



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

April 6, 2009

Mr. Einar T. Ronningen
Superintendent, Rancho Seco Assets
Sacramento Municipal Utility District
14440 Twin Cities Road, MS N493
Herald, CA 95638

SUBJECT: NRC INSPECTION REPORT 050-00312/09-001

Dear Mr. Ronningen:

This refers to the inspection conducted on March 9-12, 2009, at Sacramento Municipal Utility District's Rancho Seco facility. This inspection was an examination of 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. The inspection included an examination of selected procedures and representative records, observations of activities, and interviews with personnel. The enclosed report presents the results of this inspection. In summary, the inspection determine that you were conducting decommissioning activities in accordance with regulatory and license requirements.

During the inspection, representatives from the Oak Ridge Institute for Science and Education (ORISE) conducted confirmatory surveys on behalf of the NRC. The final results for these surveys will be presented to you under separate correspondence at a later date.

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 document system (ADAMS), accessible from the NRC's Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection, please contact Mr. Robert Evans, Senior Health Physicist, at (817) 860-8234 or the undersigned at (817) 860-8197.

Sincerely,

/RA/

Jack E. Whitten, Chief
Nuclear Materials Safety Branch B

Docket: 050-00312
License: DPR-54

Enclosure:

NRC Inspection Report 050-00312/09-001

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

Site Document Control Supervisor
Sacramento Municipal Utility District
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

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

bcc w/enclosure (via e-mail distribution):
 ATHowell
 CLCain
 JBHickman, FSME/DWMEP/DURLD
 THYoungblood, FSME/DWMEP/DURLD
 JEWhitten
 FEE Coordinator

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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 050-00312

License: DPR-54

Report: 050-00312/09-001

Licensee: Sacramento Municipal Utility District

Facility: Rancho Seco Nuclear Generating Station

Location: 14440 Twin Cities Road
Herald, CA 95638-9799

Dates: March 9-12, 2009

Inspector: Robert J. Evans, PE, CHP, Senior Health Physicist
Nuclear Materials Safety Branch B

Accompanied By: Thomas H. Youngblood, Jr., Health Physicist
Decommissioning and Uranium Recovery Licensing Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental
Management Programs

Wade Adams, Project Leader
Oak Ridge Institute for Science and Education

Dean Herrera, Radiation Protection Technician
Oak Ridge Institute for Science and Education

Edwin Montalvo, Radiation Protection Technician
Oak Ridge Institute for Science and Education

Approved By: Jack E. Whitten, Chief
Nuclear Materials Safety Branch B

Attachment: Supplemental Inspection Information

ENCLOSURE

EXECUTIVE SUMMARY

Rancho Seco Nuclear Generating Station NRC Inspection Report 050-00312/09-001

This inspection was a routine, announced inspection of decommissioning activities being conducted at the Rancho Seco Nuclear Generating Station. In summary, the licensee was conducting decommissioning in compliance with regulatory and license requirements.

Organization, Management, and Cost Controls

- The licensee had sufficient staff for the type of work in progress. Sufficient staff was available to fulfill the requirements of the License Termination Plan (Section 1).

Safety Reviews, Design Changes, and Modifications

- The licensee had functioning programs for ensuring quality during decommissioning activities (Section 2).

Maintenance and Surveillance

- The licensee continued to have a functioning equipment maintenance program as required by plant procedures (Section 3).

Decommissioning Performance and Status Review

- A tour of the Interim Onsite Storage Building was conducted. The licensee maintained storage of radioactive wastes in accordance with site procedures. Area postings, signs, radiation levels, and boundaries were in agreement with regulatory requirements. A building leak was identified, but the licensee stated that it would fix the leak in a timely manner (Section 4).

Occupational Radiation Exposure

- The licensee implemented an occupational exposure program that effectively monitored internal and external doses to radiation. No individual exceeded the regulatory limit for total effective dose equivalent exposures during calendar year 2008. The licensee downgraded the occupational exposure monitoring program during 2009 as allowed by regulations (Section 5).

Inspection of Final Surveys

- The licensee had conducted, or was in the process of conducting, the various quality control reviews as stipulated in the License Termination Plan (Section 6).
- Representatives from Oak Ridge Institute for Science and Education conducted confirmatory surveys on behalf of the NRC. The confirmatory surveys identified three discrete radioactive particles during the inspection. The licensee is expected to evaluate the significance of these and previously identified discrete particles and to share the results of the evaluation with the NRC when complete (Section 6).

Report Details

Summary of Plant Status

The Rancho Seco Nuclear Generating Station began commercial operations during April 1975 but was permanently shut down during June 1989. The licensee commenced with decommissioning during February 1997. By August 2002, all spent reactor fuel had been transferred from the spent fuel pool to the onsite Independent Spent Fuel Storage Installation. The NRC approved the License Termination Plan (LTP) during November 2007. At the time of this inspection, the licensee was conducting decommissioning activities in accordance with requirements specified in the LTP.

Since the previous inspection, the licensee had completed remediation of the reactor building and had removed some contaminated soils located outside of the reactor building equipment hatch. Also, the tank farm area was remediated. Final status surveys were complete in all areas of the plant. Work in progress during the inspection included industrial decommissioning. Industrial decommissioning included removing non-impacted electrical equipment, preparing the site structures for long-term closure, and conducting road surface asphalt repairs.

Future work includes submittal of license amendment requests for partial site release and reduction in emergency plan requirements. Once the NRC approves the final status survey reports, the licensee plans to solicit NRC approval to reduce the footprint of the 10 CFR Part 50 license to the area of the Interim Onsite Storage Building (IOSB) and to reduce the scope of the emergency plan.

1 Organization, Management, and Cost Controls (36801)

1.1 Inspection Scope

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

1.2 Observations and Findings

The licensee's organizational staffing was reviewed. The inspector noted that the staffing level continued to decline as the work was being completed. At the time of the inspection, the licensee had approximately 30 people onsite. The licensee continued to staff all required management and supervisory positions with experienced personnel. The inspector concluded that the licensee had enough staff to fulfill the radiation protection program requirements.

The licensee recently implemented several changes to its nuclear organization. For example, during November 2008, the licensee permanently disbanded the Commitment Management Review Group (CMRG). The functions of the CMRG were transferred to the senior site representative. Other modifications to the nuclear organization included position title changes. The licensee conducted a licensing review of these changes prior to implementation, and the licensee determined that the changes did not require prior NRC approval because the changes did not negatively impact any licensing basis documents.

1.3 Conclusions

The licensee had sufficient staff for the type of work in progress. Sufficient staff was available to fulfill the requirements of the LTP.

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

2.1 Inspection Scope

The inspector reviewed the licensee's programs for ensuring quality during decommissioning activities.

2.2 Observations and Findings

As part of its corrective action program, the licensee used Potential Deviation from Quality (PDQ) reports to document issues that may have an impact on the quality of decommissioning. The inspector reviewed the five PDQ reports issued since the last inspection. The inspector reviewed each issue and discussed the issue with licensee management. The inspector concluded that the PDQ process was functioning as required by site procedures.

Two of the PDQs were related to site decommissioning. Both issues involved the discovery of discrete radioactive particles by the NRC's contractor, Oak Ridge Institute for Science and Education (ORISE). In the first instance, a discrete particle was discovered in the former emergency sump in the reactor building during December 2008. This particle was subsequently captured by a vacuum cleaner, and no other particles were identified in the area. In the second instance, three discrete particles were discovered by ORISE during this inspection. The origination of the discrete particles was not clear, but the particles may have been unintentionally relocated due to onsite movement of radioactive wastes. The licensee's investigation for the second PDQ was incomplete at the end of the onsite inspection, and additional information about the discrete particles is provided in Section 6 of this Inspection Report.

The inspector also reviewed the licensee's quality assurance (QA) audit program. The QA program requirements are provided in the Rancho Seco Quality Manual. The inspector compared the audit program requirements to the audit matrix. The inspector confirmed that all required audits had been completed, were in progress, or were scheduled for completion in the near future. The audit frequencies were in agreement with procedure requirements.

2.3 Conclusions

The licensee had functioning programs for ensuring quality during decommissioning activities.

3 Maintenance and Surveillance (62801)

3.1 Inspection Scope

The purpose of this portion of the inspection effort was to verify proper operation of radiation monitoring and effluent control equipment.

3.2 Observations and Findings

The inspector conducted a review of the remaining equipment surveillances and routine test procedures. Site procedures were used to control routine tests and maintenance activities. The number of required surveillances and maintenance activities had been reduced due to the completion of decommissioning activities in most areas of the plant. The remaining surveillances and tests were primarily for non-radiological systems such as the plant effluent flow totalizer and fire protection system. There were no license-required equipment surveillances and routine test procedures remaining at the time of this inspection.

The licensee stated that the plant systems that will remain in service included the fire protection, communications, plant lighting, sewer, service water, and domestic well systems. The licensee will continue to conduct routine tests of the fire protection system including fire pump tests, battery checks, and hose inspections. The licensee also plans to conduct a routine walk-through of the IOSB, the location where radioactive wastes and other potentially contaminated equipment will be stored.

As required by a site procedure, the licensee maintained a tracking program for radiological surveys. The licensee also maintained a list of available survey meters and calibration due dates. The inspector noted that the licensee had sufficient equipment available to conduct the required surveys.

The licensee also maintained various supplies in the event of a radiological emergency. The supplies included equipment for emergency communications and radiation protection response activities. The inspector noted that the supplies were maintained in three sealed storage lockers. When questioned about the supplies, the licensee indicated that routine audits of the supplies were conducted, with the most recent audit being conducted during February 2009. The audit confirmed that all required emergency response supplies were present in the three sealed storage lockers. The inspector examined the supplies in one of three sealed lockers, and the inspector determined that the required supplies were effectively staged in the locker in the event of a radiological emergency.

3.3 Conclusion

The licensee continued to have a functioning equipment maintenance program as required by plant procedures.

4 Decommissioning Performance and Status Review (71801 and 84750)

4.1 Inspection Scope

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

4.2 Observations and Findings

The inspector conducted a tour of the IOSB, the location where the remaining radioactive wastes will be stored on an interim basis. The IOSB will also be used to

store the fuel handling equipment, including the transfer cask, for future use during fuel cask handling operations.

A 3-ton/25-ton crane was located within the IOSB. Licensee representatives stated that the crane was capable of lifting 25 tons, but the crane would have to be recertified for 25-ton lifts prior to actual use. Therefore, based on the lack of certification for the 25-ton crane, the crane capacity available to the licensee would only be 3 tons, a capacity which should be sufficient for most of the licensee's work activities within the building.

A sump is located within the IOSB. At the time of the site tour, the inspector noted that the local sump indicator displayed a reading that suggested fluid was actually situated within the sump, but the licensee stated that the sump was dry. The sump indicator is scheduled for replacement in the near future. Once replaced, the licensee plans to conduct annual preventive maintenance on the sump level instrumentation.

During the site tour, the inspector observed the area postings, signs, and boundaries. All postings and signs were found to be in agreement with regulatory requirements. The inspector concluded that the radiological controls in place at the time of the inspection were in agreement with regulatory requirements.

The inspector conducted radiological surveys of the interior and exterior of the IOSB. The inspector measured the ambient gamma exposure rates using a Ludlum Model 2401-P survey meter (NRC Meter No. 21189G, calibration due date 12/18/09). With a background of 0.01 millirems per hour (mR/hr), the exterior of the building measured less than 0.025 mR/hr with a procedure limit of 0.5 mR/hr. The highest exposure rate (3 mR/hr) was measured on the surface of tools/equipment staged for disposal. The center of the storage cells measured 2 mR/hr. All accessible areas in the IOSB were less than 5 mR/hr, the exposure rate required for posting of the general building areas as a radiation area.

Within the IOSB, the radioactive wastes are stored in various concrete cells. Wastes that are destined for disposal in the near future are stored in drums or on pallets. The inspector reviewed the licensee's procedure for routine operations and maintenance within the building. The procedure stipulates, in part, that every four years, a direct visual inspection will be conducted for all stored waste containers in the cells. This activity was conducted by the licensee during December 2008.

During the licensee's December 2008 inspection, water intrusion was identified in one cell, although no evidence of water damage was identified on any component within this particular cell. In addition, standing water was identified on top of one of 15 storage cells during the inspector's site tour. Although the inspector could not determine if the building leak during the tour was the same source of water that was identified during the licensee's December 2008 cell inspection, the licensee's representatives stated during the tour that they intended to locate and repair the leak in a timely manner.

4.3 Conclusions

A tour of the IOSB was conducted. The licensee maintained storage of radioactive wastes in accordance with site procedures. Area postings, signs, radiation levels, and boundaries were in agreement with regulatory requirements. A building leak was

identified during the site tour, but the licensee stated that it would fix the leak in a timely manner.

5 Occupational Radiation Exposure (83750)

5.1 Inspection Scope

The inspector reviewed occupational radiation exposures to verify compliance with 10 CFR Part 20 requirements.

5.2 Observations and Findings

The inspector reviewed records and interviewed the radiological health supervisor to ensure that the radiation protection program was in compliance with regulatory requirements. The inspection included a review of occupational exposures for calendar year 2008 and the licensee's plans for future dose assessments.

During 2008, the licensee monitored 172 individuals for exposures to radioactive materials. The licensee's records indicate that the collective dose was 2.4 person-rems. The projects with the highest exposure totals included dismantlement activities (1.4 person-rems), routine radioactive waste operations (0.6 person-rems), and radwaste segregation operations (0.3 person-rems). The individual with the highest deep dose equivalent exposure, 0.227 rems, was a demolition laborer.

Also during 2008, the licensee conducted air sampling, but no sample result exceeded the action level required for the licensee to conduct a dose assessment. The licensee conducted whole body counting, but no individual was identified with internal contamination that required assignment of internal dose. In summary, no individual exceeded the NRC's annual total effective dose equivalent exposure limit of 5 rems.

Based on plant conditions, the licensee discontinued monitoring of workers for external exposures at the beginning of 2009. The licensee also discontinued air sampling and whole body counting of workers. The inspector noted that the licensee was allowed to downgrade the radiation monitoring program per the requirements of 10 CFR 20.1502.

To ensure that workers do not exceed the public dose limit of 100 millirems per year, the licensee installed area badges inside of the IOSB to measure ambient gamma exposures. In conjunction with an assessment of the amount of time a worker will spend in the building, the licensee contends that the results of the area badges should demonstrate that individual monitoring for occupational workers will not be necessary. The licensee also installed environmental badges around the IOSB to ensure that building operations have a minimal impact on the environment. The results of these area and environmental badges will be reviewed during a future inspection to ensure that the licensee's assessments are in compliance with regulatory requirements.

The licensee plans to continue sending routine environmental and effluent monitoring reports to the NRC. The environmental reports are expected to include the results of environmental radiation exposures only. The effluent report will no longer include gaseous and liquid effluents, but will include direct radiation doses and radioactive waste shipments.

5.3 Conclusions

The licensee implemented an occupational exposure program that effectively monitored internal and external doses to radiation. No individual exceeded the regulatory limit for total effective dose equivalent exposures during calendar year 2008. The licensee downgraded the occupational exposure monitoring program during the beginning of 2009 as allowed by regulations.

6 Inspection of Final Surveys at Permanently Shutdown Reactors (83801)

6.1 Inspection Scope

The inspector verified that final characterization surveys were being conducted and documented by the licensee in accordance with site procedures and NRC guidance documents.

6.2 Observations and Findings

a. Final Status Survey

The inspector compared the licensee's implementation of the final status survey program to the requirements provided in the NRC-approved LTP. At the time of the inspection, the licensee had completed the final status survey. The impacted area of the site had been subdivided into nine major areas and 324 individual survey units. The licensee documented and submitted the survey results to the NRC in five submittals. At the time of the inspection, the NRC had approved three of five submittals.

The inspector conducted a review of the quality control requirements provided in the LTP. The LTP lists a number of actions that are necessary to ensure the accuracy and consistency of the licensee's final status survey results. The inspector reviewed the status of these actions to ensure compliance with the requirements of the NRC-approved LTP.

The LTP, Section 2.6, states that the licensee will evaluate the results of future characterization sample analyses to determine the impact, if any, on radionuclide identities, nuclide fractions, and survey unit classifications. This evaluation will help determine whether the licensee's original assumptions about the acceptance criteria and the scope of the final status survey are still valid. At the time of the inspection, the licensee had not completed this final review. Based on preliminary information, the licensee does not expect the results of the review to impact the completed final status survey results. The licensee plans to document its final decision when the review is complete.

Section 5.2.1.3 of the LTP states that final status survey measurements will be reviewed to ensure that the surrogate ratio derived concentration guideline level does not require revision. At the time of the inspection, this review was incomplete. Based on preliminary information, neither the licensee nor the inspector identified any evidence that the surrogate ratio derived concentration guideline level will need to be revised.

Section 5.8.2.4.1 provides the quality control survey requirements. The requirements include replicate scan surveys, repeat direct surface measurements, and blind duplicate

or third-party sampling of soil samples. The inspector confirmed that the licensee had implemented all three quality control requirements. The licensee conducted greater than the minimum threshold for all three quality control sample tests.

Section 5.8.3.2 states, in part, that QA personnel will randomly review at least 5-percent of the survey packages. The licensee conducted this review during February 2009 and documented its review in a QA surveillance report. The QA auditor concluded that the licensee's final status survey reports met the requirements of the LTP and site procedures.

b. Confirmatory Survey

During the inspection, representatives from ORISE conducted confirmatory surveys on behalf of the NRC. The survey was conducted using the guidance provided in ORISE's Final Confirmatory Survey Plan dated August 10, 2007. Since June 2006, ORISE has conducted confirmatory surveys in about 100 Class 1 survey units.

During this inspection, ORISE conducted surface surveys of the reactor building floor. In addition, ORISE surveyed selected outdoor areas including the tank farm, cooling tower buffer zones, roadways, and rail line. The surveys included surface scans, fixed point measurements, swipe sampling, and soil sampling. In addition to confirmatory surveys, ORISE conducted side-by-side measurements with the licensee's staff.

Based on preliminary information collected, ORISE identified three discrete particles in two survey units. In response, the licensee collected the particles and analyzed them. The licensee's analyses indicated that one particle contained cobalt-60 and europium-152, the second particle contained only cobalt-60, and the third particle contained only cesium-137. Although the particles contained licensed material, the total activity of each particle was less than 1-microcurie.

Also in response to ORISE's discovery of the three discrete particles, the licensee issued a PDQ report. The licensee plans to conduct a thorough evaluation using the PDQ process. The PDQ evaluation may include an assessment of dose impacts and how the particles may have been relocated to the places they were identified. In addition, the licensee will consider the impacts of three previously identified discrete particles. The licensee is expected to share its evaluation, including proposed corrective actions, with the NRC when the review is complete.

Also during the inspection, ORISE conducted a technical review of the licensee's comments that were submitted to the NRC in response to the ORISE Report No. 1, Site-Specific Decommissioning Inspection Report, dated April 25, 2008. The licensee's comments were submitted to the NRC project manager by email dated February 26, 2009. The results of ORISE's technical review of the licensee's comments will be forwarded to the licensee under separate correspondence at a later date.

6.3 Conclusions

The licensee had conducted, or was in the process of conducting, the various quality control reviews stipulated in the LTP. Representatives from ORISE conducted confirmatory surveys on behalf of the NRC. The confirmatory surveys identified three discrete radioactive particles during the inspection. The licensee is expected to evaluate

the significance of the three particles as well as the previously identified discrete particles identified in previous inspections, and to share the results of the evaluation with the NRC when complete.

7 Exit Meeting Summary

The inspector presented the results of the inspection to members of licensee management at the exit meeting conducted on March 12, 2009. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspector.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Decker	Lead Final Status Survey Engineer
J. Field	Engineering Superintendent
W. Hawley	Dismantlement Superintendent
B. Jones	Principal Quality Engineer
M. Murdock	Senior Radiological Engineer, Decommissioning
S. Nichols	Radiological Health Supervisor
E. Ronningen	Superintendent, Rancho Seco Assets
D. Schelosky	Security Specialist
D. Tallman	Final Status Survey Engineer

INSPECTION PROCEDURES USED

36801 Organization, Management, and Cost Controls at Permanently Shutdown Reactors
37801 Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors
62801 Maintenance and Surveillance at Permanently Shutdown Reactors
71801 Decommissioning Performance and Status Review at Permanently Shutdown Reactors
83750 Occupational Radiation Exposure
83801 Inspection of Final Surveys at Permanently Shutdown Reactors
84750 Radioactive Waste Treatment, and Effluent and Environmental Monitoring

ITEMS OPENED AND CLOSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS AND ABBREVIATIONS

CFR	<i>Code of Federal Regulations</i>
CMRG	Commitment Management Review Group
IOSB	Interim Onsite Storage Building
LTP	License Termination Plan
mR/hr	millirems per hour
ORISE	Oak Ridge Institute for Science and Education
PDQ	Potential Deviation from Quality report
QA	quality assurance