



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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February 20, 2020

Mr. Doug Bauder
Vice President and Chief Nuclear Officer
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

SUBJECT: San Onofre Nuclear Generating Station Independent Spent Fuel Storage
Installation (ISFSI) - NRC Inspection Report 05000206/2019-004;
05000361/2019-007; 05000362/2019-007; AND 07200054/2019-002

Dear Mr. Bauder:

This letter refers to the U.S. Nuclear Regulatory Commission's (NRC's) unannounced inspections conducted from October through December 2019 of the dry cask storage activities associated with your Independent Spent Fuel Storage Installation (ISFSI). The NRC inspectors discussed the results of this inspection with you and other members of your staff during a final telephonic exit meeting conducted on January 21, 2020. The inspection results are documented in the enclosure to this letter.

The inspections examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspections consisted of selected examination of procedures and representative records, observations of site meetings, performance of independent radiation measurements, and interviews with personnel. Specifically, the inspections reviewed compliance with the requirements specified in the Holtec International HI-STORM UMAX Certificate of Compliance No. 1040 and the associated Technical Specifications, the HI-STORM UMAX Final Safety Analysis Report (FSAR), and Title 10 of the Code of Federal Regulations (CFR) Part 72, Part 50, and Part 20. Within the scope of the inspections, no violations were identified and a response to this letter is not required.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC's Website at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the Public without redaction.

D. Bauder

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If you have any questions regarding this inspection report, please contact Lee Brookhart at 817-200-1549, or the undersigned at 817-200-1249.

Sincerely,

/RA/

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

Docket Nos.: 50-206; 50-361; 50-362; 72-041
License Nos.: DPR-13; NPF-10; NPF-15

Enclosure:
Inspection Report 050-000206/2019-004;
050-00361/2019-007; 050-00362/2019-007;
and 072-00054/2019-002

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket Nos.: 50-206; 50-361; 50-362; 72-041

License Nos.: DPR-13; NPF-10; NPF-15

Report No.: 050-000206/2019-004; 050-00361/2019-007; 050-00362/2019-007; and
072-00054/2019-002

Enterprise Identifier: I-2019-002-0094; I-2019-007-0003

Licensee: Southern California Edison Company

Facility: San Onofre Nuclear Generating Station

Location: San Clemente, CA 92674-02

Inspection Dates: On-site: October 21-25; November 20-22; and December 10-12, 2019

Exit Meeting Date: January 21, 2019

Inspectors: Lee Brookhart, Senior ISFSI Inspector
Reactor Inspection Branch
Division of Nuclear Materials Safety, Region IV

Eric Simpson, CHP, Health Physicist
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Reactor Inspection Branch
Division of Nuclear Materials Safety, Region IV

Approved By: Greg Warnick, Chief
Reactor Inspection Branch
Division of Nuclear Materials Safety, Region IV

Enclosure

EXECUTIVE SUMMARY

NRC Inspection Report 050-000206/2019-004; 050-00361/2019-007; 050-00362/2019-007; and 072-00054/2019-002

On October 21-25; November 20-22; and December 10-12, 2019, the U.S. Nuclear Regulatory Commission (NRC) performed a series of unannounced on-site inspections of dry fuel storage activities of the Independent Spent Fuel Storage Installation (ISFSI) at the decommissioning San Onofre Nuclear Generating Station (SONGS) in San Clemente, California. The on-site inspections were augmented through in-office review of the licensee's condition reports, records, procedures, and other materials gathered and provided prior to and after the on-site portion of the inspections through December 12, 2019. The scope of the inspections was to evaluate and review the licensee's actions related to the resumption of fuel transfer operations from the Unit 2 and Unit 3 spent fuel pools to dry storage following an extended stoppage in loading due to the August 3, 2018, canister misalignment incident. For additional discussions and evaluations of the August 3, 2018, incident, see the NRC Special Inspection Report 050-00206/2018-005, 050-00361/2018-005, 050-00362/2018-005, and 072-00041/2018-001 and Notice of Violation and NRC Supplemental Inspection Report 050-00206/2018-006, 050-00361/2018-006, 050-00362/2018-006, and 072-00041/2018-002 (NRC's Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML18341A172 and ML19190A217, respectively).

Operation of an Independent Spent Fuel Storage Installation, IP 60855

- The inspectors completed numerous unannounced on-site inspections of the licensee's return to fuel loading operations. The inspections were timed such that risk-significant activities were observed. Specifically, the inspectors evaluated and observed the critical tasks associated with the licensee's spent fuel loading, processing, and downloading operations. The inspectors found that the corrective actions taken in response to the August 2018 incident remained effective in the areas of training, procedures, equipment, and oversight to ensure safe and compliant downloading operations. The licensee continued to demonstrate a low threshold for placing issues into its corrective action program. Additionally, the licensee continued to enhance the downloading operations utilizing additional or new equipment, processes, and lessons learned. The inspectors determined the licensee was adequately implementing all required corrective actions from the causal evaluations and the status of the canister during downloading was constantly monitored and properly handled to avoid any possible misalignment issue. No findings were identified during the inspection period. (Section 1.2)

Review of 10 CFR 72.48 Evaluations, IP 60857

- The inspectors reviewed a sample of 10 CFR 72.48 safety screenings and safety evaluations that had been performed within the inspection period. No findings were identified during the selected sample review. (Section 2.2)

REPORT DETAILS

Summary of Facility Status

The San Onofre Nuclear Generating Station (SONGS) Independent Spent Fuel Storage Installation (ISFSI) consists of two ISFSI designs located adjacent to each other: the Orano Transnuclear (TN) Nuclear Horizontal Modular Storage (NUHOMS) system and the Holtec International Storage Module Underground Maximum Capacity (HI-STORM UMAX) system. The TN ISFSI contains a total of 63 advanced horizontal storage modules (AHSMs) on the NUHOMS ISFSI pad. Fifty-one of the AHSMs are loaded with the stainless steel dry shielded canisters (DSCs). Spent fuel from all three reactors are stored in 50 of the AHSMs. Greater-than-Class-C (GTCC) waste from the Unit 1 reactor decommissioning project was stored in the 51st module. The twelve empty AHSMs will be available for storage of additional GTCC waste from decommissioning the Units 2 and 3 reactors. The 24PT1-DSCs (Unit 1 fuel) are loaded and maintained under Amendment 0 of Certificate of Compliance (CoC) No. 72-1029 and the 24PT4-DSCs (Units 2 and 3 fuel) are loaded and maintained under Amendment 1 of CoC No. 72-1029. Both CoC amendments were being maintained under NUHOMS Final Safety Analysis Report (FSAR), Revision 5.

The HI-STORM UMAX ISFSI portion was designed to hold 75 Holtec multi-purpose canisters (MPCs). The Holtec MPC-37 canister design can hold 37 pressurized water reactor fuel assemblies in accordance with UMAX CoC No. 72-1040, Amendment 2; HI-STORM UMAX FSAR, Revision 4; and the HI-STORM Flood and Wind (FW) FSAR, Revision 5. Dry cask storage operations had resumed in July 2019, after an 11-month safety stand-down in operations following an August 3, 2018, canister misalignment incident at the UMAX ISFSI. At the end of the inspection period (December 31, 2019), the licensee had loaded 44 canisters into the UMAX ISFSI.

1 Operation of an Independent Spent Fuel Storage Installation (IP 60855)

1.1 Inspection Scope

The inspectors performed a review of the licensee's ISFSI activities to verify compliance with requirements of the Holtec UMAX CoC No. 72-1040, Amendment 2; HI-STORM UMAX FSAR, Revision 4; and the HI-STORM Flood and Wind (FW) FSAR, Revision 5. The inspectors reviewed selected procedures, corrective action reports, and records to verify ISFSI operations were compliant with the license Technical Specifications and Holtec UMAX FSAR.

1.2 Observations and Findings

Loading Operations Observed

The inspection included three unannounced on-site visits. The inspections were timed such that risk-significant activities were observed. Specifically, the inspectors evaluated and observed the critical tasks associated with the licensee's spent fuel loading, processing, and downloading operations.

The unannounced on-site inspection dates were as follows:

On-site inspection period	MPC Canister No.
October 21-25, 2019	MPC #37
November 20-22, 2019	MPC #41
December 10-12, 2019	MPC #43

The inspectors determined that the corrective actions taken in response to the August 2018 incident remained effective. Additionally, the inspectors noted that Southern California Edison's (SCE) oversight of their contractor's activities remained effective and thorough. The inspectors confirmed the workers were qualified and trained under the licensee's new training program. The procedures utilized in the transfer operations continued to contain the new quantitative and qualitative steps to ensure important tasks were adequately accomplished. During downloading evolutions, the licensee's operations contained the required new personnel, new equipment, and additional oversight to safely place a canister into the UMAX ISFSI. No findings were identified during inspections of the licensee's loading activities.

Corrective Action Program

NRC inspectors performed a review of SCE's Corrective Action Program (CAP) associated with ISFSI operations, including the cask handling crane. A list of Action Requests (ARs) issued since the last NRC inspection of September 2019 was provided by the licensee during the quarter's unannounced inspections. Several ARs were selected by the inspectors for further review based, in part, on the list provided by the licensee, on operational issues that were discussed during the weekly SCE/NRC teleconferences, and on issues evaluated during unannounced inspection efforts.

The ARs reviewed by the inspectors covered a broad range of issues that were identified during routine ISFSI operations. Based on the range and types of problems identified, the licensee continued to demonstrate a low threshold for placing issues into its CAP. The actions taken for the resolution of the issues were appropriate to address the problems that were identified.

No significant trends were identified during the review of the CAP at SONGS. The ARs were processed in accordance with SCE Procedure SO123-XV-50, "Corrective Action Program," Revision 45. No findings were identified related to the ARs reviewed.

Licensee Equipment and Downloading Enhancements

The inspectors observed several improvement changes related to the downloading process during the inspections performed this period. Specifically, the licensee made changes to incorporate lessons learned and operating experience to further enhance operations in four areas: canister centering, communications, lighting, and general procedure enhancements.

For the canister centering changes, the licensee procured new rigging slings for the vertical cask transporter. The newly procured slings were specified to be a mated pair, meaning each sling was the same length. While the old slings were adequate and met all required specifications, there was an allowable tolerance which meant the sling length could differ by up to four inches. For context, the slings are over 500 inches long. With

the slings procured as a mated pair, it ensures the canister is significantly less likely to tilt and allows for better concentricity between the canister and the storage vault. Second, the licensee measured the slope of the ISFSI pad for the current row of storage vaults. The measurements determined that the East to West slope was within design specifications, but less than the nominal assumed value. Armed with the actual slope for that row, the licensee revised the number of shims needed to level the vertical cask transporter (VCT). Third, the mating device and canister were aligned with lasers to ensure it was concentric in the hole of the vault. Finally, the licensee verified that the canister was level prior to initiating the download. While the setup time for these activities is greater than in the past, the preparatory work to ensure alignment enhances the downloading process. For the canisters observed, the inspectors noted that the aggregate effect of these geometric changes led to more refined downloading operations, with less trial and error adjustments needed.

For the communications area, the licensee made new equipment changes. Specifically, a new headset system was employed during operations on the ISFSI pad. Previously, the old wireless headset system had a limited number of headsets that could be used simultaneously. Additionally, the old headsets were not loud enough and blocked transmissions when more than one person spoke. The new headsets are better-quality devices that are much louder, clearer, and better at filtering the background noise caused by operating heavy equipment than the old headsets. Additionally, the new headsets have multiple channels which allowed different work groups to have conversations without overwhelming everyone on the headset. For instance, the radiation protection group could relay real-time radiation dose rates on one channel, while the VCT operator could be on another channel with the rigger personnel in the elevated lifts, and the cask loading supervisor could opt to hear everyone or select a single channel. The headsets were setup such that the cask loading supervisor and the rigger-in-charge are heard by everyone but not everyone can talk to them unless they are on the same channel frequency.

Lastly, the inspectors observed that the visibility at night was much improved due to the addition of more portable LED lights. The portable lights were staged such that the rigger, operator, and ground personnel could clearly see the condition of the lifting slings. Additionally, the extra lighting was helpful during VCT positioning over the vertical ventilated module (VVM). No findings were identified related to the newly implemented downloading enhancements.

1.3 Conclusions

The inspectors completed three unannounced on-site inspections of the licensee's return to fuel loading operations. The inspections were timed such that risk-significant activities were observed. Specifically, the inspectors evaluated and observed the critical tasks associated with the licensee's spent fuel loading, processing, and downloading operations. The inspectors found that the corrective actions taken in response to the August 2018 incident remained effective in the areas of training, procedures, equipment, and oversight to ensure safe and compliant downloading operations. The licensee continued to demonstrate a low threshold for placing issues into its CAP. Additionally, the licensee has continued to enhance downloading operations utilizing additional or new equipment, processes, and lessons learned. The inspectors determined the licensee was adequately implementing all required corrective actions from the causal evaluations and the status of the canister during downloading was constantly monitored

and properly handled to avoid any possible misalignment issue. No findings were identified during the inspection period.

2 Review of 10 CFR 72.48 Evaluations (IP 60857)

2.1 Inspection Scope

The licensee's 10 CFR 72.48 screenings and evaluations performed since the NRC's last ISFSI inspection (ADAMS Accession No. ML19316A762) were reviewed to determine compliance with regulatory requirements.

2.2 Observations and Findings

The licensee performed several procedure revisions and some equipment or process changes under the 10 CFR 72.48 process since the last inspection. NRC inspectors reviewed the 10 CFR 72.48 screenings for those procedure changes and design change packages made within the ISFSI program. None of the screenings led to a full 10 CFR 72.48 safety evaluation. All screenings were determined to be adequately evaluated.

2.3 Conclusions

The inspectors reviewed a sample of the licensee's required safety screenings and evaluations that had been performed within the inspection period. No findings were identified during the selected sample review.

4 Exit Meeting Summary

On January 21, 2020, the NRC inspectors presented the final inspection results to Mr. Doug Bauder, Vice President and Chief Nuclear Officer, Southern California Edison, and other members of the licensee's staff.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

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M. Morgan, Regulatory and Oversight
L. Bosch, Plant Manager
T. Palmisano, former Vice President Decommissioning and Chief Nuclear Officer
J. Pugh, Project Engineer
K. Rod, General Manager, Decommissioning Oversight
J. Smith, Project Manager, Holtec
K. Wilson, Engineer

INSPECTION PROCEDURES USED

IP 60855 Operation of an Independent Spent Fuel Storage Installation
IP 60857 Review of 10 CFR 72.48 Evaluations

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

None

Closed

None

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
AHSM	Advanced Horizontal Storage Module
AR	SCE Action Request
CAP	Corrective Action Program
CFR	<i>Code of Federal Regulations</i>
CoC	Certificate of Compliance
DSC	Dry Shielded Canister
FSAR	Final Safety Analysis Report
GTCC	Greater than Class C
HI-STORM FW	Holtec International Storage Module Underground Flood and Wind
HI-STORM UMAX	Holtec International Storage Module Underground Maximum Capacity
IP	Inspection Procedure
ISFSI	Independent Spent Fuel Storage Installation
NRC	U.S. Nuclear Regulatory Commission
NUHOMS	Nuclear Horizontal Modular Storage
MPC	multipurpose canister
SCE	Southern California Edison
SONGS	San Onofre Nuclear Generating Station
TN	Orano Transnuclear
VCT	Vertical Cask Transporter
VVM	Vertical Ventilated Module

SAN ONOFRE NUCLEAR GENERATING STATION INDEPENDENT SPENT FUEL STORAGE
 INSTALLATION (ISFSI) - NRC INSPECTION REPORT 05000206/2019-004;
 05000361/2019-007; 05000362/2019-007; AND 07200054/2019-002 DATED – FEBRUARY 20,
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