



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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December 1, 2004

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 050-00312/04-004; 072-00011/04-004

Dear Mr. Shetler:

This report refers to NRC inspections conducted on October 5-6, 12, and 27-28, 2004, at your Rancho Seco Nuclear Generating Station. On November 3, 2004, a telephonic exit briefing was conducted with Mr. Steve Redeker, Manager, Plant Closure and Decommissioning.

The inspections included the heavy lifts of the "B" steam generator upper section, the collection of soil samples from beneath the spent fuel pool floor, and a review of the analysis for accidental explosion or rapid burning of natural gas at the Cosumnes Power Plant. The enclosed report presents the scope and results of the inspections. No violations of NRC requirements were identified.

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 any) will be made 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).

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

Sincerely,

/R.J. EVANS FOR RA/
D. Blair Spitzberg, Ph.D., Chief
Fuel Cycle and Decommissioning Branch

Sacramento Municipal Utility District

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Docket Nos.: 050-00312; 072-00011

License Nos.: DPR-54; SNM-2510

Enclosure:

NRC Inspection Report

050-00312/04-004; 072-00011/04-004

cc w/enclosure:

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- FCDB File

ADAMS: Yes No Initials: SPA
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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.: 050-00312; 072-00011

License Nos.: DPR-54; SNM-2510

Report No.: 050-00312/04-004; 072-00011/04-004

Licensee: Sacramento Municipal Utility District

Facility: Rancho Seco Nuclear Generating Station

Location: 14440 Twin Cities Road
Herald, California 95638

Dates: October 5-6, 12, 27-28, and November 3, 2004

Inspectors: Emilio M. Garcia, Health Physicist
Scott P. Atwater, Health Physicist

Approved By: D. Blair Spitzberg, Ph.D., Chief
Fuel Cycle and Decommissioning Branch

Attachment: Supplemental Information

ADAMS Entry : IR 05000312-04-004; 072-00011/04-004 on 10/05/04 -11/03/04;
Sacramento Municipal Utility District; Rancho Seco Nuclear
Generating Station; Decommissioning Report; No Violations.

EXECUTIVE SUMMARY

Rancho Seco Nuclear Generating Station
NRC Inspection Report 050-00312/04-004; 072-00011/04-004

During these inspections, the inspectors observed movement of the "B" steam generator upper section from its "D"-Ring enclosure to the transfer trailer and sampling of the soil beneath the spent fuel pool floor. The inspectors also reviewed the analysis for accidental explosion or rapid burning of natural gas at the Cosumnes Power Plant and its effect on the Rancho Seco Independent Spent Fuel Storage Installation (ISFSI).

Decommissioning Performance and Status Review

- The crane and rigging capacities, lifting heights, load travel paths, procedural controls, and personnel safety measures were appropriate for the segmented steam generator heavy lift evolutions. The work observed was being conducted in a safe and orderly manner consistent with generally accepted industrial rigging and crane practices (Section 1.2.a).
- The site characterization samples of the soil beneath the spent fuel pool floor were collected in accordance with site procedures, and sample integrity was maintained at all times. Preliminary results from the licensee gamma spectroscopy analysis indicated no radioactivity levels above background. A follow-up letter will be sent to the licensee once the sample results are received from the Oak Ridge Institute for Science and Education and are reviewed by the NRC (Section 1.2.b).

Operation of an ISFSI

- The inspectors concurred with the licensee's conclusion that the impact on the Rancho Seco ISFSI from an explosion or rapid burning of natural gas at the Cosumnes Power Plant or Gas Metering Station was bounded by the ISFSI design for tornado and flood events (Section 2.2).

Report Details

Summary of Facility Status

The Rancho Seco facility was undergoing active decommissioning with dismantlement work in progress in the auxiliary, reactor and spent fuel buildings and outdoor areas. The licensee had removed all 493 spent fuel assemblies from the spent fuel pool. Twenty-one canisters had been loaded with spent fuel and transferred to the Independent Spent Fuel Storage Installation (ISFSI). Most major components in the auxiliary building have been removed, packaged and shipped for disposal. In the reactor building, most of the major piping, the four reactor coolant pumps, the core flood tanks, the reactor vessel head, and the pressurizer had been removed, packaged and disposed. The "B" steam generator had been segmented into upper and lower sections. Two 24-inch lifting trunnions had been welded to the sides of the steam generator shell for lifting. In the fuel handling building, most of the spent fuel pool liner had been removed and released offsite. Borings had been made through the floor of the spent fuel pool for site characterization sampling of the soil below the pool floor.

1 Decommissioning Performance and Status Review (71801)

1.1 Inspection Scope

The licensee was segmenting the two steam generators into upper and lower sections, and removing the four resultant sections from the reactor building. Each section was a heavy load weighing approximately 300 tons. This inspection focused on crane and rigging capacities, lifting heights, load travel paths, procedural controls, and personnel safety measures.

The licensee was obtaining site characterization samples of the soil beneath the spent fuel pool floor. This inspection focused on the sampling methodology, integrity of samples and preliminary sample results.

1.2 Observations and Findings

a. Movement of the "B" Steam Generator Upper Section

Both steam generators were to be segmented into upper and lower sections. Each of the four resultant sections were to be removed from the reactor building, loaded onto a special rail car assembly and shipped to a disposal site. The licensee had obtained U.S. Department of Transportation Exemption, DOT-E 13338, which authorized the four steam generator sections, classified as surface contaminated objects class II (SCO-II), to be transported from the Rancho Seco station to a low level radioactive waste disposal site in Clive, Utah without specification packaging. The steam generator shells serve as the non-specification transportation packages and unique placarding was required. All four steam generator sections were to be shipped by exclusive use rail freight.

The licensee had contracted with Bigge Power Constructors to remove the four steam generator sections from the reactor building and load them onto special rail car assemblies. Each steam generator section weighed approximately 300 tons and the

reactor building polar crane girders, rails, and rail supports had a rated capacity of 700 tons. However, the crane trolley did not provide the required capacity nor lifting height, so it was not used. Instead, two steel towers were erected on top of the crane girders to provide the needed capacity and lifting height. The towers, link chains and lifting yoke had a rated capacity of 500 tons and the load was raised and lowered hydraulically.

The "B" steam generator upper section heavy lifts were conducted in accordance with Bigge drawing titled "Rigging Arrangement - Upper Shell Steam Generator Removal Project," dated September 3, 2004, and with Bigge drawing titled "General Arrangement - Upper Shell Removal," dated September 9, 2004. These two drawings provided the building and equipment arrangement, removal sequence, rigging, lift heights and travel paths. During the site visit of October 5-6, 2004, these drawings were reviewed for clarity and function. Since a load drop would not impact any spent fuel or safe shutdown equipment, NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," did not apply to these lifts. However, the BIGGE crane and rigging practices were consistent with the NUREG-0612 guidelines in terms of handling system design, load handling instructions and safe load paths.

During the site visit of October 12, 2004, a 110-percent load test was performed on the crane and rigging. Just prior to the final cut on the "B" steam generator shell, the lifting yoke was attached to the trunnions and 4700 psi of hydraulic pressure, the equivalent of a 330 ton load, was applied to the towers and lifting chains. The hydraulic pressure was then reduced to 4300 psi, the equivalent of 300 tons, and the final shell cuts were made. The upper section of the steam generator was then lifted slightly and a "diaper" was installed under the shell to catch any loose debris. The "B" steam generator upper section was then lifted over the D-Ring wall to near the center of the reactor building.

On October 13, 2004, the polar crane was rotated into alignment with the equipment hatch. The "B" steam generator upper section was then moved to the east and lowered onto a closure lid in front of the equipment hatch. From October 14-27, 2004, the closure lid was welded onto the open end of the steam generator section and a polymeric coating was applied to the exterior to encapsulate any remaining removable contamination.

During the site visit of October 27-28, 2004, the "B" steam generator upper section and welded closure lid were downended and loaded onto the Bigge 10 axle trailer. Preparations were begun for moving it out of the reactor building and onto a special rail car assembly for shipment to the disposal site.

The BIGGE craft supervisor directed all load movements through his lead rigger who executed the heavy lifts via radio contact with the crane operators on top of the crane. The evolution was performed at a methodical pace and in accordance with the BIGGE drawings. All personnel stayed clear of the load whenever it was suspended.

b. Characterization Sampling of Soil Beneath the Spent Fuel Pool

During the site visit of October 27-28, 2004, site characterization sampling of the soil beneath the spent fuel pool floor was observed. The sampling operation was performed in accordance with "Spent Fuel Pool Subsurface Soil Sampling General Instructions," dated September 27, 2004, and with "Survey Sample Instruction Package #SB8120070," Rev. 0.

Thirteen of the fifteen planned borings through the concrete in the spent fuel pool floor had been completed. In each hole, split spoon samples were to be taken at one meter increments down to a depth of 7 meters below the surface of the spent fuel pool floor. With this method, the samples were to be collected from the same ground stratum regardless of variations in spent fuel pool floor thickness. At the time of the inspection, three holes had been fully sampled and sampling was started in the fourth hole. The split spoon was approximately 3 inches in diameter, 1 meter in length and was driven into the earth using a pile driver. As it was extracted from the hole, the exterior was cleaned and the spoon was placed into a clean polyethylene bag labeled with sample date, time, and location. The sample spoon was then carried to the preparation area where it was opened. The center of the sample was collected into two scintillation vials, one for a split with the NRC. Care was taken to minimize the samples' exposure to air. The remainder of the bulk sample was sifted for rocks and collected into a clean container. A portion of the bulk sample was then transferred into a marinelli beaker for a gamma spectroscopy analysis by the licensee. Another portion of the bulk sample was transferred into a polyethylene container for a split with the NRC. Using this process, soil samples from the first four borings were split with the NRC. All four samples were extracted from the first meter of soil below the spent fuel pool floor.

Preliminary analysis results from the licensee's gamma spectroscopy analysis indicated no radioactivity levels above background. The NRC portion of the split samples were sent to the Oak Ridge Institute for Science and Education (ORISE). ORISE will analyze the four scintillation vial samples for volatile components such as carbon-14 and tritium and the four bulk samples for a gamma spectrum. A follow-up letter will be sent to the licensee once the ORISE results are received and reviewed by the NRC.

1.3 Conclusions

The crane and rigging capacities, lifting heights, load travel paths, procedural controls, and personnel safety measures were appropriate for the segmented steam generator heavy lift evolutions. The work observed was being conducted in a safe and orderly manner consistent with generally accepted industrial rigging and crane practices.

The site characterization samples of the soil beneath the spent fuel pool floor were collected in accordance with site procedures, and sample integrity was maintained at all times. Preliminary results from the licensee gamma spectroscopy analysis indicated no radioactivity levels above background. A follow-up letter will be sent to the licensee once the sample results are received from ORISE and are reviewed by the NRC.

2 Operation of an ISFSI (60855)

2.1 Inspection Scope

The inspectors reviewed the Rancho Seco Quality Surveillance Report 04-S-025 which contained the analysis of an accidental explosion or rapid burning of natural gas at the Consumnes Power Plant or Gas Metering Station.

2.2 Observations and Findings

The analysis was performed by a licensee contractor. It evaluated a worst case accidental explosion or rapid burning of natural gas at the new Cosumnes Power Plant or Gas Metering Station for potential impact on the existing ISFSI. The inspectors reviewed the analysis and found it to be comprehensive. The analysis concluded that the impact on the Rancho Seco ISFSI from this event was less severe than the tornado and flood events for which the ISFSI was designed.

2.3 Conclusions

The inspectors concurred with the licensee's conclusion that the impact on the Rancho Seco ISFSI from an explosion or rapid burning of natural gas at the Consumnes Power Plant or Gas Metering Station was bounded by the ISFSI design for tornado and flood events.

3 Exit Meeting Summary

A telephonic exit interview was conducted with Mr. Steve Redeker, Plant Manager, on November 3, 2004. The general scope and results of these inspections were discussed. The licensee did not identify as proprietary any information provided to or reviewed by the inspectors.

**ATTACHMENT
SUPPLEMENTAL INFORMATION**

PARTIAL LIST OF PERSONS CONTACTED

Sacramento Municipal Utility District

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D. Clark, Senior Mechanical Engineer
J. Delezenski, Quality Assurance/Licensing/Administration/Training Superintendent
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S. Porterfield, Supervisor Radiation Engineering Specialist
E. Ronningen, Principal Decommissioning Radiological Engineer
D. Russell, Rad Waste Handler
S. Redeker, Manager, Plant Closure and Decommissioning
J. Witte, Principal Mechanical Engineer

Bigge Power Constructors

T. Garcia, Craft Supervisor

INSPECTION PROCEDURES USED

IP 60855	Operation of an ISFSI
IP 71801	Decommissioning Performance and Status Review

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS

ISFSI	Independent Spent Fuel Storage Installation
ORISE	Oak Ridge Institute for Science and Education