



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

October 31, 2007

Mr. James Shetler, Assistant General Manager
Energy Supply
Sacramento Municipal Utility District
6201 'S' Street
P.O. Box 15830
Sacramento, California 95852

SUBJECT: NRC INSPECTION REPORT 050-00312/07-005; 072-00011/07-001

Dear Mr. Shetler:

An NRC inspection was conducted on October 16-17, 2007 at your Rancho Seco Independent Spent Fuel Storage Installation (ISFSI). On October 17, 2007, at the conclusion of the inspection, an exit meeting was held with Mr. Bob Jones and Mr. Jim Field of your staff. The enclosed report presents the scope and results of that inspection.

The inspection was an examination of ISFSI operations 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. The inspection included examination and review of the ISFSI materiel condition and spent fuel inventory, technical specification surveillances, radiological controls and environmental monitoring, operations and maintenance, quality assurance audits, and program changes and safety reviews. No violations of NRC regulations were identified during the inspection.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, please contact Mr. Scott Atwater at 817-860-8286 or the undersigned at (817) 860-8191.

Sincerely,
/RA/

D. Blair Spitzberg, Ph.D., Chief
Repository and Spent Fuel Safety Branch

Docket Nos.: 050-00312; 072-00011
License Nos.: DPR-54; SNM-2510

Enclosure: Inspection Report 050-00312/07-005; 072-00011/07-001
w/Attachment

cc w/enclosure:

Thomas A. Baxter, Esq.
Shaw, Pittman, Potts & Trowbridge
2300 N. Street, N.W.
Washington, DC 20037

QA/Licensing Superintendent
Rancho Seco Nuclear Generating Station
14440 Twin Cities Road
Herald, CA 95638-9799

Sacramento County Board
of Supervisors
700 H. Street, Suite 2450
Sacramento, CA 95814

Assistant General Counsel
Sacramento Municipal Utility District
6201 S Street
P.O. Box 15830
Sacramento, CA 95852-1830

Radiation Program Director
California Radiologic Health Branch
State Department of Health Services
P.O. Box 997414 (MS 7610)
Sacramento, CA 95899-7414

Site Document Control Supervisor
Sacramento Municipal Utility District
Rancho Seco Nuclear Generating Station
14440 Twin Cities Road
Herald, CA 95638-9799

Commissioner's Office
California Energy Commission
1516 Ninth Street (MS 34)
Sacramento, CA 95814-5512

bcc w/enclosure (via ADAMS distrib):

- EECollins
- DBSpitzberg
- LDWert
- CLCain
- JBHickman, FSME/DWMEP/DURLD
- ACMcMurtray, NSIR/DPR/DDEP/LI
- DBSpitzberg
- JRHall
- EMGarcia
- SPAtwater
- RITS Coordinator
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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.: 050-00312; 072-00011

License Nos.: DPR-54; SNM-2510

Report Nos.: 050-00312/07-005; 072-00011/07-001

Licensee: Sacramento Municipal Utility District

Facility: Rancho Seco Nuclear Generating Station

Location: 14440 Twin Cities Road
Herald, California

Dates: October 16-17, 2007

Inspectors: Scott Atwater, Health Physicist

Approved By: D. Blair Spitzberg, Ph.D., Chief
Repository and Spent Fuel Safety Branch

Attachments: Supplemental Information

ADAMS Entry : IR 05000312-07-005; 0720011-07-001 on 10/16-17/07;
Sacramento Municipal Utility District; Rancho Seco Nuclear
Generating Station. ISFSI Report; No Violations.

Enclosure

EXECUTIVE SUMMARY

Rancho Seco Nuclear Generating Station
NRC Inspection Report 050-00312/07-005; 072-00011/07-001

The Rancho Seco facility was in the final stages of decommissioning. The major components in the auxiliary building and reactor building had been removed, packaged and shipped for disposal. Demolition of the reactor building interior concrete structures was in progress. All spent fuel assemblies and Greater than Class C (GTCC) waste had been stored at the Independent Spent Fuel Storage Installation (ISFSI) and the spent fuel pool and had been dismantled.

Operation of an Independent Spent Fuel Storage Installation

- The ISFSI was being maintained in good material condition and the pad was clear of combustibles. The Horizontal Storage Module (HSM) tamper-indicating welds were intact and had been inspected annually. The notification to the NRC of a potential spent fuel misloading was made in accordance with the ISFSI technical specifications and a plan to restore compliance was being developed (Section 1.1).
- The temperature instruments on the HSMs were functional and indicated that the HSMs were removing decay heat from the spent fuel within the design envelope. The HSM daily monitoring was meeting the ISFSI Technical Specification surveillance requirements (Section 1.2).
- The HSMs were properly posted as radiation areas. The licensee's environmental monitoring program was meeting the ISFSI Technical Specification requirements. Doses to the public from ISFSI operations were within limits (Section 1.3).
- The ISFSI fire detection system was being maintained in an operable condition and was being tested annually to ensure continued operability (Section 1.4).
- The surveillance of the last semi-annual Special Nuclear Material (SNM) inventory calculation indicated the calculation was performed using acceptable computer codes and the results were accurate (Section 1.5).
- The surveillances of the Greater than Class C (GTCC) canister fabrication were detailed and thorough. The canister material, rolling, welding, and testing were consistent with the procurement specifications (Section 1.5).
- Program changes made since the last inspection were consistent with the license and had not reduced the effectiveness of the Rancho Seco Emergency Plan, Quality Assurance Program or Radiation Protection Program (Section 1.6).

Report Details

Summary of Facility Status

The Rancho Seco facility was in the final stages of decommissioning. The major components in the auxiliary building had been removed, packaged and shipped for disposal. In the reactor building, the four reactor coolant pumps, two steam generators, pressurizer, core flood tanks, reactor vessel, and reactor vessel head had been removed and shipped for disposal. Demolition of the reactor building interior concrete structures was in progress. Twenty-one canisters containing 493 spent fuel assemblies, and one canister containing Greater than Class C (GTCC) waste had been stored at the Independent Spent Fuel Storage Installation (ISFSI) and the spent fuel pool and had been dismantled.

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

1.1 ISFSI Materiel Condition and Spent Fuel Inventory

1.1.1 Inspection Scope

Verification that the ISFSI is being maintained in good condition and that combustible materials exceeding the bounding fire loading have not accumulated in the vicinity of the loaded Horizontal Storage Modules (HSMs).

Verification that a physical inventory is being conducted on all spent fuel stored at the ISFSI every 12 months. Verification that tamper-indicating seals are present and intact.

1.1.2 Observations and Findings

A tour of the ISFSI indicated the welds on the Horizontal Storage Modules (HSM) doors were intact and the air inlet and outlet screens on all HSMs were clear of debris. There was minimal erosion under both inner and outer ISFSI fences. There were no vehicles parked inside the ISFSI and the pad was clear of combustibles. The licensee had performed the last annual spent fuel inventory on May 10, 2007 using Surveillance Procedure SP.642, Revision 6. No discrepancies were identified.

On November 6, 2006 the licensee made a 24-hour notification to the NRC concerning a potential fuel misloading at the Rancho Seco ISFSI. This notification met the requirements of ISFSI Technical Specification 2.2.1 and was documented in NRC Licensee Event Report #42968. Based on the differences in the definition of damaged fuel presented in Rancho Seco Administrative Procedure, RSAP-0112, "Fuel Assembly Visual Inspection", Revision 2 and the commitments made in various licensing documents, Rancho Seco management had determined that a potential existed that damaged fuel assemblies may have been placed in a fuel canister licensed only for intact assemblies.

On December 6, 2006 the licensee submitted to the NRC their 30-day followup letter to the notification (ML063470060), as required by ISFSI Technical Specification 2.2.1. The letter stated that one spent fuel assembly had confirmed cladding damage and five other assemblies had potential cladding damage greater than hairline cracks or pinhole leaks. The 30-day letter

concluded that there was no imminent concern for continued safe storage of the fuel. At the time of the inspection, Rancho Seco was consulting with the canister vendor, Transnuclear, to develop a plan for restoring compliance. The licensee was tracking completion of the corrective actions under Commitment Tracking System #53617, ComTrack Log #CL-0056, and Potential Deviation from Quality #05-0003.

1.1.3 Conclusions

The ISFSI was being maintained in good material condition and the pad was clear of combustibles. The HSM tamper-indicating welds were intact and were being inspected annually. The notification to the NRC of a potential spent fuel misloading was made in accordance with the ISFSI technical specifications and a plan to restore compliance was being developed.

1.2 Technical Specification Surveillance

1.2.1 Inspection Scope

Verification that routine activities are performed in accordance with approved procedures, and that surveillances are being conducted at the specified intervals.

1.2.2 Observations and Findings

Rancho Seco ISFSI Technical Specification 5.5.3 required daily monitoring of the Horizontal Storage Modules. The monitoring included verification that the screens on the inlet and outlet air vents were not blocked or damaged, and verification that the concrete temperatures were within tolerance. The technical specification limited concrete temperatures to a maximum of 225 degrees F with no more than an 80 degrees F temperature rise in any 24 hour period.

Each HSM was equipped with a thermocouple imbedded in the concrete directly above the stored canister. Each thermocouple provided a direct temperature output to the Plant Integrated Computer System (PICS). The concrete temperature high alarm was set at 220 degrees F. The HSM thermocouples were functional and the PICS station was staffed. During the ISFSI tour, the ambient temperature was 58 degrees F and the HSM roof temperatures ranged from 84 to 98 degrees F. The HSM differential temperatures of 26 to 40 degrees F indicated the HSMs were functioning as designed.

The licensee used Operations Surveillance Procedure, SP-10, "ISFSI & Instrument Checks & System Verification Daily Surveillance", Revision 1 to document completion of Technical Specification 5.5.3 HSM monitoring. A review of the completed SP-10 data sheets from August 1, 2007 to the time of inspection indicated compliance with Technical Specification 5.5.3.

1.2.3 Conclusions

The temperature instruments on the HSMs were functional and indicated that the HSMs were removing decay heat from the spent fuel within the design envelope. The HSM daily monitoring was meeting the ISFSI Technical Specification surveillance requirements.

1.3 Radiological Controls and Environmental Monitoring

1.3.1 Inspection Scope

Verification that the radiological postings are consistent with 10 CFR Part 20, and reflect the measured dose rates at the ISFSI.

Verification that the dose to the public from ISFSI operations is within the 10 CFR 104(a) limits.

1.3.2 Observations and Findings

A tour of the ISFSI indicated that the HSM access boundary was established at approximately 10 feet from the HSM doors on the east and west faces and at the exterior shield walls on the north and south faces. The area was posted as a Radiation Area.

The third quarter 2007 ISFSI radiation survey was conducted on September 27, 2007, in accordance with Radiation Protection Procedure RP.305.08A, "Routine and Radiation Work Permit Surveys", Revision 6. Survey #S2007-02428 documented contact dose rates on the HSM doors of 1.5 to 2.5 mrem/hour gamma and less than 1.0 mrem/hour neutron. Dose rates at the HSM screens were 6-10 mrem/hour gamma and less than 1.0 mrem/hour neutron.

Rancho Seco ISFSI Technical Specification 5.5.2 required a radiological environmental monitoring program to ensure the annual dose equivalent to any real individual located outside the ISFSI controlled area did not exceed the 10 CFR 72.104(a) limit of 25 mrem to the whole body during normal operations and anticipated occurrences. The licensee had established four monitoring locations at the site boundary for detecting direct radiation from the ISFSI. The Annual Radiological Environmental Operating Report for January-December 2006 indicated that the annual dose from ISFSI operations was below the 10 CFR 72.104(a) limit.

Rancho Seco ISFSI Technical Specification 5.5.2.d required that an annual report be submitted to the Commission specifying the quantity of each of the principal radionuclides released to the environment in liquid and in gaseous effluents during the previous calendar year of operation. 10 CFR 72.44(d)(3) specified that the report must be submitted within 60 days after the end of the 12-month monitoring period. Spent fuel was loaded into the Rancho Seco ISFSI between April 2001 and August 2002. No ISFSI effluent release report was issued for 2001 and the reports for calendar years 2002 and 2003 were late. The three reports did not meet the requirements of 10 CFR 72.44(d)(3) and the licensee entered this deficiency into their corrective action program. The short term corrective action was to combine the ISFSI effluent release report with the Annual Radiological Environmental Operating Report, to ensure the deadline was not missed in the future. The long term corrective action was to seek relief from the reporting requirement altogether, since the Rancho Seco ISFSI is a sealed system with no gaseous or liquid effluents. NRC Inspection Followup Item 072-00011/2004-01-01 was opened to track completion of both the short term and long term corrective actions.

In a letter to the NRC dated July 19, 2004, Rancho Seco requested relief from the requirements under 10 CFR 72.44(d)(3) and ISFSI Technical Specification 5.5.2.d to submit an annual radioactive effluent release report for the ISFSI. In a letter to Rancho Seco dated March 21, 2005, the NRC granted an exemption from 10 CFR 72.44(d)(3) and issued an amendment to the Rancho Seco ISFSI license that deleted Technical Specification 5.5.2.d.

The annual ISFSI effluent release report is no longer required and Inspection Followup Item 072-00011/2004-01-01 has been closed.

1.3.3 Conclusions

The HSMs were properly posted as radiation areas. The licensee's environmental monitoring program met the ISFSI Technical Specification requirements, and doses to the public from ISFSI operations were within the 10 CFR 104(a) limits.

1.4 Operations and Maintenance

1.4.1 Inspection Scope

Verification that the ISFSI equipment is being maintained in an operable condition and is being tested periodically to ensure continued operability.

1.4.2 Observations and Findings

The latest annual test of the ISFSI fire detection system was conducted on June 4, 2007 in accordance with Surveillance Procedure SP-366, "Annual Fire Protection System Functional Test (ISFSI Electrical Building)", Revision 2. The testing verified that the smoke detectors were operable and that the supervisory trouble circuit responded to failed inputs. No discrepancies were identified.

During this inspection two railroad locomotives passed within approximately 80 yards of the ISFSI. Each locomotive was equipped with a 4,350 gallon diesel fuel tank. The ISFSI fire hazards analysis did not evaluate the potential burning of 8,700 gallons of diesel fuel within 80 meters of the ISFSI. However the hazards analysis stated that "positive drainage of the basemat toward the site drainage system ensures that the diesel will runoff away from the HSM". The licensee stated that the potential for any fire to migrate uphill from the rail line and engulf the ISFSI was not credible, and therefore did not need to be evaluated. The NRC inspector concurred with this conclusion.

1.4.3 Conclusions

The ISFSI fire detection system was being maintained in an operable condition and was being tested annually to ensure continued operability.

1.5 Quality Assurance Audits

1.5.1 Inspection Scope

Verification that audits are being performed to assess the effectiveness of the Quality Assurance Program. Verify that purchased ISFSI equipment and material conforms to procurement documents.

1.5.2 Observations and Findings

The licensee conducted a surveillance of the semi-annual Special Nuclear Material (SNM) inventory data sent to DOE/Nuclear Assurance Corporation (NAC). The surveillance was completed on April 10, 2006 as documented in Surveillance Report 06-S-0067. The semi-annual SNM inventory data was properly calculated using acceptable computer codes.

The licensee conducted eleven surveillances of the Greater than Class C (GTCC) canister fabrication between July 27, 2004 and November 2, 2004. The results were documented in Surveillance Reports 04-S-026, 027, 029, 032, 033, 034, 039, 040, 041, 045, and 046. The canister material was supplied by ESCO and the Certified Material Test Reports were complete. The canister shells were rolled by Thompson Metal Fabricators. Minor discrepancies were noted which were later corrected by the canister fabricator, Therm-Flite. The canisters and shield plug were also fabricated by Therm-Flite. The fabrication documentation (including welding and NDE records) was complete and accurate. Helium Leak Testing of the canister shell was performed by HIT Inspection. The test results were acceptable.

The licensee conducted a surveillance of the Greater than Class C (GTCC) canister prior to loading. The results were documented in Surveillance Report 065-S-006, dated February 7, 2006. The canister was free of foreign materials, the siphon port was clear, and the lid placement was within design tolerances.

1.5.3 Conclusions

The surveillance of the last semi-annual SNM inventory calculation indicated the calculation was performed using acceptable computer codes and the results were accurate.

The surveillances of the Greater than Class C (GTCC) canister fabrication were detailed and thorough. The canister material, rolling, welding, and testing were consistent with the procurement specifications.

1.6 Program Changes and Safety Reviews

1.6.1 Inspection Scope

Verification that changes made to the programs and procedures since the last inspection are consistent with license or Certificate of Compliance requirements, and do not reduce the effectiveness of the programs.

1.6.2 Observations and Findings

The licensee performed the following program changes since the last ISFSI inspection in May 2004.

- Rancho Seco Emergency Plan Change 5, Revision 2 made editorial and administrative changes to simplify the emergency response with all fuel stored at the ISFSI.

- Rancho Seco Emergency Plan and Implementing Procedure EPIP-01, Revision 4 reflected changes to the Offsite Dose Calculation Manual resulting from the dismantlement of the onsite retention basins, radioactive effluent monitor RI-1507A, and associated onsite piping. The revision acknowledged removal of any major radioactive liquid effluent and deleted the Emergency Plan response to a “High Liquid Effluent” alarm for Unusual Event or Alert.
- Rancho Seco Emergency Plan Revision 3 reflected relocation of the Technical Support Center.
- Rancho Seco Quality Manual (RSQM) Section II, “Quality Assurance Program (QAP.)”, Revision 11 implemented a previously reviewed and approved change to the fire protection program audit requirements.
- Rancho Seco Quality Manual (RSQM) Policy, Revision 8 and RSQM Section I, “Organization” Revision 12 reflected changes to the organization as described in Rancho Seco Administrative Procedure RSAP-0101. The organizational changes included: 1) replacement of the Decommissioning Project Manager with two new positions, the Dismantlement Supervisor - Operations and the Dismantlement Supervisor - Radiological Assessment; 2) elimination of the QA/Lic./Admin/Trng Superintendent position and transfer of all responsibilities to the new Supervising Quality Engineer position; and 3) a change to the reporting chain for the Supervisor, District Security Operations.
- Rancho Seco Quality Manual (RSQM) Section I, “Organization” Revision 13 modified the Rancho Seco organization to reflect that the Manager, Plant Closure and Decommissioning now reports to the Manager, Power Generation.
- Rancho Seco Quality Manual (RSQM) Section XVIII, “Audits”, Revision 11 implemented NRC Order for Modification of the Rancho Seco ISFSI license, dated August 18, 2004 which required an individual with knowledge of the ISFSI access authorization program to participate in the annual security audit.
- Chemistry Administrative Procedure CAP-0002, “Off-site Dose Calculation Manual”, Revision 17 removed the Auxiliary Building stack from the gaseous effluent pathway. This was based on a previous evaluation that approved removal of the Auxiliary Building ventilation system from service as part of decommissioning.
- Chemistry Administrative Procedure CAP-0002, “Off-site Dose Calculation Manual”, Revision 18 removed the gaseous effluent release pathway once the Auxiliary Building ventilation system had been dismantled and all spent fuel was in the ISFSI.

1.6.3 Conclusions

The program changes made since the last inspection were consistent with the Certificate of Compliance and had not reduced the effectiveness of the Rancho Seco Emergency Plan, Quality Assurance Program or Radiation Protection Program.

2 Exit Meeting

On October 17, 2007, at the conclusion of the inspection, the inspector held an exit meeting with representatives of licensee management to present the preliminary inspection results. The licensee representatives acknowledged the results presented. No information reviewed by the inspector was identified as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Sacramento Municipal Utility District

M. Bua - Superintendent, Radiation Protection/Chemistry
J. Field - Superintendent, Engineering
R. Jones - Supervising Quality Engineer
D. Koontz - ISFSI Supervisor
J. Loy - Nuclear Licensing Instructor
E. Reese - Security Officer
G. Roberts - Superintendent, Maintenance
M. Steinbacher - Radiation Protection Supervisor
A. Zwierzynski, ISFSI Technician

INSPECTION PROCEDURES USED

IP 60855 Operation of an Independent Spent Fuel Installation

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

Inspection Followup Item 072-00011/2004-01-01; Timeliness of the Annual Radioactive Effluent Release Report.

Discussed

None

LIST OF ACRONYMS

| | |
|-------|---|
| CFR | Code of Federal Regulations |
| HSM | Horizontal Storage Modules |
| ISFSI | Independent Spent Fuel Storage Installation |
| PICS | Plant Integrated Computer System |
| SNM | Special Nuclear Material |