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

September 25, 2019

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 05000361/2019-004 AND 05000362/2019-004

Dear Mr. Bauder:

This letter refers to the U.S. Nuclear Regulatory Commission's (NRC's) inspection conducted on August 26-29, 2019, at the San Onofre Nuclear Generating Station (SONGS), Units 2 and 3. The NRC inspectors discussed the results of this inspection with you and other members of your staff during a final onsite exit meeting conducted on August 29, 2019. 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, emergency preparedness exercise and program evaluation, implementation of the solid radioactive waste management and transportation of radioactive materials program, effectiveness of the 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.

If you have any questions regarding this inspection report, please contact Stephanie Anderson at 817-200-1213, or the undersigned at 817-200-1249.

Sincerely,

/RA/

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 05000361/2019-004;
05000362/2019-004
w/Attachment: Supplemental Information

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket Nos.:	05000361; 05000362
License Nos.:	NPF-10; NPF-15
Report Nos.:	05000361/2019-004; 05000362/2019-004
Licensee:	Southern California Edison Company
Facility:	San Onofre Nuclear Generating Station, Units 2 and 3
Location:	5000 South Pacific Coast Highway, San Clemente, California
Inspection Dates:	August 26-29, 2019
Inspectors:	Stephanie G. Anderson, Health Physicist Reactor Inspection Branch Division of Nuclear Materials Safety Rachel S. Browder, CHP, Senior Health Physicist Division of Nuclear Materials Safety Austin C. Roberts, Health Physicist Materials Licensing and Decommissioning Branch Division of Nuclear Materials Safety
Approved By:	Gregory G. Warnick, Chief Reactor Inspection Branch Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

San Onofre Nuclear Generating Station, Units 2 and 3
NRC Inspection Report 05000361/2019-004; 05000362/2019-004

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 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 2018 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)

Solid Radioactive Waste Management and Transportation of Radioactive Materials

- The inspectors concluded that the licensee was knowledgeable of the transportation requirements and adequately trained to implement the program. The licensee maintained a solid radioactive waste management and transportation program that met regulatory requirements. (Section 4.2)

Decommissioning Emergency Preparedness Scenario Review, Exercise Evaluation, and Program Evaluation

- The inspectors observed a biennial emergency exercise conducted on August 27, 2019, and concluded that the licensee’s emergency response organization effectively implemented its Permanently Defueled Emergency Plan to adequately protect the public health and safety. The licensee demonstrated an adequate management critique process that identified issues

and improvement items, which were entered into the corrective action system for resolution. The licensee's emergency preparedness program was being maintained in a state of operational readiness. The inspectors confirmed that changes made to the emergency preparedness program continued to meet NRC requirements and licensee commitments. (Section 5.2)

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.

On March 11, 2016, the NRC issued two revised facility operating licenses for SONGS, Units 2 and 3 (ADAMS Accession No. ML16055A522), in response to the licensee's amendment request dated August 20, 2015 (ADAMS Accession No. ML15236A018). The license amendment allowed 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 two units were shut down in January 2012. The licensee shut down Unit 2 for a scheduled refueling outage but never restarted the unit, and the licensee shut down Unit 3 the same month in response to a steam generator tube leak. 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 5, 2015 (ADAMS Accession Nos. ML15105A349 and ML15126A461). These license amendments revised the SONGS emergency action level (EAL) scheme and emergency plan, respectively, to reflect the low likelihood of any credible accident at the plant in its permanently shut down and defueled condition that could result in radiological releases requiring offsite protective measures. The changes to the license were to provide conformance with the related exemptions granted to the licensee by NRC letter dated June 4, 2015 (ADAMS

Accession No. ML15082A204). The changes were reviewed, and appropriate conforming changes were properly addressed in the applicable revision and sections of the SONGS UFSAR.

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 EAL scheme into ISFSI-only EALs for SONGS, Units 1, 2, and 3 ISFSI. The proposed changes would reflect the new status of the facility, as well as the reduced scope of potential radiological accidents, once all 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 would 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 UFSAR.

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, SFPs and its transfer to dry cask storage within an onsite ISFSI. These changes will more 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 once 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 will become effective as of the date the licensee submits a written notification to the NRC that all spent nuclear fuel assemblies have been transferred out of the SONGS SFPs and placed in storage within the onsite ISFSI. In addition, the changes were reviewed, and appropriate conforming changes were properly addressed in the applicable revision and section(s) of the SONGS UFSAR.

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) will perform the California Environmental Quality Act review, which is 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. SONGS is currently waiting on the approval from the California Coastal Commission of the Coastal Development Permit to begin active decommissioning of SONGS, Units 2 and 3.

After the August 3, 2018, canister misalignment incident at SONGS ISFSI, the licensee committed on August 7, 2018, to an NRC review prior to resuming operations of spent fuel loading operations at SONGS. On July 15, 2019, SONGS resumed spent fuel transfer operations. At the time of this inspection, the licensee was loading and transferring the 32nd canister onto the storage pad. The SDS organization had initiated planning for the site's decommissioning activities, which are scheduled to commence once the spent fuel has been moved to the ISFSI and the licensee has received the required permit from the CSLC.

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, SFP level and temperature control, 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. The majority of activities described under Period 1, "Transition to Decommissioning," and Period 2, "Decommissioning Planning and Site Modifications," have been implemented, as described in previous inspection reports. The licensee, under its decommissioning general contractor, SDS, was planning and scheduling hazard mitigation activities in preparation for decommissioning, as described under Period 3, "Decommissioning Preparations and Reactor Internal Segmentation."

SDS was continuing to work on limited Authorized Limited SAFSTOR Hazard Mitigating Activities related activities. 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. SDS had a detailed plan pending the approval of the coastal development permit, to begin active decommissioning at the site.

The inspectors performed tours of the facilities, including the Unit 2 and Unit 3 spent fuel handling building, command center, turbine building, ISFSI pad, and general areas along the west and east roads. The command center staffing met or exceeded technical specifications requirements during the inspection period. The operators were knowledgeable of plant conditions, including the status of the SFPs. The operators continuously monitored critical plant parameters including the SFP water levels. Procedures were available in the control room for use by the operators. 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 12/12/19). The inspectors did not identify any radiation area that was not already identified and posted by the licensee. The observed radiological postings were in compliance with regulatory requirements. Radiological boundaries were well defined. Housekeeping was adequate for the work in progress. The licensee was paying particular attention to possible environmentally induced corrosion in outside areas that may potentially impact personnel safety.

1.3 Conclusion

The licensee continued to conduct decommissioning 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 assessment report ASMT00021, dated April 22, 2018, with a special focus on the program since the transition to SDS. Overall, the licensee concluded the assessment areas were satisfactory. 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 3. 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. In addition, the inspectors reviewed documentation generated as part of the licensee's work-in-progress reviews and post-job reviews of work activities. The inspectors concluded there were adequate instructions 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 2018, which SDS issued on March 27, 2019. The overall station dose was significantly less than the projected dose due to the discovery of friable asbestos in the plant that limited most of the planned SDS work activities and the stoppage of all fuel transfer operations on August 3, 2018. Based on the limited work activities, the SDS electronic dosimeter dose for calendar year 2018 was approximately 0.15 Roentgen (rem) and the dose for fuel transfer operations was approximately 17.0 rem. At the time of the inspection, the ALARA dose report for calendar year 2019 was approximately 0.19 rem for SDS work

activities. The dose estimate for the fuel transfer operations was 1.37 rem and dose for the multi-purpose canister (MPC) camera inspections was 0.176 rem. All readings were below regulatory limits.

The inspectors reviewed the SDS procedures for internal dose assessment including SDS-RP3-PCD-1002, "Internal Dose Assessment," Revision 2; SDS-RP3-PCD-1008, "Bioassay Monitoring," Revision 4; 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 the 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 effectively controls, monitors, and quantifies releases of radioactive materials in liquid, gaseous, and particulate forms to the environment, and
- Radiological environmental monitoring programs are effectively implemented to ensure effluent releases are being adequately performed as required to minimize public dose.

3.2 Observations and Findings

Technical Specifications (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 2018 annual radioactive effluent release report was submitted on April 25, 2019 (ADAMS Accession No. ML19121A425). The 2018 annual radiological environmental operating report was submitted on May 7, 2019 (ADAMS Accession No. ML19130A112).

The annual radioactive effluent release report documented the gaseous and liquid effluents for 2018. 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 2018. The licensee made 33 shipments of solid waste to the Energy*Solutions* disposal site in Clive, Utah. The licensee also made one shipment of solid waste from Energy*Solutions* Bear Creek facility in Tennessee to the same Clive, Utah disposal site, and one more shipment of solid waste from the Bear Creek facility to the Waste Control Specialist Texas disposal site. The shipments consisted of approximately 797 cubic meters (m^3) of dry active waste containing approximately 1.23 Curies (Ci) of activity, and approximately 1.17 m^3 of filters containing approximately 26.3 Ci of activity. The inspectors confirmed there were no shipments of resins or irradiated components during calendar year 2018.

The inspectors reviewed the annual radiological environmental operating report for 2018, 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 ODCM was updated to reflect changes to the liquid radioactive waste treatment system. The original system used by the licensee was retired from service after the facility was shutdown. The SDS decommissioning contractor installed a stand-alone liquid radwaste processing (LRWP) skid system that will be 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 gaseous and liquid pathways at the facility, including the newly 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 SDS decommissioning contractor developed and performed numerous work packages to bring the ventilation and radiological monitoring for the Units 2 and 3 containment purge systems back into service. The work packages consisted of repairs and reconfigurations of the containment ventilation and purge systems, in addition to the containment purge stack radiation monitors 2RE-7828 and 3RE-7828 and associated components. At the time of the inspection, the Unit 2 containment purge system was “functional” and the licensee was performing surveillances on the system. The licensee was continuing to implement its work packages for the Unit 3 containment purge system.

The inspectors received a thorough brief of the multiple work packages and reviewed the channel calibration and functional tests for the Unit 2 containment purge system. The inspectors confirmed that the licensee's documented test reflected there was isokinetic flow in the sampling line and the alarm setpoints for 2RE-7828 reflected the calculated effluent ODCM setpoint for the radiation monitor.

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 2018 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 Conclusions

The licensee implemented and maintained the effluent monitoring and control systems for calendar year 2018 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 Solid Radioactive Waste Management and Transportation of Radioactive Materials (86750)

4.1 Inspection Scope

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

- Whether the licensee provided detailed instructions and operating procedures for transfer, packaging, and transport of low-level radioactive waste,
- Whether the material was properly classified, described, packaged, marked, and labeled for transportation,
- Whether the licensee used up dated and audited procedures when scaling factors or correlation factors are used to quantify the concentration of hard-to-detect radionuclides,
- Whether shipments made by the licensee were in compliance with NRC and U.S. Department of Transportation regulations.

4.2 Observations and Findings

The inspectors reviewed the waste management program at the plant, which is implemented by SDS using procedure SDS-WM1-PGM-0001, "Waste Management Program," Revision 8. At the time of this inspection SDS had shipped three packages in 2019. The inspectors reviewed several shipping packages for 2018 and 2019, training

records, and verified the 24-hour emergency telephone number indicated on the shipping papers. The inspectors were not able to observe any shipments being packaged or placarded, since no shipment activities were occurring during the inspection. Based on discussions with the SDS waste group, the inspectors concluded that the staff was knowledgeable of the waste and transportation requirements.

The licensee generated 10 CFR Part 61 waste streams for the legacy waste, which included dry active waste (for two time periods dated 2013-2015 and 2016-2018). The waste streams had been decayed to the present time period for shipment. In addition, the licensee generated two separate waste streams for the TriNuke filters used in the Units 2 and 3 fuel handling building. The inspectors reviewed the waste streams generated and the methodology used for the generation of scaling factors to account for difficult-to-measure radionuclides. Based on the review and discussions with the SDS Broker II, the inspectors concluded that the methodology was technically sound and provided reasonable assurance that the radionuclide concentrations identified represented the facility's specific data.

The Nuclear Oversight group performed an audit dated April 18, 2019, entitled "Radiation Protection and Radioactive Waste Program Audit," SCES-002-19. The purpose of the audit was to evaluate compliance with regulatory, license, and SONGS Quality Assurance Program requirements. The audit concluded that based on the activities and the objective evidence reviewed, the radiation protection and radioactive waste programs were being effectively implemented in compliance with applicable regulations, Quality Assurance Program requirements, and implementing procedures. The overall performance of the audit was satisfactory with two findings and five weaknesses identified. Each finding and weakness was captured by an action request in the SCE Corrective Action Program.

Based on discussions with responsible staff and review of representative records, the inspectors concluded that the shippers were knowledgeable of the regulations and demonstrated adequate skills to accomplish the package preparation requirements for public transport. In particular, SDS had conservatively implemented the waste management and transportation programs.

4.3 Conclusion

The inspectors concluded that the licensee was knowledgeable of the transportation requirements and adequately trained to implement the program. The licensee maintained a solid radioactive waste management and transportation program that met regulatory requirements.

5 Decommissioning Emergency Preparedness Scenario Review and Exercise Evaluation (82401) and Decommissioning Emergency Preparedness Program Evaluation (82501)

5.1 Inspection Scope

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

- Evaluating the licensee's ability to maintain its Emergency Preparedness programs by verifying accurate and appropriate identification and correction of emergency preparedness weaknesses,

- Adequacy of the emergency response organization (ERO) on-shift and augmentation staffing levels,

- Monitoring of the effectiveness of the licensee's program for implementing changes to the EALs and emergency plan to ensure the changes meet the requirements of 10 CFR 50.54(q), and

- Determining whether the licensee's emergency preparedness program is maintained in a state of operational readiness.

5.2 Observations and Findings

a. Exercise Scenario Review and Evaluation

The inspectors reviewed the drill scenario for the August 27, 2019, biennial exercise, which contained a progression of events that provided opportunities for the ERO to demonstrate skills necessary to implement the PDEP. As stated in the summary of plant status, the NRC approved exemptions from certain emergency planning requirements to reflect the low likelihood of any credible accident at the plant in its permanently shut down and defueled condition that could result in radiological releases requiring offsite protective measures. The drill scenario included a simulation of a seismic event that damaged at least one train of safety system that required a Notification of Unusual Event; and subsequently the facility experienced increasing radiation levels in the Fuel Handling Building due to filtration cartridge damage and filters floating in the spent fuel pool that resulted in an Alert being declared for unplanned area radiation monitor reading or survey results indicating an increase in radiation levels above normal. Once the licensee met all drill objectives, then the exercise was terminated.

The inspectors determined that the scenario events afforded realistic scenarios that provided the site ERO opportunities to demonstrate two emergency classifications, two notifications to appropriate offsite authorities, and the protection of emergency workers in the protected area. The drill scenario was very timely since there was recent operational experience regarding the capacity of filters to float in water. Together, these simulated events provided a basis to determine whether the ERO remained capable of implementing appropriate measures to protect the health and safety of the public.

The inspectors verified that the licensee's emergency classifications, off-site notifications, and protective action recommendations were appropriate and timely. There were no deficiencies or weaknesses identified during the exercise. The inspectors identified several other issues during the exercise that included one issue associated with drill objective (I-02), accident recognition and assessment, by response personnel not demonstrating an understanding of the radiological conditions.

The inspectors observed the licensee's post-exercise management critique conducted on August 28, 2019, to determine whether the licensee identified any performance weakness or issues that occurred during the exercise. The inspectors compared the

issues identified by the licensee with those independently identified by the NRC inspectors. The licensee identified several issues and improvement items, which were each entered into the corrective action program for resolution. The inspectors determined through their comparison, that the licensee thoroughly evaluated the issue discussed above related to the drill objective (I-02), based on the licensee conducting several follow-up interviews and discussions with the response personnel to fully understand the actions taken during the exercise. There were no deficiencies or weaknesses identified during the management critique associated with the biennial exercise. The inspectors concluded that the licensee identified all of the performance issues that occurred during the exercise, as identified by the NRC inspectors.

b. Program Evaluation

The inspectors performed a review of Emergency Plan implementing procedure changes performed since the last inspection. These included the following:

- SO123-VIII-ADMIN-1, “Emergency Preparedness Program Maintenance,” Revision 7
- SO123-VIII-ADMIN-1, “Emergency Preparedness Program Maintenance,” Revision 8
- SO123-VIII-ADMIN-1, “Emergency Preparedness Program Maintenance,” Revision 9
- SO123-VIII-ADMIN-2, “Emergency Preparedness Program Training,” Revision 4
- SO123-VIII-ADMIN-3, “Emergency Preparedness Program Drill Development and Evaluation,” Revision 3
- SO123-VIII-ERO-6, “Dose Assessment,” Revision 3

The procedure revisions were compared to the previous revision, to the criteria of NUREG-0654, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” Revision 1, and to the standards in 10 CFR 50.47(b), as exempted, to determine if the revision adequately implemented the requirements of 10 CFR 50.54(q)(3), as exempted. The inspectors verified that each revision did not reduce the effectiveness of the PDEP.

The inspectors reviewed the licensee’s implementation and maintenance of the emergency preparedness equipment, supplies, and communications as prescribed in Procedure SO123-VIII-ADMIN-1, “Emergency Preparedness Program Maintenance,” Revisions 8 and 9. The licensee was performing its communication checks and maintaining the emergency kits as required. The records demonstrated that the licensee identified issues, checked certification dates, and ensured the equipment was available and ready to be used in the event of an emergency. The inspectors reviewed the licensee’s letters of agreement or memorandums of understanding, as appropriate. These agreements were reviewed on an annual basis by the Emergency Preparedness Manager, as required by Procedure SO123-VIII-ADMIN-1, “Emergency Preparedness Program Maintenance,” Revision 9. The licensee was meeting its ERO staffing levels as required by Table B-1 of the PDEP, Revision 3. The inspectors concluded that the licensee had appropriately maintained its emergency response equipment and capabilities over the inspection period as required by the PDEP and were in a status of operational readiness.

The inspectors noted that the PDEP, Section I, “Accident Assessment” states, in part, that local meteorological parameters include wind speed and direction, and that procedures have been developed to determine stability class. The licensee

implemented SO123-VIII-ERO-6, “Dose Assessment,” Revision 3 procedure to determine the stability class. The inspectors reviewed Procedure SO123-VIII-ERO-6 for assessing the radiological consequences of emergencies, reviewed corrective action program reports associated with radiological assessment, and reviewed the licensee’s evaluation of radiological assessment functions as documented in drill and exercise reports. The inspectors also walked down the command center to verify that instruments, equipment, and data required for radiological assessment remained functional and available. In addition, the inspectors reviewed the 6-month surveillance work package MWP SDS-0117-44261-3, Revision 0 on the primary meteorological tower (10/40 meter) 30002619, conducted between June 6-17, 2019. The acceptance criteria met the commitments in Regulatory Guide 1.23, “Onsite Meteorological Programs,” dated February 17, 1972. The inspectors concluded that the licensee had the capability to assess the radiological consequences in accordance with regulatory requirements.

5.3 Conclusions

The inspectors observed a biennial emergency exercise conducted on August 27, 2019, and concluded that the licensee’s emergency response organization effectively implemented its PDEP to adequately protect the public health and safety. The licensee demonstrated an adequate management critique process that identified issues and improvement items, which were entered into the corrective action system for resolution. The licensee’s emergency preparedness program was being maintained in a state of operational readiness. The inspectors confirmed that changes made to the emergency preparedness program continued to meet NRC requirements and licensee commitments.

6 Exit Meeting Summary

On August 29, 2019, the NRC inspectors presented the final inspection results to Doug Bauder, Vice President and Chief Nuclear Officer 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
K. Gallion, SCE, Emergency Preparedness Manager
A. Wood, SDS, Waste Manager
L. Villalobos, SDS, Broker II
B. Corbett, SDS, Radiation Protection Manager
S. Enright, SDS, Radiation Protection Operations
M. Reitzler, SDS, Maintenance Manager
C. Aung, SDS, Chemistry Supervisor
R. Kalman, SDS, Operations Project Director
D. Evans, SCE, Regulatory Affairs

INSPECTION PROCEDURES USED

IP 71801	Decommissioning Performance and Status Review at Permanently Shutdown Reactors
IP 83750	Occupational Radiation Exposure
IP 84750	Radioactive Waste Treatment, and Effluent and Environmental Monitoring
IP 86750	Solid Radioactive Waste Management and Transportation of Radioactive Materials
IP 82401	Decommissioning Emergency Preparedness Scenario Review and Exercise Evaluation
IP 82501	Decommissioning Emergency Preparedness Program Evaluation

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*
CSLC	California State Lands Commission
DQAP	Decommissioning Quality Assurance Program
EAL	Emergency Action Level
ERO	Emergency Response Organization
IOEP	ISFSI Only Emergency Plan
ISFSI	Independent Spent Fuel Storage Installation
LRWP	Liquid Radwaste Processing
MPC	Multi-Purpose Canister

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

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