



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

February 3, 2014

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 050-00361/13-005 AND 050-00362/13-005

Dear Mr. Palmisano:

This refers to the inspection completed on December 31, 2013, at the permanently shut down San Onofre Nuclear Generating Station facility, Units 2 and 3. The purpose of the inspection was to determine whether decommissioning activities were being conducted safely and in accordance with U.S. Nuclear Regulatory Commission (NRC) requirements. The enclosed inspection report documents the inspection results which were discussed with Mr. B. Sholler, Shutdown Plant Manager, and other members of your staff, on January 7, 2014 .

During this inspection, the NRC staff examined activities conducted under your license as they relate to public health and safety 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. During the inspection period, the NRC reviewed the following aspects of onsite activities: organization, management, and cost controls; safety reviews, design changes, and modifications; self-assessments, audits, and corrective actions; spent fuel pool safety; maintenance and surveillance; fire protection program; decommissioning performance and status review; and solid waste management and transportation. The enclosed report presents the results of this inspection.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," 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), accessible from the NRC Web site 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 concerning this inspection, please contact Greg Warnick, Senior Resident Inspector, at 949-492-2641 or the undersigned at 817-200-1191.

Sincerely,

**/RA/**

D. Blair Spitzberg, Ph.D., Chief  
Repository and Spent Fuel Safety Branch  
Division of Nuclear Materials Safety

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

Enclosure:  
NRC Inspection Report 050-00361/13-005  
and 050-00362/13-005

cc w/encl:     Director, California Radiation  
                    Control Program  
                    R. Sholler, Southern California  
                    Edison Company  
                    W. Mathews III, Esquire, Southern  
                    California Edison Company  
                    R. St. Onge, South California  
                    Edison Company  
                    E. Park, Esquire, Southern California  
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Letter to Mr. Thomas J. Palmisano from D. Blair Spitzberg, dated February 3, 2014.

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION – NRC INSPECTION REPORT  
050-00361/13-005 AND 050-00362/13-005

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U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket: 50-361, 50-362

License: NPF-10, NPF-15

Report: 050-00361/13-005 and 050-00362/13-005

Licensee: Southern California Edison

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

Location: 5000 S. Pacific Coast Hwy  
San Clemente, CA

Dates: September 23 through December 31, 2013

Inspectors: R. Evans, Ph.D., C.H.P., P.E., Senior Health Physicist  
G. Warnick, Senior Resident Inspector

Approved By: D. Blair Sptizberg, Ph.D., Chief  
Repository and Spent Fuel Safety Branch  
Division of Nuclear Materials Safety

Attachment: Supplemental Inspection Information

Enclosure

## **EXECUTIVE SUMMARY**

Southern California Edison  
NRC Inspection Report 050-00361/13-005; 050-00362/13-005

This inspection was a routine, announced inspection of decommissioning activities being conducted at the San Onofre Nuclear Generating Station. In summary, the licensee was conducting site activities in accordance with procedures, license requirements, and regulations.

### Organization, Management, and Cost Controls

- The licensee's emergency response and operations organizations were being maintained in accordance with regulatory and license requirements. (Section 1.2)

### Safety Reviews, Design Changes, and Modifications

- The licensee adequately implemented safety reviews, design changes, and modifications in accordance with applicable regulatory requirements, license conditions, and technical specifications. (Section 2.2)

### Self-Assessments, Audits, and Corrective Actions

- Issues were identified by the licensee at appropriate thresholds and entered into the corrective action program. Issues were screened and prioritized commensurate with safety significance. Licensee evaluations determined the significance of issues and included appropriate corrective actions. (Section 3.2)

### Spent Fuel Pool Safety

- The licensee was safely storing spent fuel in wet storage. Specifically, the spent fuel pool was adequately protected from a siphon or drain down event, and adequate procedures were maintained to restore pool water level and mitigate the adverse effects from a drain-down event. Spent fuel pool cooling system electrical power supplies were reliable, and the licensee's operational strategies were consistent with those used during reactor power operations. (Section 4.2)

### Maintenance and Surveillance

- The licensee had developed and was implementing an acceptable program to prepare plant systems for permanent removal from service. In addition, the licensee was defining the maintenance and surveillance requirements for the systems that will remain in service. The inspectors confirmed that the licensee's initial list of systems to be removed from service did not include any systems that were required to be operable by the respective technical specifications. (Section 5.2)
- Plant material condition and housekeeping were adequate and had not adversely impacted safe decommissioning or transition to SAFSTOR. Workers followed work plans, surveillance procedures, industrial safety protocols, and were aware of job controls specified in work instructions. (Section 5.2)

- The licensee appropriately implemented the maintenance rule to ensure compliance with the requirements of Title 10 of the Code of Federal Regulations (CFR) 50.65 for structures, systems, and components associated with the storage, control, and maintenance of spent fuel. (Section 5.2)

#### Fire Protection Program

- The licensee's staff appropriately identified deficiencies, openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions for fire fighting personnel performance issues. (Section 6.2)

#### Decommissioning Performance and Status Review

- The licensee conducted decommissioning activities in accordance with license and regulatory requirements. Radiation postings and boundaries were maintained in accordance with regulatory requirements. Ongoing work was conducted following applicable procedures and in accordance with license and regulatory requirements. Finally, the inspectors conducted frequent plant tours to verify that the materiel condition of structures, systems, and components supported the safe storage of spent fuel and conduct of safe decommissioning. (Section 7.2)

#### Solid Waste Management and Transportation

- The licensee has established programs for tracking legacy wastes in storage and for shipping these wastes to offsite disposal sites. The licensee conducted radioactive waste management and transportation activities in accordance with license and regulatory requirements. (Section 8.2)

## Report Details

### Summary of Plant Status – Units 2 and 3

On June 12, 2013, the licensee formally notified the U.S. Nuclear Regulatory Commission (NRC) by letter that it had permanently ceased power operations at Units 2 and 3, effective June 7, 2013. By letters dated June 28, 2013, and July 22, 2013, the licensee informed the NRC that the reactor fuel had been permanently removed from Units 3 and 2, respectively.

At the time of this inspection, the two units continued to be permanently shut down. The licensee was reviewing its options for future decommissioning activities. The licensee's decommissioning method for the short term will be SAFSTOR. The SAFSTOR option is a method in which a nuclear facility is placed and maintained in a condition that allows the facility to be safely stored and subsequently decontaminated (deferred decontamination) to levels that permit release for unrestricted use. The spent fuel will remain in the two spent fuel pools until off-loaded into canisters for storage at the onsite Independent Spent Fuel Storage Installation. The licensee has not established a final schedule for starting and completing site decommissioning activities.

Program areas being reviewed or developed by the licensee included the decommissioning cost estimate, defueled technical specifications, irradiated fuel management plan, decommissioning scheduling, and long-term staffing requirements. The licensee was developing several regulatory-required reports including the post-shutdown decommissioning activities report which is required pursuant to 10 CFR 50.82 within two years after submitting the certification of permanent closure, and the environmental report, an assessment of the environmental impacts of decommissioning.

Since the licensee elected to permanently shut down the two units, the licensee started draining fluids from various plant systems. The licensee drained fluids from the steam generators, reactor coolant systems, feedwater systems, condensate polishing demineralizers, condensate systems, chemical volume and control systems, emergency core cooling systems, and condensate storage tanks. The reactor pressure vessels have been drained to the bottom of the hot legs. The licensee continues to remove oil, chemicals, and resins from various plant components including the reactor coolant pumps.

## **1 Organization, Management, and Cost Controls (36801)**

### **1.1 Inspection Scope**

The inspectors reviewed management organization and controls to ensure that the licensee was maintaining effective oversight of SAFSTOR related decommissioning activities.

### **1.2 Observations and Findings**

During the inspection period, the licensee continued to reduce the onsite staff. The inspectors reviewed the licensee's organizational structure to ensure compliance with regulatory and license requirements. In particular, the inspectors compared actual staffing levels with the requirements specified in regulations and the emergency plan. The inspectors wanted to ensure that the licensee had sufficient staff to conduct plant operations and to respond to emergency situations.



Regulation 10 CFR 50.54(m)(1) provides the minimum requirements for operator staffing. With both reactors in permanent shutdown (not in operations), the minimum operations staffing requirements consist of three individuals—one senior operator and two licensed operators. In addition, Sections 5.2.2 of the two technical specifications require three non-licensed operators to be onsite. During the inspection, the on-duty operations staff typically consisted of about seven individuals, a number of operators which exceeded the required minimum of three individuals.

Licensee representatives noted that licensed operators typically filled the position of non-licensed operators to comply with technical specifications requirements. In addition, the licensee discontinued the position of shift technical advisor because the operations staff no longer needed this technical support.

The inspectors reviewed the licensee's emergency response staffing. The staffing requirements are provided in the emergency plan. For emergency responses, the emergency plan requires operations, maintenance, health physics, chemistry, and fire department staff to be available. The licensee maintained a list of the onsite staff and who was assigned to each emergency response position. For example, the emergency coordinator position was normally filled by the on-duty shift manager. The emergency plan listed 18 required positions, and at the time of the inspection, all positions were filled with site staff.

The inspectors reviewed the licensee's emergency response organization staffing requirements as documented in the site Emergency Plan, Revision 34, including operations, maintenance, health physics, chemistry and fire department positions. The current emergency plan requires eighteen on-shift and augmented positions. The inspectors verified the licensee is capable of staffing the positions described in Revision 34 for an extended event. The inspectors noted that the licensee had reduced the number of emergency response organization positions in August 2013. Because the licensee determined the elimination of positions from the Emergency Plan did not reduce the Plan's effectiveness and implemented the changes without NRC review as allowed by 10 CFR 50.54(q)(3), these changes remain subject to inspection.

By letters dated August 20, 2013, and September 3, 2013, the licensee submitted a safe storage shift manager and certified fuel handler training program to the NRC for review. If approved, the licensee will be able to delete its licensed operator training program and implement a certified fuel handler program. By letter dated September 18, 2013, the licensee submitted a change to its emergency plan and implementing procedures to the NRC for review and approval. This proposed change will reduce the emergency response organization requirements. Finally, by letter dated October 21, 2013, the licensee requested a change in operations site staffing, as specified in Section 5.2.2 of each technical specification, to revise the minimum shift requirements and to change staffing requirements from certified operators to certified fuel handlers. The licensee plans to maintain current operations and emergency response staffing requirements until the NRC approves these proposed regulatory exemptions and license amendments.

### 1.3 Conclusions

The licensee's emergency response and operations organizations were being maintained in accordance with regulatory and license requirements.

## **2 Safety Reviews, Design Changes, and Modifications (37801)**

### **2.1 Inspection Scope**

The inspectors conducted document reviews and interviews with plant personnel to assess the licensee's performance as it related to the following areas:

- Determination that licensee procedures and processes conform to the regulation and guidance associated with 10 CFR 50.59;
- Evaluation of the licensee's onsite safety review committee to ensure the committee was appropriately staffed and trained to fulfill the charter;
- Verification that the licensee's training program provided training for personnel preparing, reviewing, and approving safety evaluations;
- Procedures that control and implement design changes and modifications to assess that the procedures provided adequate guidance for implementation, review and approval; and
- Verification that changes to preventive maintenance, corrective maintenance, and operational procedures for required equipment were implemented in accordance with the licensee's processes and procedures.

The inspectors verified that when issues were identified that licensee personnel appropriately documented the issue in the corrective action program (CAP).

### **2.2 Observations and Findings**

The inspectors reviewed the licensee's programs for changes, attended a sampling of onsite safety review committee meetings throughout the inspection period to verify requirements were met, and performed a review of procedure and modification changes on a sample of licensee approved changes. The inspectors determined that when issues were identified, the issues were documented by the licensee in the corrective action program at an appropriate threshold.

### **2.3 Conclusions**

The licensee adequately implemented safety reviews, design changes, and modifications in accordance with applicable regulatory requirements, license conditions, and technical specifications.

## **3 Self-Assessments, Audits, and Corrective Actions (40801)**

### **3.1 Inspection Scope**

The inspectors conducted document reviews and interviews with plant personnel to assess the licensee's performance as it related to the following areas:

- Administrative procedures prescribed actions for the identification, evaluation, and resolution of problems;
- Licensee procedures prescribed thresholds for the performance of self-assessments, audits, and surveillances;
- Licensee management reviewed self-assessments, audits, and corrective actions to remain knowledgeable of plant performance; and
- Issues or problems were identified and corrected in accordance with the licensee's CAP through a sampling of select issues.

The inspectors reviewed CAP documents on a daily basis to determine: if a sufficiently low threshold for problem identification existed; if the quality of follow-up evaluations including extent of condition; if the licensee assigned timely and appropriate prioritization for issue resolution commensurate with the significance of the issue. Issues that were repetitive and those with the potential for safety or regulatory consequence were evaluated further to assess apparent and/or common cause and significance.

### 3.2 Observations and Findings

The inspectors determined that issues were identified by the licensee at an appropriate threshold within various functional areas of the site and entered into the CAP. Issues were effectively screened, prioritized, and evaluated commensurate with safety significance. The scope and depth of evaluations were adequate in that the evaluations reviewed addressed the significance of issues and assigned appropriate corrective actions.

### 3.3 Conclusions

Issues were identified by the licensee at appropriate thresholds and entered into the corrective action program. Issues were screened and prioritized commensurate with safety significance. Licensee evaluations determined the significance of issues and included appropriate corrective actions.

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

### 4.1 Inspection Scope

The inspectors verified the safe wet storage of spent fuel in the Units 2 and 3 spent fuel pools (SFPs). The review included SFP siphon and drain down protection, and SFP system operation and electrical power supply adequacy.

### 4.2 Observations and Findings

#### a. Siphon and Drain Protection

The inspectors reviewed the saltwater cooling system, component cooling water system, SFP cooling system, and SFP design drawings, and performed a walk down of the SFP, accessible SFP cooling system piping, and areas of SFP makeup water piping to

evaluate whether conditions existed that represented a siphon or drain path. The inspectors also confirmed that licensee procedures properly controlled temporary hoses to prevent an inadvertent drain down of the SFP. The inspectors also reviewed the licensee's abnormal operating procedures relating to a drain down event of the SFP and confirmed that the procedure contained adequate actions to restore SFP water level and mitigate adverse effects from such events.

b. Operation and Power Supply

The inspectors reviewed electrical circuit drawings for the SFP pumps and confirmed that the pumps were still powered from their pre-shutdown vital buses. The inspectors also reviewed SFP procedures and operational strategies and confirmed that no significant changes occurred since the plant permanently shutdown.

4.3 Conclusions

The licensee was safely storing spent fuel in wet storage. Specifically, the spent fuel pool was adequately protected from a siphon or drain down event, and adequate procedures were maintained to restore pool water level and mitigate the adverse effects from a drain-down event. Spent fuel pool cooling system electrical power supplies were reliable, and the licensee's operational strategies were consistent with those used during reactor power operations.

**5 Maintenance and Surveillance (62801)**

5.1 Inspection Scope

The inspectors evaluated the status of systems still required to be operable and systems permanently removed from service. The inspectors conducted this evaluation, in part, to ensure that the licensee continued to comply with technical specifications maintenance and surveillance requirements.

The inspectors conducted plant tours throughout the inspection period to observe field conditions, discuss job safety with workers, and to review the impact of work activities on safe decommissioning. During these walkdowns, the inspectors evaluated material condition and housekeeping, assessed area radiological conditions, radiological access control and associated posting/labeling, and reviewed the overall condition of systems, structures, and components that support decommissioning. Independent radiation measurements were periodically made by the inspectors in areas toured to determine if those areas were controlled properly and posted as prescribed in 10 CFR Part 20.

The inspectors reviewed the licensee's program to implement the maintenance rule to ensure compliance with the requirements of 10 CFR 50.65 for structures, systems, and components associated with the storage, control, and maintenance of spent fuel. This review included observation of a maintenance rule expert panel meeting conducted on December 18, 2013. The inspectors review also included a detailed review of the radiation monitoring system.

## 5.2 Observations and Findings

During the inspection period, the licensee continued to evaluate which systems were still required to be operable to support critical plant functions and which systems were no longer required to be operable. After the licensee decided in June 2013, to permanently discontinue plant operations, the licensee started to review its configuration management control requirements. As part of this effort, the licensee reviewed the status of plant systems at other recently shut down reactor sites, a process called benchmarking. Using this preliminary information, the licensee started reviewing the current operability requirements for plant systems. In parallel, the licensee established a program for formally reviewing existing plant systems in a phased approach.

The first phase was to identify which systems could be abandoned and which systems had to remain in service. For example, systems required by technical specifications would continue to remain in service until these technical specifications were revised. Based on the decision to either abandon or maintain available a particular system, during the second phase, the licensee planned to define the abandonment requirements or preventive maintenance and surveillance requirements for each system. In this second phase, the licensee would identify the documentation and field changes needed to abandon plant systems. The third phase, for abandoned equipment, involves physically removing the systems from service in a controlled manner. Systems such as the instrument air and cooling water systems would be removed from service in a piecemeal fashion.

The licensee elected to pilot test this phased approach to system decommissioning using the saltwater system, which will remain in service, and the post-LOCA (loss of cooling accident) hydrogen gas control system, which will be removed from service. The licensee will use the results of the pilot tests to update the system decommissioning process accordingly.

During the inspection period, the licensee had developed a preliminary list of systems to be abandoned and systems to remain in service. Systems scheduled to be abandoned include the main turbine-generators, condensate systems, feedwater systems, auxiliary feedwater systems, main steam systems, and emergency core cooling systems. Systems to remain in service include the electrical, cooling water, ventilation, radiation monitoring, and SFP support systems. The inspectors reviewed the list of systems to be abandoned and confirmed that none of the systems were currently required to remain operable by technical specifications.

In summary, the licensee was actively defining the systems required to remain in operation and the preventive maintenance and surveillance requirements for these systems. The licensee plans to continue with this phased approach for removing systems from service, and redefining the maintenance and surveillance requirements, for the foreseeable future. The NRC inspectors will continue to monitor the licensee's implementation of the newly defined maintenance and surveillance requirements during future inspections.

In addition, the inspectors noted that throughout the inspection period housekeeping remained satisfactory and changing radiological conditions were addressed in a prompt and timely manner by licensee staff.

Finally, the inspectors noted that the licensee appropriately prioritized corrective maintenance on the remaining systems required for permanent cessation of operations. The inspectors also verified that equipment, which remained available following the shutdown had the appropriate preventive maintenance schedules established with input from equipment vendors. The inspectors also verified that available equipment had the appropriate procedures available to establish operability prior to any irradiated fuel movement.

### 5.3 Conclusions

The licensee had developed and was implementing an acceptable program to prepare plant systems for permanent removal from service. In addition, the licensee was defining the maintenance and surveillance requirements for the systems that will remain in service. The inspectors confirmed that the licensee's initial list of systems to be removed from service did not include any systems that were required to be operable by the respective technical specifications.

Plant material condition and housekeeping were adequate and had not adversely impacted safe decommissioning or transition to SAFSTOR. Workers followed work plans, surveillance procedures, industrial safety protocols, and were aware of job controls specified in work instructions.

The licensee appropriately implemented the maintenance rule to ensure compliance with the requirements of 10 CFR 50.65 for structures, systems, and components associated with the storage, control, and maintenance of spent fuel.

## 6 **Fire Protection Program (64704)**

### 6.1 Inspection Scope

On December 17, 2013, the inspectors observed a fire brigade activation drill, with a request for assistance from the Camp Pendleton Fire Department, for report of a fire in the Unit 3 emergency diesel generator building. The observation evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient firefighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of preplanned strategies; (9) adherence to the preplanned drill scenario; and (10) drill objectives.

### 6.2 Observations and Findings

The fire drill was the first to exercise the newly trained fire brigade, which will consist of on-shift operations personnel, and the first to involve the Camp Pendleton Fire Department for fire response inside the protected area. The drill was conducted, in part, to further prepare for the transition from the fire protection strategy using the SONGS Fire Department to a strategy using an operations led fire brigade, which is scheduled to occur on January 3, 2014. The inspectors observed that not all of the drill objectives

were met due to the performance of the newly trained fire brigade and site unfamiliarity of the Camp Pendleton Fire Department; however, the evaluators effectively identified the deficiencies for corrective action and improvement.

### 6.3 Conclusions

The licensee's staff appropriately identified deficiencies, openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions for fire fighting personnel performance issues.

## 7 **Decommissioning Performance and Status Review (71801)**

### 7.1 Inspection Scope

The inspectors evaluated whether the licensee was conducting decommissioning activities in accordance with license and regulatory requirements. The inspectors conducted document reviews, observations, and interviews with plant personnel to assess the licensee's performance as it related to the following areas:

- Status of decommissioning through the observation of licensee meetings that planned, reviewed, assessed, and scheduled the conduct of facility decommissioning;
- Whether licensee activities were in accordance with license conditions and docketed commitments;
- Operability and functionality of systems necessary for safe decommissioning was assessed through control room and plant walkdowns including the following systems: radioactive effluent monitoring, SFP cooling, level and temperature control, radiation protection monitors and alarms, equipment important to emergency preparedness, and equipment that provided normal and standby electrical power;
- Operator logs and data taking for normal facility operations, surveillances, maintenance and verification that data out of specification was appropriately dispositioned and resolved;
- Assessed ongoing in-plant work activities to ensure work activities were evaluated for risk in accordance with 10 CFR 50.65(a)(4), operational work risk assessments were performed and operations shift turnovers appropriately communicated pertinent plant status;
- Verified appropriate plant staffing was maintained and that appropriate management oversight of licensee and supplemental activities were performed;
- Verified pre-job briefs were conducted for facility operations including maintenance, surveillance, operations, and decommissioning activities;
- Verified that system isolations, boundaries and abandonment plans for saltwater cooling, emergency core cooling, component cooling water, and electrical distribution systems ensured proper control of systems important to safe shutdown and did not adversely affect the overall plant configuration;

- Performed frequent plant tours to assess field conditions and decommissioning abandonment activities;
- Observed in progress field work to verify activities were conducted in accordance with approved work instructions and workers were knowledgeable of tasks;
- Plant materiel condition of structures, systems, and components was maintained at a high level to ensure safe storage of spent fuel;
- Verified the storage of combustibles and flammables were in accordance with plant procedures and the fire plan for the subject location;
- Verified firefighting equipment and stations were properly maintained, inventoried and readied for use; and
- Verified that the installed fire detection and suppression systems were effectively maintained, surveillances performed and were capable of performing their intended function.

## 7.2 Observations and Findings

### a. Routine Review

The inspectors determined through the plant tours and observation of activities that the licensee conducted activities in accordance with the regulatory requirements and plant procedures. Minor deficiencies identified by the inspectors or the licensee were appropriately identified in the CAP in a timely manner and corrected commensurate with the safety significance of the issue.

### b. Review of Radiological Surveys for Building Demolition

During the inspection period, the licensee conducted surveys of several onsite structures scheduled for demolition. These structures were located within the owner controlled area but outside of the radiologically restricted areas. These structures were called the "N Buildings" and included multi-level offices, restrooms, and a vehicle enclosure. The licensee originally scheduled to demolish these structures during early November 2013.

Prior to demolition, the inspectors reviewed the licensee's work plan, survey plan, and preliminary radiological survey results. The inspectors noted that the work plan included a limited historical assessment, including the results of radiological surveys conducted during plant operations and after plant shutdown. The licensee concluded that the structures were unimpacted by previous plant operations, meaning that it was unlikely that the structures were contaminated with radioactive material.

The inspectors noted that the licensee's initial survey results were inconsistent with NRC guidance for releases of equipment and rubble from nuclear plants. For example, the licensee's survey results did not clearly demonstrate that the survey results were indistinguishable from background as recommended by NRC IE Circular 81-07, "Control of Radioactively Contaminated Material," and NRC Information Notice 85-92, "Surveys of Wastes Before Disposal from Nuclear Reactor Facilities."



In response to the inspectors' comments, the licensee temporarily suspended the planned demolition and conducted additional radiological surveys of the structures. The licensee surveyed portions of the exterior surfaces to ensure that plant effluents from the site stacks had not resulted in the buildup of radioactive material on the structures. The licensee's survey results indicate that no radioactive material was identified inside or outside of the structures. The licensee subsequently demolished the structures in early December 2013.

In summary, the licensee conducted radiological surveys of the "N Building" structures prior to demolition. The final surveys were consistent with NRC guidance, and the survey results indicate that the structures did not contain radioactivity detectable above background levels.

c. Un-irradiated Fuel Recovery Project

The inspectors reviewed procedures and technical specifications, and observed various activities associated with the licensee's project for recovering un-irradiated Unit 2 fuel assemblies from the SFP. The un-irradiated Unit 2 fuel assemblies were recovered and transported back to the fuel fabricator AREVA.

On October 16, 2013, the inspectors attended the Onsite Safety Review Committee meeting where the new fuel recovery project, and associated Procedure SO2-I-3.6.3, "Return Unit 2 Batch U Fuel to Fuel Fabricator," Revision 0, were reviewed for management approval to proceed with the project. The inspectors noted that management concerns were appropriately addressed and approval to commence the project was granted.

During the week of October 28, 2013, the inspectors observed the dry-run activities, using the dummy fuel assembly, conducted by the licensee to ensure that personnel, equipment, and procedures performed as expected. During the dry-run, the inspectors observed maintenance personnel attempt to verify the serial number for the dummy fuel assembly while located in the new fuel elevator. Since the serial number view was obstructed when the assembly was located in the new fuel elevator, the licensee had to back up a step and remove the dummy fuel assembly from the elevator to perform the verification. The inspectors noted that the moving sequence for the assemblies in Procedure SO2-I-3.6.3 was such that the serial number should have been verified prior to placement into the new fuel elevator. When questioned, the licensee informed the inspectors that spent fuel handling machine operating procedure instructed operators to move the dummy fuel assembly directly to the new fuel elevator, without a pause for serial number verification, which was different than the sequence specified in Procedure SO2-I-3.6.3. Based on the observation, the inspectors expressed a concern to the licensee that a validation that the new procedure would perform as expected would only be effective in identifying necessary changes if the as-written procedure was followed during the dry-run activities. The licensee acknowledged the inspectors' comments and initiated Nuclear Notification NN 202641734 to identify and track all procedure issues and enhancements identified during the dry-run evolution. Procedure SO2-I-3.6.3 was revised to incorporate the lessons learned during the dry-run activities prior to movement of the new fuel assemblies.

Technical specifications were reviewed for applicability during the movement of fuel assemblies in the Unit 2 SFP. The inspectors verified that equipment required by technical specifications remained functional and/or operable during periods of fuel movement throughout the project.

The inspectors observed ongoing work in the Unit 2 spent fuel building throughout the new fuel recovery project. Workers were observed to be in compliance with requirements of the applicable As Low As Reasonably Achievable (ALARA) Work Plan and Radiation Work Permit specifically written for the project. Radiological postings in the area where the maintenance activities occurred were clearly visible and met the requirements of 10 CFR Part 20.

The inspectors observed numerous activities associated with the new fuel recovery project between October 28 and December 20, 2013. Activities observed included: retrieval of un-irradiated fuel assemblies from the SFP; fuel assembly decontamination and survey activities; fuel assembly movement to the new fuel storage racks; packaging of assemblies in new fuel shipping containers; and shipping preparation activities. The inspectors concluded that the activities observed were performed in accordance with procedural and regulatory requirements.

During site tours, including observations associated with the new fuel recovery project, the inspectors measured ambient gamma exposure levels with a Thermo model RadEye G survey meter (NRC Serial Number 086961, calibration due 06/20/2014). No areas were found that were inconsistent with observed postings made pursuant to 10 CFR 20.1902.

### 7.3 Conclusions

The licensee conducted decommissioning activities in accordance with license and regulatory requirements. Radiation postings and boundaries were maintained in accordance with regulatory requirements. Ongoing work was conducted following applicable procedures and in accordance with license and regulatory requirements. Finally, the inspectors conducted frequent plant tours to verify that the materiel condition of structures, systems, and components supported the safe storage of spent fuel and conduct of safe decommissioning.

## 8 **Solid Waste Management and Transportation (86750)**

### 8.1 Inspection Scope

The inspectors reviewed the licensee's programs for storing, packaging, and shipping radioactive wastes generated during previous site operations and during site decommissioning.

### 8.2 Observations and Findings

#### a. Legacy Wastes

During the inspection period, the licensee continued to store radioactive wastes from previous operations. This material was designated as legacy wastes by the licensee for

cost accounting purposes. The inspectors conducted a review of the radioactive wastes currently in storage and the licensee's plans for shipping and disposing of these wastes.

At the time of the inspection, the licensee had various types of legacy wastes in storage. The waste types included Class A wastes as well as Class B and C wastes. These Class B/C wastes included spent resins and filters from previous plant operations. The Class A wastes are expected to be disposed at a facility in Utah, while the Class B/C wastes are expected to be disposed at a facility in Texas. In addition, the licensee plans to ship the radioactive materials in accordance with the requirements for physical protection as specified in 10 CFR 37.79.

In the future, the licensee plans to continue removing legacy wastes, including resins and filters, from plant systems. These resins and filters will be processed as necessary and will be shipped for disposal as soon as possible. In summary, the licensee has established a tracking program to monitor the wastes in storage and to schedule wastes for shipment.

b. Shipment of Radioactive Material

The inspectors observed the licensee perform the following radioactive waste shipments:

- November 4, 2013, Radioactive Waste Shipment 13-2012
- November 5 - 29, 2013, shipment of un-irradiated fuel assemblies packaged in new fuel shipping containers by AREVA personnel

The inspectors observed licensee and contractor personnel prepare the transportation vehicle for shipping, reviewed the procedures associated with activities observed, and questioned personnel regarding their shipping responsibilities. The inspectors also obtained copies of the shipping papers for each shipment and reviewed the packages for compliance. The inspectors noted that the papers contained a basic description of the shipment, including a proper shipping name, hazard class, and U.N. identification number. The shipping papers also listed the number and type of packages and named each radionuclide. Where appropriate, activity levels in storage installation units were included. The packages included a shipper's certification and signature. Both the AREVA contractor and licensee personnel utilized checklists to ensure compliance with requirements (Form FRM-40940 B, Version 1.0, 51032-2 Shipping Container Checkoff List for Loading SONGS Fuel Bundles at San Onofre; Form FRM-20141, Version 11.0, Fuel Assembly/Rod Shipment Inspection Form; and Procedure SO123-VII-8.2, Radioactive Material Shipment Check-Off Sheet).

8.3 Conclusions

The licensee has established programs for tracking legacy wastes in storage and for shipping these wastes to offsite disposal sites. The licensee conducted radioactive waste management and transportation activities in accordance with license and regulatory requirements.

## **9 Meetings, Including Exit**

On November 1, 2013, inspectors from the Repository and Spent Fuel Safety Branch, Region IV, presented the results of onsite inspection activities performed during the week of October 28 to Mr. R. St. Onge, Manager, Regulatory Affairs and Emergency Preparedness, and other members of the licensee staff. On January 7, 2014, the inspectors presented the final inspection results to Mr. B. Sholler, Shutdown Plant Manager, 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.

## **SUPPLEMENTAL INSPECTION INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee Personnel

T. Adler, Manager, DIA Planning Team  
E. Avella, Director, Decommissioning Initial Activities  
L. Bosch, Manager, Engineering  
S. Collins, Radwaste Specialist  
J. Davis, Manager, Operations  
D. Evans, Manager, Security  
K. Flynn, Supervisor, Plant Engineering  
T. Gallaher, Supervisor, Corrective Action Program/Performance Improvement  
R. Granaas, Senior Nuclear Engineer  
J. Madigan, Director, Oversight and Nuclear Safety Concerns  
A. Martinez, Manager, Radiation Protection and Chemistry  
M. Orewyler, Project Manager, New Fuel Recovery  
R. Pettus, Licensing/Compliance Specialist  
R. Quam, Manager, Security  
M. Shepard, Manager, DIA Projects  
B. Sholler, Shutdown Plant Manager  
R. St. Onge, Manager, Regulatory Affairs and Emergency Preparedness

### **INSPECTION PROCEDURES USED**

IP 36801	Organization, Management, and Cost Controls
IP 37801	Safety Reviews, Design Changes, and Modifications
IP 40801	Self-Assessments, Audits, and Corrective Actions
IP 60801	Spent Fuel Pool Safety
IP 62801	Maintenance and Surveillance
IP 64704	Fire Protection Program
IP 71801	Decommissioning Performance and Status Review
IP 86750	Solid Waste Management and Transportation

### **ITEMS OPENED, CLOSED, AND DISCUSSED**

#### Opened

None

#### Closed

None

#### Discussed

None

## LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ALARA	As low as reasonably achievable
CAP	Corrective action program
CFR	Code of Federal Regulations
IP	Inspection Procedure
LOCA	Loss of coolant accident
NRC	U.S. Nuclear Regulatory Commission
SFP	Spent fuel pool
SONGS	San Onofre Nuclear Generating Station

## LIST OF DOCUMENTS REVIEWED

### Section 1: Organization, Management, and Cost Controls

#### NUCLEAR NOTIFICATIONS

##### NUMBER

202508123          202645735

### Section 2: Safety Reviews, Design Changes, and Modifications

#### PROCEDURES

##### NUMBER

##### TITLE

##### REVISION / DATE

SO123-XV-44	10 CFR 50.59 and 72.48 Program	16
SO123-XV-60.1	Onsite Review Committee (OSRC)	12

#### NUCLEAR NOTIFICATIONS

##### NUMBER

202524121

#### WORK ORDERS

801086345

### Section 3: Self-Assessments, Audits, and Corrective Actions

#### PROCEDURES

##### NUMBER

##### TITLE

##### REVISION / DATE

SO123-XV-50	Corrective Action Program	30
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#### **Section 4: Spent Fuel Pool Safety**

##### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SO23-13-23	Loss of Spent Fuel Pool Cooling	12
SO23-3-2.6	Shutdown Cooling System Operation	36
SO23-2-8.1	Saltwater Cooling System Removal/Return to Service Evolutions	25
SO23-3-2.11	Spent Fuel Pool Operations	37 EC 1
SO23-3-2.11.1	SFP Level Change and Purification Crosstie Operations	22

##### DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>
40122	P & I Diagram – Fuel Pool Cooling System

#### **Section 5: Maintenance and Surveillance**

##### NUCLEAR NOTIFICATIONS

<u>NUMBER</u>				
202699696	202694463	202622291	202694158	202532665
202672721	202672720			

##### MISCELLANEOUS

Engineering Decommissioning Paper – Deactivation of Radiation Monitoring System  
Preventative Maintenance Plans on Reliability

Maintenance Rule Function Report – Rad-Mon

SONGS System Health Report – First Quarter 2013

Maintenance Rule Expert Panel Meeting Package, Dated December 18, 2013

#### **Section 6: Fire Protection Program**

##### MISCELLANEOUS

2013-12-13 Off Site Assistance – Fire Drill Report

## **Section 7: Decommissioning Performance and Status Review**

### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SO23-3-2.11	Spent Fuel Pool Operations	37 EC-1
SO123-VII-20.10.3	Health Physics ALARA Work Plans and Micro ALARA Plans	6
SO2-I-3.6.3	Return Unit 2 Batch U Fuel to Fuel Fabricator	0
SO2-I-3.6.3	Return Unit 2 Batch U Fuel to Fuel Fabricator	1
SO123-I-1.18	Foreign Material Exclusion (FME) Control	21
SO23-I-3.19	Spent Fuel Handling Machine Operation	15
SO23-X-7.2	Nuclear Fuel Movement – Spent Fuel Pool (RxEng)	22

### NUCLEAR NOTIFICATIONS

#### NUMBER

202645735      202645300      202641734

### WORK ORDERS

800899596

### MISCELLANEOUS

AWP 13-010      ALARA Work Plan      0  
Onsite Review Committee Meeting Package, Dated October 16, 2013

## **Section 8: Solid Waste Management and Transportation**

### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SO123-VII-8.2	Shipment of Radioactive Material	29
SO123-VII-8.2.9	Advance Notification Requirements for Radioactive Material Shipments	10
DOC-003	Toxco Materials Management Center – Waste Acceptance Criteria	8
SO123-VII-8.5.5	Dewatering System Operation	19
SO23-XXVII-29.91	Hydrostatic Test Requirements	0 EC 1



MISCELLANEOUS

Shipping Papers for Shipment 12-2013

Shipping Papers for Shipment 13-2017

Shipping Papers for a Sampling of SONGS Fuel Bundle Shipments

Certificate of Compliance 9168, Revision 19