
Radwaste Primary Tank	T-066	60,000	RW Control Room	83	83
Radwaste Primary Tank	T-067	60,000	RW Control Room	87	87
Radwaste Primary Tank	T-068	60,000	RW Control Room	0	0
Miscellaneous Wastes Evaporator Condensate Monitor Tank	T-075	25,000	RW Control Room	23	23
Miscellaneous Wastes Evaporator Condensate Monitor Tank	T-076	25,000	RW Control Room	24	86

The inspector reviewed the coordination study for LDC02 essential load center feeding the U2 spent fuel cooling island. The inspector reviewed calculation 480V Load Center Breaker Coordination & Settings Calculation (152219-C-E-0009) and calculation change notice (CCN01) regarding the breaker overcurrent relay settings for adequate margin and breaker coordination. The inspector determined that all inputs and assumptions were reasonable and the breaker overcurrent relays performed as designed.

### 1.3 Conclusion

The licensee had initiated excavation activities in the southern portion of the switchyard and construction of the soil nail wall in support of the synchronous condenser construction. The licensee's survey results and the NRC composite soil sample confirmatory data indicated that the excavated soil was indistinguishable from background radiological levels and therefore met the unrestricted use criteria established under 10 CFR 20.1402. Based on the survey results, the excavated soil was unconditionally released from the site. The inspector concluded that the licensee was monitoring and maintaining liquids at the site in accordance with the UFSAR.

## 2 **Spent Fuel Pool Safety (60801)**

### 2.1 Inspection Scope

The inspector conducted a review of the spent fuel pools for SONGS Units 2 and 3, specifically the pool water level, chemistry, and associated cooling systems to ensure that the licensee was maintaining the two pools in accordance with technical specifications and procedural requirements.

### 2.2 Observations and Findings

Technical Specifications 3.1.1 and 3.1.2 requires the spent fuel pool water level be maintained greater than or equal to 23 feet over the top of the irradiated fuel assemblies seated in storage racks, and the spent fuel pool boron concentration be maintained greater than or equal to 2,000 parts per million (ppm), respectively. In addition, SONGS UFSAR, Section 9.1.2.3, Safety Evaluation required the spent fuel pool coolant temperature be maintained between 50°Fahrenheit (°F) to 160°F.

The SONGS Units 2 and 3 spent fuel pools were approximately 27 feet above the top of the irradiated fuel assemblies, based on the licensee's surveillance performed on May 7, 2017. The licensee indicated that the new spent fuel pool cooling system was holding the temperature of the spent fuel pools in steady temperature conditions. The Unit 2 and 3 spent fuel pools were approximately 68°F, which was within the range specified in the UFSAR.

The inspector reviewed the spent fuel pool surveillances performed in accordance with licensee Procedure SO123-III-1.23, "Chemical Control of SONGS Plant System," Revision 68. The boron parameter in the spent fuel pools was required to be analyzed weekly to verify the boron concentration. The Unit 2 spent fuel pool boron concentration was 2,730 parts per million (ppm) and Unit 3 spent fuel pool concentration was 2,723 ppm, based on the last weekly sample analyzed on May 3, 2017. The inspector

reviewed the surveillance history since the last inspection and the surveillances were completed as required and the results were not below the technical specifications requirement.

The gamma activity in both spent fuel pools continued to increase slightly, as noted in previous inspections. The activity in Unit 2 was approximately 2.6 E-3 microCurie per milliliter (uCi/ml) and Unit 3 activity was approximately 1.04E-3 uCi/ml. The licensee was monitoring for any trends and had not identified any upward trend of other spent fuel pool parameters. The gamma dose rate in the area around the pool continued to remain low, as indicated by the local area radiation monitor, Ludlum Model 375, which indicated 0.0 milliRoentgen per hour (mR/hr). The annual calibration was due on December 21, 2017. In the areas toured, the licensee had implemented radiation protection controls, including postings and labeling that were in compliance with regulatory and procedure requirements. The inspector also observed the status of boundaries, postings, and labeling to ensure compliance with regulatory and procedural requirements.

### 2.3 Conclusion

The SONGS Units 2 and 3 spent fuel pools were being maintained in accordance with technical specifications and procedural requirements. The licensee was safely storing spent fuel in wet storage.

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

### 3.1 Inspection Scope

The inspector reviewed the licensee's radioactive effluent release report to verify that the program was implemented consistent with the licensee's technical specifications and Offsite Dose Calculation Manual (ODCM) requirements.

### 3.2 Observations and Findings

Technical Specifications Section 5.5.2 for the two licenses, require the licensee to establish, implement, and maintain the ODCM. The ODCM provides detailed guidance for monitoring and controlling liquid and gaseous effluents, as well as calculating offsite doses. In addition, Technical Specifications Section 5.7.1 requires the licensee to submit annual radiological environmental and radioactive effluent release reports to the NRC. The 2016 annual radiological environmental operating report was submitted on May 11, 2016, (ML17135A360) therefore it was not reviewed as part of this inspection. The 2016 annual radioactive effluent release report was submitted on April 25, 2017, (ML17121A421) therefore it was reviewed as part of this inspection.

#### a. Effluent Monitoring

The annual radioactive effluent release report documented the gaseous and liquid effluents for 2016, as well as radioactive waste shipments. The inspector reviewed the annual report and selected data used in the development of the report and compared the information provided against the requirements in the ODCM.

The licensee monitored gaseous effluents based on fission gases, iodines, particulates, and tritium. The radioactive gaseous release permits for Units 2 and 3 identified tritium, except for one particulate in the third quarter that identified  $5.11\text{E-}06$  curies of cesium-137. There were no fission gases, iodines, or noble gases detected. The resultant quarterly doses at the site boundary were calculated in accordance with the ODCM and were significantly less than 1 mrem. The annual calculated dose for airborne effluents was  $8.83\text{E-}3$  mrem.

The licensee monitored releases of fission and activation products, tritium, dissolved and entrained gases, and gross alpha radioactivity in the liquid effluents. All releases in 2016 were less than 0.01-percent of the applicable effluent concentration limit, and tritium was the only measurable constituent. The licensee calculated the quarterly doses at the site boundary in accordance with the ODCM and the results were significantly less than 1 mrem. The annual calculated dose from liquid effluents for the whole body was  $1.50\text{E-}4$  mrem and for the organs the dose was  $2.42\text{E-}4$  mrem.

The inspector observed a routine chemistry surveillance of the plant vent stack monitors 2/3RT-7808 and 2RT-7865. The inspector observed good use of licensee Procedure SO123-III-5.4.23, "Chemistry Procedure," Revision 13, Attachment 2, for completing the sample preparation, sample collection, and restoring the monitor to service. The chemistry technician used good radiological protection techniques to ensure the samples were not mishandled or contaminated. The final gamma analysis results for the charcoal, particulate filter, and gas sample were all less than minimum detectable for the measuring equipment.

b. ODCM Maximum Setpoint

The licensee had calculated new ODCM liquid effluent maximum setpoint value for 2/3RE2101, North Industrial Area Radiation Monitor, and issued a transmittal letter on August 3, 2016. However, as a result of monitors being taken out of service during the cold and dark modifications, the revised ODCM maximum setpoint value of  $1.33\text{E-}05$  uCi/cc was not updated to 2/3RE2101 (North Industrial Area Radiation Monitor) when the monitor was returned to service. This was identified during a surveillance of 2/3RE2101 conducted on November 12, 2016, when the licensee identified the monitor's *as-found* ODCM maximum setpoint value was  $1.38\text{E-}5$  uCi/cc. The licensee initiated a corrective action (NN# 203399258) and corrected the ODCM maximum setpoint value to reflect  $1.33\text{E-}5$  uCi/cc. In addition, the licensee performed a low level event investigation for this incident.

The corrective actions entailed evaluating the event log for the liquid effluent monitor 2/3RE2101, which indicated there was no release that exceeded the concentrations specified in 10 CFR Part 20, Appendix B, Table II, Column 2 for radionuclides. In addition, the licensee changed several instructions and procedures. These changes included Maintenance identifying the *as-found* setpoints for any effluent radiation monitors, such as during a channel functional surveillance test, and to check/adjust the values to ensure it corresponded to the latest ODCM maximum setpoint value. In addition, Operations procedure was updated to verify the setpoint values prior to returning any radiological effluent monitor back into service.

The inspector further questioned the methodology used for transmitting the ODCM maximum setpoint values, which was performed by email when there were reduced number of staff at the facility. The licensee decided to use the action request system when new ODCM maximum setpoints were required to be updated to the radiological effluent monitors. The licensee initiated AR number 0517-18452 to modify Procedure SO123-III-5.8 , “Using the Gamma Spectroscopy Computer, Liquid and Gaseous Effluent Dose Determinations and Manual Effluent Release Permits and Setpoint Calculations” to generate an action request for Maintenance to install new setpoint values for the respective radiological effluent monitors.

The inspector agreed with the licensee’s conclusion that there was not a potential for a discharge above the effluent ODCM maximum setpoint value because the pump trip value for the effluent radiation monitor 2/3RE2101 was set to 5.00E-6 uCi/cc, which is below the ODCM maximum setpoint value of 1.33E-5 uCi/cc. As a result, the pump would have tripped and prevented any instantaneous effluent release in excess of Technical Specifications 5.5.2, and therefore the licensee would not exceed the concentrations specified in 10 CFR Part 20, Appendix B, Table II, Column 2 for radionuclides.

c. Shipment

The licensee made one shipment in 2016 to EnergySolutions, LLC, Bear Creek Facility in Tennessee for processing waste. The shipment consisted of one general design Sealand container with dry active waste and two drums of Non-RCRA (Resource Conservation and Recovery Act) waste oil. The package was shipped as LSA-II. The inspector reviewed the shipping papers and determined the documents adequately met the requirements under 10 CFR Part 172, Subpart C. In addition, the inspector reviewed the hazmat training for the shipper and concluded the training was performed as required by 49 CFR 172.704.

3.3 Conclusions

The licensee maintained effluent monitoring and control systems as required. The effluent flow paths and monitoring systems reviewed aligned with descriptions in the ODCM and were calibrated, functional, and the alarm setpoints met regulatory requirements. The licensee’s effluent monitoring program was being conducted in accordance with the appropriate regulatory requirements as prescribed by the SONGS ODCM.

**4 Occupational Radiation Exposure (83750)**

4.1 Inspection Scope

The inspector evaluated the licensee’s implementation of its occupational radiation safety program.

## 4.2 Observations and Findings

The licensee implemented its radiological survey program in accordance with licensee Procedure SO123-VII-20.9, "Radiological Surveys," Revision 24. The inspector reviewed the required annual, quarterly, and monthly survey areas and determined that the frequency of surveys for the respective areas were reasonable to evaluate the radiological conditions of the facility, and therefore in compliance with 10 CFR 20.1501, "Surveys and Monitoring." The inspector reviewed surveys for Units 2 and 3 Fuel Handling Buildings, elevation 63-foot, that were performed between January and May 2017. The surveys were performed and documented on the frequency required by the procedure. The surveys were legible and clearly provided the radiological conditions of the area.

The licensee was implementing its "As Low As is Reasonably Achievable" ALARA program in accordance with Procedure SO123-XV-85, "SONGS Station ALARA Committee," Revision 6. The inspector reviewed the ALARA Committee Meeting minutes for December 19, 2016, March 1, 2017 and observed the meeting that was conducted on May 10, 2017.

During the December 19, 2016 meeting, the committee agreed to align the station's procedures to reflect the Nuclear Energy Institute's (NEI) Efficiency Bulletin 16-03, "Align Personnel Contamination Event Response to Industry Guidance." This NEI Efficiency Bulletin reflects Electric Power Research Institute's (EPRI's) guidelines for personnel contamination event response in EPRI 1011740, which recommends to track Level 1 personnel contamination events (PCE), but not restrict the individual from the radiologically controlled area and not to perform additional remediation, nor detailed investigation under the licensee's corrective action program. A Level 1 personnel contamination is the lowest level of PCE, which is >1000 disintegrations per minute (dpm) and < 50,000 dpm. However, for higher level PCEs and events resulting from multiple Level 1 PCEs, then appropriate investigation would be performed under the licensee's corrective action program. While NRC has not endorsed EPRI 1011740, several licensees have implemented this industry initiative.

The ALARA Committee approved two project dose goals during the March 1, 2017, meeting. One of the projects entailed moving a loaded filter cask from the Unit 2 Fuel Handling Building to the multi-purpose handling facility (MPHF) for storage with a dose goal of 20 milli-rem (mrem). The second project involved the initial preparations for moving fuel to the ISFSI pad. These initial preparations covered the inspections of the fuel handling building crane, fuel handling equipment, Tri-nuke filter equipment, scaffolding and some decontamination activities. The proposed dose goal was 30 mrem.

The inspector observed the ALARA Committee meeting conducted on May 10, 2017, which covered the project proposal for all aspects of the pre-operational testing and demonstrations for the planned Holtec ISFSI. The inspector observed the committee members had a good questioning attitude, which allowed for a thorough discussion regarding the proposed dose analysis, which resulted in greater specificity for each activity and corresponding dose. Based on the discussion, the proposal wasn't approved and was scheduled to be brought back to the committee at a later date.

#### 4.3 Conclusions

The licensee effectively implemented its ALARA program in accordance with procedures and regulatory requirements. The licensee demonstrated initiatives to implement methods and practices to maintain doses ALARA. Based on a review of the dose history, ALARA 2016 Annual Report, and ALARA committee meeting reports, the inspector concluded that issues, events, or problems were identified and resolved to preclude possible issues in the area of radiological controls. The licensee was adequately implementing its radiological survey program in accordance with 10 CFR 20.1501.

### **5 Training and Qualification Effectiveness (41500)**

#### 5.1 Inspection Scope

The inspector evaluated the training and qualification programs to verify the licensee was implementing, evaluating, documenting, and maintaining the Certified Fuel Handler and Radiation Protection programs as required by 10 CFR 50.120 and 10 CFR 55.5.

#### 5.2 Observations and Findings

##### a. Operations SM/CFH Training Program

On August 1, 2014, Technical Specifications Section 5.3.2 was amended to require the licensee to maintain an NRC approved training and retraining program for the Certified Fuel Handlers (ML13268A165). The licensee's Shift Manager and Certified Fuel Handlers (SM/CFH) training program was developed as specified under 10 CFR 50.120(b)(2), "Training and Qualification of Nuclear Power Plant Personnel," to include all five of the required elements of a systematic approach to training (SAT) as defined under 10 CFR 55.4. The five elements included: 1) systematic analysis of jobs to be performed, 2) learning objectives, 3) training designed and implemented based on the objectives developed, 4) evaluation of the trainee mastery of the objectives during training, and 5) evaluation and revision of the training based on the performance of trained personnel in the job setting. The technical specification was approved by the NRC based on the licensee's description of the program in Procedures SO23-XXI-TPD-SMCFH, "Shift Manager/Certified Fuel Handler Training Program Description (TPD)," Revision 7 and SO23-XXI-TRN, "Conduct of Training," Revision 8, which implemented the SAT methodology for SM/CFH.

The licensee's Nuclear Oversight performed a Maintenance, Modification, and Training audit (SCES-007-16) that was issued by letter dated November 8, 2016. The purpose of the audit was to verify the licensee's maintenance, modifications and training programs were in compliance with SONGS Decommissioning Quality Assurance Program (DQAP) and committed regulatory requirements. The licensee's audit team identified several deficiencies in the SM/CFH training program, including the failure to perform routine audits, the failure to update the training program when changes were made to the training schedule and materials presented, and the failure to suspend a CFH from duty when a quarterly training cycle was not completed for greater than 90-days and subsequently allowed the individual to stand watch on two different shifts.

The NRC evaluated the licensee's audit report and determined that the licensee's failure to maintain the Certified Fuel Handler training program was a violation of Technical

Specifications, Section 5.3.2, which states in part, that the licensee shall maintain an NRC approved training and retraining program for Certified Fuel Handlers. Licensee Procedure SO23-XXI-TPD-SMCFH, Section 6.6.6 requires in part, that a program audit report be completed after each session of training within the biennial cycle and after each biennial examination; Section 6.6.2 states in part, that if the required training is not completed within 90-days of the training, then the SM/CFH shall be suspended from duty pending completion of training; and licensee Procedure SO23-XXI-TRN, Section 6.7 requires in part, that the training is to include current and relevant content.

Contrary to the above, during the biennial training period 2015 through 2016, the licensee failed to maintain the Certified Fuel Handler training program in accordance with Technical Specifications 5.3.2. Specifically, the licensee identified the following examples during the SCES-007-16 audit, in which the training program was not implemented in accordance with the NRC approved Certified Fuel Handler training program.

- Routine audits of the program were not completed during the 2015 and 2016 Two-Year Schedule as required by licensee's Procedure SO23-XXI-TPD-SMCFH, Section 6.6.6, which satisfied the program evaluation requirements under 10 CFR 50.120(b)(3) as summarized in elements (3) and (4) of the systematic approach to training as defined in 10 CFR 55.4.
- A CFH was not suspended after 7/23/16, when the individual failed to complete the retraining within the 90-day makeup period, after missing the quarterly training cycle RQ1601 that ended on 4/24/16. The CFH subsequently stood watch on two shifts, August 5, 2016 and August 6, 2016, during the time of missed training. The licensee's Procedure SO23-XXI-TPD-SMCFH, Section 6.6.2 states in part, that any missed material or examination, such as the quarterly cycle under the SM/CFH retraining program, must be made up within 90-days of the training. If the required training is not completed within the makeup period, then the SM/CFH shall be suspended from duty pending completion of training.
- Changes were made to the training schedule and material presented during the 2015 and 2016 cycle that were not updated in the training program as required by Procedure SO23-XXI-TRN, "Conduct of Training," Revision 8, Section 6.7. The systematic approach to training that was approved by the NRC specified that the training should reflect changes in the facility, procedures, regulations, and quality assurance requirements, and the changes shall be incorporated into the training program.

Consistent with the guidance in Section 1.2.6.D of the NRC Enforcement Manual, if a violation does not fit an example in the Enforcement Policy Violation Examples, it should be assigned a severity level that is commensurate with its safety significance and informed by similar violations addressed in the Violation Examples. This violation was evaluated to be a Severity Level IV violation using Section 6.3.d of the NRC Enforcement Policy, dated November 1, 2016, regarding the failure to implement procedures, which has a low safety significance. Based on the inspector's review of the Nuclear Oversight audit and the training material provided during 2015 to the present, as well as through interviews and observations, the NRC concluded that the SM/CFH staff were adequately trained in providing safe handling and storage of spent

fuel, conducting and overseeing decommissioning activities, and providing appropriate response to emergencies based on the conditions of the plant.

Upon identification, the licensee entered the issue into its corrective action program (NN# 203389511). In addition, the licensee initiated a Low Level Event Investigation under (NN# 203387022) to evaluate the SM/CFH who stood watch without completing the cycle training within 90-day period as required by licensee Procedure SO23-XXI-TPD-SMCFH. The licensee identified that 3 additional Operations personnel qualified as SM/CFH and Emergency Director were on duty in the command center during the two shifts, in which one of the individuals did not have any conflicting duties. The licensee performed a cause evaluation of these self-identified issues and developed a corrective action matrix. The inspector concluded that the licensee performed a thorough evaluation and developed corrective actions pertinent to the incident.

Since the licensee placed the deficiency into its corrective action program, the safety significance of the issue was determined to be low, and because the violation was not willful or repetitive, this violation was treated as a non-cited violation (NCV), consistent with Section 2.3.2.a of the Enforcement Policy (NCV 05000361/2017002 01/05000362/2017002-01; Failure to Maintain a CFH Training Program).

The inspector reviewed the Two-Year Schedule - Operations Continuing Training plans for 2015-2016 and 2017-2018. Based on review of the training plans and discussions with the Operations training staff, the inspector concluded that the training courses described in licensee's Procedure SO23-XXI-TPD-SMCFH, "Shift Manager/Certified Fuel Handler Training Program Description (TPD)," Revision 7 for continuing training were completed as specified by the procedure. In addition, the training plans scheduled for 2017 and 2018 were captured at the frequency specified by the procedure.

The inspector reviewed several training plans including the new ring bus distribution (CDDIST). The training plan was developed for the ring bus components that were installed as part of the cold and dark modification package. Based on the training plans reviewed, the inspector determined that the training plans were designed to implement the identified learning objectives for each plan. For example, the CDDIST training plan had a terminology list and provided adequate discussion of the equipment with sufficient pictures to support the lesson. The inspector observed one of the CFH demonstrating a routine walk down of the fuel handling building. The CFH was knowledgeable of the spent fuel pool islanding equipment, the specific pumps, and the system piping, and the makeup water system. Overall, the inspector concluded that the licensee was implementing its NRC approved CFH training program consistent with the SAT process.

The licensee had 24 staff trained and qualified under the SM/CFH training program, which included 4 staff not assigned to a rotating shift. In addition, there was one individual out on sick leave with expired qualifications, and a second individual going through the initial SM/CFH training program, who were not captured in the 24 count. The licensee maintained a spreadsheet of the required qualifications for each SM/CFH staff. The one-page spreadsheet easily depicted each individual's qualifications, the areas pending expiration in less than 60 days, and the areas with expired qualifications. As mentioned earlier, only one CFH had expired qualifications due to sick leave. The inspector reviewed

several CFH's individual training records and concluded that the spreadsheet accurately reflected the training records.

b. Radiation Protection Training Program

The inspector reviewed the radiation protection training program as described in licensee Procedure SO123-XXI-TPD-RP, "Radiation Protection Personnel Training Program Description," Revision 1 and SO23-XXI-TRN, Conduct of Training, Attachment 2, Radiation Protection Task List, dated November 2, 2015. The inspector determined that the training plan was sufficient to address the criteria for initial requirements as a radiation protection technician. All of the radiation protection technicians had lifetime qualifications and therefore received an annual proficiency guideline training as required by the procedure. During 2016, the licensee provided radioisotopic analysis training to the RP Technicians as part of the continuing proficiency training.

The licensee updated the radiation protection training program to reflect changes in the facility and to incorporate new activities, such as collecting samples for radioisotopic analysis and performing subsequent dose assessment calculations based on the chemistry analysis.

5.3 Conclusions

The NRC determined that one Severity Level IV NCV of Technical Specifications, Section 5.3.2, occurred based on the licensee's identification of the failure to maintain an NRC approved training and retraining program for Certified Fuel Handlers. The licensee was implementing its Radiation Protection Training program in accordance with its procedures and regulatory requirements.

**6 Exit Meeting Summary**

On May 11, 2017, the NRC inspector presented the final inspection results to Mr. T. Palmisano, Vice President and Chief Nuclear Officer, and other members of the licensee's staff. The inspector 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

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M.Reitzler, Maintenance/Work Control  
M.Shackelford, Training Manager  
S.Vaughan, Project Manager  
J.Appel, Regulatory Affairs

### INSPECTION PROCEDURES USED

IP 71801 Decommissioning Performance and Status Review at Permanently Shutdown Reactors  
IP 60801 Spent Fuel Pool Safety at Permanently Shutdown Reactors  
IP 84750 Radioactive Waste Treatment, Effluent, and Environmental Monitoring  
IP 83750 Occupational Radiation Exposure  
IP 41500 Training and Qualification Effectiveness

### LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened/Closed

NCV 05000361/2017002-01/05000362/2017002-01 Failure to Maintain a Certified Fuel Handler Training Program

#### Discussed

None

### LIST OF ACRONYMS

ADAMS Agencywide Documents Access and Management System  
ALARA As Low As is Reasonably Achievable  
CFR *Code of Federal Regulations*  
mrem millirem  
NRC Nuclear Regulatory Commission  
ODCM Offsite Dose Calculation Manual  
ORAU Oak Ridge Associated Universities  
PSDAR Post-Shutdown Decommissioning Activities Report  
RCRA Resource Conservation and Recovery Act  
SFP Spent Fuel Pool  
SONGS San Onofre Nuclear Generating Station  
TS Technical Specifications  
UFSAR Updated Final Safety Analysis Report

SAN ONOFRE NUCLEAR GENERATING STATION – NRC INSPECTION REPORTS  
 05000361/2017-002; 05000362/2017-002 - DATED JUNE 9, 2017

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<input checked="" type="checkbox"/> SUNSI Review By: RSB	ADAMS: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Sensitive <input checked="" type="checkbox"/> Non-Sensitive	<input type="checkbox"/> Non-Publicly Available <input checked="" type="checkbox"/> Publicly Available	Keyword NRC-002
OFFICE	DNMS/FCDB		C:FCDB	
NAME	RSBrowder		RLKellar	
SIGNATURE	/RA/		/RA/	
DATE	6/8/17		6/9/17	

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