UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-8064

March 21, 1997

Richard Ferreira, Assistant General Manager
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SUBJECT: NRC INSPECTION REPORT 50-312/97-01; 72-11/97-01

Dear Mr. Ferreira:

An NRC inspection was conducted February 24-27, 1997, at your Rancho Seco Nuclear Generating Station facility. The enclosed report presents the scope and results of that inspection.

The areas reviewed during this inspection included the planned work associated with the dismantlement of the turbine building, the radiological controls being implemented during the work activities, condition of the spent fuel pool, implementation of 10 CFR 50.65 maintenance rule requirements as applicable to your facility, safety evaluations completed since the last NRC inspection, review of plant procedures, and records and status of activities related to dry cask storage.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room (PDR).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

/s/ Blaine Murray for

Ross A. Scarano, Director
Division of Nuclear Material Safety

Docket No.: 50-312; 72-11
License No.: DPR-54

Enclosure:
NRC Inspection Report
50-312/97-01; 72-11/97-01

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.:	50-312;72-11
License No.:	DPR-54
Report No.:	50-312/97-01;72-11/97-01
Licensee:	Sacramento Municipal Utility District
Facility:	Rancho Seco Nuclear Generating Station
Location:	Rancho Seco Nuclear Generating Station 14440 Twin Cities Road Herald, California 95638-9799
Dates:	February 24-27, 1997
Inspectors:	J. V. Everett, RIV Health Physics Inspector R. F. Dudley, NRR Project Manager S. M.McDuffie, SFPO Project Manager
Approved By:	D. Blair Spitzberg, Ph. D., Chief Nuclear Materials Licensing Branch
Attachment:	Supplemental Information

EXECUTIVE SUMMARY

Rancho Seco Nuclear Generating Station
NRC Inspection Report 50-312/97-01;72-11/97-01

Rancho Seco has been shut down for approximately 8 years. During that time, the facility had been maintained in a SAFSTOR condition. The spent fuel has remained in the spent fuel pool awaiting completion of the Independent Spent Fuel Storage Installation (ISFSI), which will be used to store the fuel in large casks until the Department of Energy accepts fuel for long-term storage. Until the NRC licensing process for the casks to be used at Rancho Seco is completed, no movement of the fuel to the ISFSI will occur.

Rancho Seco recently initiated limited dismantlement work in selected portions of the Rancho Seco facility. This is a change from the SAFSTOR status that had been maintained over the past several years. Areas for dismantlement were selected based on low contamination levels, ease of removal, and ease of decontamination. Much of the material being removed will be recycled. The NRC was notified of the planned dismantlement work by Rancho Seco on January 29, 1997. The first area being dismantled is the turbine building. This inspection was conducted to verify that Rancho Seco's programs for implementing dismantlement activities safely were adequate for the planned work.

- The radiation protection program was reviewed to ensure that safe radiological protection practices were being implemented during the dismantling activities. The radiation safety program, procedures, and the training and experience of the assigned radiation protection technicians was adequate for the level of activity underway at the site (Section 1).

- The radiological environmental monitoring program provided for an adequate assessment of the environmental conditions around the Rancho Seco facility. Required reports to the NRC had been made and provided comprehensive information concerning the results of the environmental sampling and analysis program (Section 2).

- The spent fuel pool water chemistry, water level, and temperature were found to be in compliance with technical specifications (Section 3).

- Acceptable programs were being implemented to ensure that facility modifications, procedure changes, tests, and experiments were properly evaluated for compliance with NRC regulations in 10 CFR 50.59 and 10 CFR 72.48 and that no unreviewed safety questions were involved with such activities (Section 4).

- Rancho Seco had concluded that the spent fuel pool cooling system met the maintenance rule criteria of 10 CFR 50.65(a)(2) because of its high reliability and minimal down time based on several years of operational experience, that a failure of the system had low safety significance, and that the current preventive maintenance program had been shown to be effective in maintaining the system operable (Section 5).

- Plans for loading spent fuel into the Independent Spent Fuel Storage Installation had been deferred as a result of delays in the NRC certification process for the Vectra MP-187 transport cask under 10 CFR Part 71. Rancho Seco's current schedule showed the first fuel load occurring in September 1998 (Section 6).

- Procedures, manuals, plans, and programs reviewed during this inspection were found to be current and properly maintained. Adequate radiological procedures were in place to support the planned decommissioning activities (Section 7).

Report Details

Summary of Plant Status

The Rancho Seco facility was shutdown in 1989 and placed in a SAFSTOR condition. On January 29, 1997, Rancho Seco informed the NRC of plans to begin dismantlement, decontamination, and radioactive waste disposal of selected secondary systems and components of the plant. During this inspection, work was underway removing various vessels and piping from the ground floor level of the turbine building. The two systems involved with this initial dismantlement activity were the condensate system polishers and the dehumidifier system. These systems were, for the most part, not contaminated. However, due to the cross connection between the turbine plant cooling water system and the component cooling water system, minor levels of contamination had been found in the turbine building systems.

Rancho Seco conducted two public meetings to discuss the planned move from SAFSTOR to incremental decommissioning. The first meeting was held in Galt, California, on November 27, 1996. The second meeting was held at the Sacramento Municipal Utility District headquarters in Sacramento on December 3, 1996. Rancho Seco announced the meetings in the local papers and sent out over 75 invitations to various local and government agencies. Public attendance at the meetings, however, was small, and no significant comments were received.

The dry cask storage program at Rancho Seco was temporarily on hold. This program will involve the transfer of spent fuel elements from the spent fuel pool to the ISFSI located on the Sacramento Municipal Utility District property adjacent to the Rancho Seco reactor site. The ISFSI uses the Vectra NUHOMS storage system. The ISFSI construction was completed, and the 22 NUHOMS concrete modules were in place. The canisters, which hold the fuel elements had not been constructed due to delays in receiving the 10 CFR Part 71 transportation certificate. Once the outstanding technical issues are resolved, Rancho Seco will submit a revised Safety Analysis Report for the 10 CFR Part 72 storage application, incorporating the modified canister design.

1 Health Physics (83100)

1.1 Inspection Scope

The recent change from a SAFSTOR condition to incremental decommissioning at the Rancho Seco site requires a higher level of implementation of the radiological safety program. This inspection reviewed the current status of the radiological safety program to ensure that program elements were in place and being properly implemented to ensure that safe radiological protection practices were conducted during new work activities. Even though radiation levels and contamination levels were expected to be minor, the Rancho Seco program must still be capable of dealing with unexpected high levels of contamination or radiation exposure, should a problem occur

1.2 Observation and Findings

The dismantlement activities underway at Rancho Seco and planned for the future involved the removal of systems and components no longer needed, such as heat exchangers, vessels, large diameter piping, and support structures. The work underway during this inspection involved the removal of the condensate system polishers and the dehumidifier system in the turbine building. The condensate system polishers included eight ion exchangers and associated piping and structural supports. Only one contaminated spot was found on the condensate system polisher system which will require decontamination prior to release. No contamination was found on the dehumidifier system.

Characterization surveys of the turbine building verified that most of the systems were not contaminated. However, due to the cross connection that existed between the turbine plant cooling water system and the component cooling water system when the plant was operating, there had been small levels of contamination found at several locations within the turbine building piping. The highest reading encountered was 1 mR\hr with a pancake probe reading of 1200 counts/minute. Rancho Seco plans to recycle all metal found uncontaminated or that can be decontaminated.

The contamination in the turbine building was primarily cesium, cobalt, and tritium. Rancho Seco procedures established criteria for release of radioactive material as 1,000 disintegrations/minute beta-gamma per 100 cm^2 for loose contamination and 100 counts/minute beta-gamma for fixed contamination above background using a pancake probe. Limits for alpha contamination were established as 20 disintegrations/minute per 100 cm^2. The Rancho Seco limits were consistent with Regulatory Guide 1.86, "Termination of Operating License for Operating Reactors," and IE Circular No. 81-07, "Control of Radioactively Contaminated Material."

The work being performed in the turbine building was being conducted under Radiation Work Permit 97-13, "Dismantlement, Survey, and Decon of the Secondary System," dated January 27, 1997. Approximately 800 hours had been completed under this radiation work permit with a resulting total exposure of 22 millirem. The inspectors toured the turbine building and observed work in progress. All workers appeared to be performing their work safely. The radiation protection technicians responsible for the final survey of material before it was placed in the scrap bin for removal from the site and eventual recycling were observed performing the free release surveys. Both direct readings with a pancake probe and smear surveys were conducted. The individuals were being careful to ensure all possible areas of the materials being removed were being surveyed. Upon completion of the surveys and prior to final removal of the scrap bin from the site, Rancho Seco procedures required a general survey of the scrap bin using a micro-R meter to ensure that no radioactive material had been inadvertently placed in the bin. For any material found to be contaminated which could not be decontaminated, Rancho Seco planned to eventually ship the contaminated material to an authorized burial site.

The training and experience of the radiation protection technicians were reviewed with the radiation protection/chemistry superintendent. Both technicians had worked previously at

Rancho Seco. The technicians had received considerable on-the-job training at Rancho Seco on procedures, standard practices, free release limits, requirements for inaccessible surfaces, and record keeping. During observation of their work while conducting the free release surveys, the technicians appeared to be well qualified and capable of implementing the radiation safety program.

A review was completed to verify that adequate procedures had been developed for the various work activities that may occur on site. A list of the procedures reviewed is included in Attachment 2. The number and level of detail of procedures appeared adequate for the work planned.

Trended data was developed quarterly and analyzed by Rancho Seco to verify that plant radiological conditions were stable or improving. The trended data from 16 data sets for the first part of 1997 were reviewed. The highest general area radiation levels for the data reviewed was 10 mR/hr. There were hot spots noted in several rooms where contact readings exceeded 1 R/hr. These included the condensate filter room, cooler room, decay heat pump room, high pressure injection pump room, and miscellaneous waste concentrate room.

1.3 Conclusion

The radiation protection program was reviewed to ensure that safe radiological protection practices were being implemented during the dismantling activities. The radiation safety program, procedures, and the training and experience of the assigned radiation protection technicians was adequate for the level of activity underway at the site.

2 Radiological Environmental Monitoring Program (84750)

2.1 Inspection Scope

Technical Specifications D6.8 and D6.9 require a radiological environmental program to be established that monitors radiological conditions around the Rancho Seco facility and provides for annual reporting to the NRC. The inspectors reviewed selected portions of the environmental programs required by the Technical Specifications.

2.2 Observation and Findings

The Radiological Environmental Monitoring Program, Revision 9, dated January 21, 1997, was reviewed. This document provided the basis for the radiological environmental monitoring program and included information on exposure pathways, land use census out to 2 miles from the site, types of samples collected, and sampling locations. Potential pathways that were sampled included air, runoff water from the site, surface water in the nearby creeks and the Rancho Seco reservoir, groundwater from two wells, drinking water from two sources, mud and silt, and fish from nearby Clay creek. Thermoluminescent dosimeters were placed at locations around the site. Garden vegetables were collected

semiannually. The analysis of samples included the isotopes manganese-54, cobalt-60, zinc-65, cesium-134, cesium-137, and gross beta.

The 1995 annual Radiological Environmental Operating Report was reviewed. The results of the 1995 radiological environmental monitoring program showed that operations at the Rancho Seco facility had resulted in no significant radiological impact to the environment. The report covered atmospheric, terrestrial, and aquatic environments adjacent to Rancho Seco.

A review of the 1995 land use census around Rancho Seco indicated that no changes in the use of land in the unrestricted areas had occurred that would require modification to the Radiological Environmental Monitoring Program for evaluating doses to individuals from principal pathways of exposure. For gaseous pathways, there were no detectable noble gases released from the site. The maximum potential annual organ dose commitment due to releases of tritium and particulate isotopes was calculated to be less than 0.2 mrem. For liquid pathways, waste water had been released from the on-site retention basin into the creek. The annual committed organ dose through this liquid pathway was calculated to be less than 1.0 mrem.

There were 34 sites which were monitored by thermoluminescent dosimeters within a 10-mile radius of the Rancho Seco facility. This included thermoluminescent dosimeters at the industrial area boundary, near the property boundary, several nearby residents, and several locations beyond the 5 miles from the plant.

The 1996 annual Radiological Effluent Release Report was also reviewed. This report provided information concerning gaseous and liquid releases from the Rancho Seco facility for 1996. There were no unplanned releases from the facility in 1996. Operational releases for airborne effluents included only tritium, which was less than 1 percent of the calculated maximum organ dose limit for Rancho Seco. Direct radiation levels measured at the site boundary were background. Several batch liquid releases from the site occurred during 1996. Isotopes detected in these releases included tritium, cobalt-60, strontium-89, and cesium-137. The calculated maximum total body dose and organ dose from these releases was less than 1 percent of the annual limit for Rancho Seco.

2.3 Conclusion

The radiological environmental monitoring program provided for an adequate assessment of the environmental conditions around the facility. Required reports to the NRC had been made and provided comprehensive information concerning the results of the environmental sampling and analysis program.

3 Spent Fuel Pool (86700)

3.1 Inspection Scope

Technical Specification D3.4 establishes specific requirements for pool water chemistry, water level, and temperature. This inspection reviewed these parameters to verify compliance with the technical specifications.

3.2 Observations and Findings

Technical Specification D3/4.1 required the water level in the spent fuel pool to be maintained at 23 feet 3 inches or greater. Temperature was required to be maintained below 140 degrees Fahrenheit per Technical Specification D3/4.2. Selected daily surveillance records were reviewed between November 1996 and February 1997. Spent fuel pool water level was maintained at approximately 38 feet 6 inches. Water temperature was maintained below 65 degree Fahrenheit. Chloride and fluoride levels were required by Technical Specification D3/4.5 to be maintained below 0.15 parts per million (ppm). The monthly surveillance records for the period between February 1996 and February 1997 were reviewed. Fluoride and chloride levels were typically maintained at 0.01 ppm with the highest levels noted to have been 0.05 ppm.

3.3 Conclusion

The spent fuel pool water chemistry, water level, and temperature were found to be in compliance with Technical Specifications.

4 10 CFR 50.59 Safety Evaluation Program (37001)

4.1 Inspection Scope

The licensee is required to maintain a functional safety review program that controls facility design changes, modifications, procedure changes, tests and experiments. The requirements of this program are specified in 10 CFR 50.59. In addition, changes which affect the dry cask storage program being licensed under 10 CFR Part 72 have equivalent review requirements specified in 10 CFR 72.48. This inspection reviewed selected safety evaluations that had been completed since the last inspection review in September 1996.

4.2 Observations and Findings

10 CFR 50.59 and 10 CFR 72.48 allow licensees to make changes to the Part 50 reactor and the Part 72 ISFSI programs and facilities, provided that the changes do not involve an unreviewed safety question. A review was completed of 11 summaries of 10 CFR 50.59 and 10 CFR 72.48 determinations completed by the licensee during the period from September 1996 until February 1997. Four of these evaluations, as listed below, were selected for detailed review:

(1) DCP R94-0002, Combine the functions of the Interim Data Acquisition and Display System computer, Bailey computer, radiation monitor computer, and the annunciator windows into the Plant Integrated Computer System personal computer system

(2) STP 1339, Revision 0, Plant Integrated Computer System Test"

(3) DCP R91-0001AC 50.59, Revision 2, "Horizontal Storage Module Temperature Monitoring System"

(4) Incremental Decommissioning Action Plan

For safety reviews Nos. 1 through 3 above, determinations made by the licensee were adequate and clearly in compliance with applicable NRC regulations.

For safety review No. 4 above, the licensee determined that potential accidents during incremental decommissioning activities were bounded by the accidents discussed in the licensee's NRC-approved Decommissioning Plan. The licensee considered the approved Decommissioning Plan to be a licensing basis document and thus concluded that the planned dismantlement activities did not involve an unreviewed safety concern.

10 CFR 50.59 states, in part, that an unreviewed safety issue exists when the probability or consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased or the possibility of an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report may be created. The current Defueled Safety Analysis Report for the Rancho Seco facility analyzed only two accidents. These were loss of off-site power and dropping of a spent fuel assembly. The Rancho Seco Decommissioning Plan considered accidents which could occur during decommissioning work activities and referenced the safety analysis completed in NUREG/CR-0130 entitled, "Technology, Safety, and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station." In particular, NUREG/CR-0130 analyzed a number of decommissioning related accidents in Chapter 11 and Appendix J. The licensee considered the accidents addressed or referenced in the NRC-approved Decommissioning Plan to be part of the current licensing basis of the facility and thus to be included in the Safety Analysis Report. Followup on this issue will be referred to NRC Headquarters staff who will determine the proper interpretation of this regulation in accordance with the recently revised decommissioning regulations. It is important to note that no apparent safety issues or concerns were observed during the inspection of the incremental decommissioning activities being undertaken by the licensee. This issue will be tracked as Unresolved Item 50-312/9701-01.

4.3 Conclusion

Acceptable programs were being implemented to ensure that facility modifications, procedure changes, tests, and experiments were properly evaluated for compliance with

NRC regulations in 10 CFR 50.59 and 10 CFR 72.48 and that no unreviewed safety questions were involved with such activities.

5 Maintenance Rule (62707)

5.1 Inspection Scope

For a nuclear power plant that has permanently ceased operations, the maintenance rule in 10 CFR 50.65 applies to structures, systems, and components associated with the storage, control, and maintenance of the spent fuel. This inspection included a review of the implementation of the maintenance rule at Rancho Seco related to the spent fuel pool.

5.2 Observations and Findings

Rancho Seco had not established a separate and special program specific to the implementation of the new maintenance rule in 10 CFR 50.65. Compliance with the requirements of the maintenance rule were factored into the existing programs. For a facility like Rancho Seco, which has ceased operations, the maintenance rule only applies to the systems, structures, and components associated with the storage, control, and maintenance of spent fuel in a safe condition. Rancho Seco's spent fuel is over 8 years old and has decayed significantly. Plans are to move the spent fuel into the ISFSI as soon as licensing of the Vectra NUHOMS dry cask storage system is completed.

The current maintenance and operations programs at Rancho Seco did not establish special provisions to implement the new maintenance rule. Rancho Seco has taken credit for the reliability of their systems associated with the spent fuel pool and base their current position on the provisions of 10 CFR 50.65(a)(2) which states, "Monitoring as specified in paragraph (a)(1) of this section is not required where it has been demonstrated that the performance or condition of a structure, system, or component is being effectively controlled through the performance of appropriate preventive maintenance, such that the structures, systems, and components remain capable of performing its intended function." The Section (a)(1) referenced in the above statement requires that special goals and corrective actions be established for structures, systems, and components that are not adequately meeting their intended functions.

Rancho Seco Procedure B-10, "List of Operable/Functional Required Systems," Revision 14, dated February 28, 1997, provided a list of 44 systems that were maintained operable and functional at the site. This procedure listed all systems that must be maintained operable and functional to either meet an NRC requirement or that are necessary to carry on daily functions at the site. The systems listed in Procedure B-10 included spent fuel pool cooling, auxiliary building exhaust, component cooling water, and numerous other systems such as power sources, radiation monitoring, ventilation systems, and cranes. Operational procedures for the spent fuel pool cooling system and auxiliary building exhaust system were provided in the A-series procedures. The A-series procedures provided valve and breaker positions for the systems when placed in various

configurations. Procedure A.21 covered the spent fuel pool cooling system. Procedure A.14.B described the auxiliary building ventilation system.

In addition to the A-series procedures, the B.10.1 through B.10.31 procedures provided information for the systems that are currently in lay-up. These procedures provided valve and breaker positions which isolate the inactive systems from the active systems. Examples of systems covered in Procedures B.10.1 through B.10.31 included auxiliary feedwater, core flooding, reactor sampling system, lube oil system, and decay heat system.

This inspection focused on the two primary systems associated directly with maintaining cooling of the spent fuel pool. The spent fuel pool cooling system was identified as the primary system with the auxiliary building ventilation system considered as the backup system. Both systems were included in Rancho Seco Procedure B-10, "List of Operable/Functional Required Systems."

The spent fuel pool cooling system was a single loop system. The system was considered operable as long as the system was able to maintain spent fuel pool water temperature below Technical Specification limits. Heat from the spent fuel pool cooling system was transferred to the component cooling water system through a heat exchanger. Over the past several years, the spent fuel pool cooling system had been an extremely reliable system with minimal maintenance problems. The only down time associated with the system had been due to the periodic preventive maintenance activities and replacement of seals on the demineralizer pumps. Seal replacements took approximately 1 day. The system was surveillance tested every 6 months to confirm operability.

Failure of the spent fuel pool cooling system would result in the spent fuel heating the water in the spent fuel pool. Technical Specification D3/4.2 requires that the spent fuel pool water temperature be maintained to less than 140 degree Fahrenheit. Typically, the spent fuel pool water temperature had been maintained at 60-70 degree Fahrenheit. Rancho Seco had analyzed the loss of spent fuel pool cooling using the computer code ORIGEN. The ORIGEN computer code provided calculations for decay heat output based specifically on the Rancho Seco fuel and the length of time since removal from the reactor. Based on these calculations, Rancho Seco predicted that as of February 1992, it would take 28 days for the spent fuel pool water to increase from 70 degree Fahrenheit to 140 degree Fahrenheit if the spent fuel pool cooling system failed and the auxiliary building exhaust system was relied upon to maintain air flow to prevent heat buildup in the building. Rancho Seco also predicted that by July 1993, the spent fuel pool cooling system could be lost indefinitely without the spent fuel pool water temperature exceeding the Technical Specification limit of 140 degree Fahrenheit as long as the auxiliary building ventilation system continued to operate at its normal volume of 10,500 cubic feet per minute. In 1989 and 1991, Rancho Seco conducted two tests to verify the water temperature heatup calculations obtained from the ORIGEN code. The heatup rate over a period of several days was tracked and compared with the computer code. Very good correlation between predicted and actual values was observed based on plotting the data on graphs.

The most recent analysis conducted by Rancho Seco showed that by September 1996, the spent fuel pool would reach a maximum temperature of 133 degrees Fahrenheit if the spent fuel pool cooling system failed. This assumed the auxiliary building exhaust system remained operational. The increase in temperature from 70 degrees Fahrenheit to 133 degrees Fahrenheit would take 814 hours (approximately 34 days).

Heat removal by evaporative heat loss is an exponential function of temperature. As temperature decreases, the loss due to the evaporative process decreases significantly. By the end of 1996, analysis indicated that the evaporative heat loss process for the Rancho Seco spent fuel pool did not significantly exceed the convection heat loss process through the spent fuel pool structural walls. If this prediction is correct, failure of both the spent fuel pool cooling system and the auxiliary building ventilation system may be compensated by simply placing large temporary fans in the auxiliary building doorways and ventilating the auxiliary building to reduce heat buildup inside the building.

5.3 Conclusion

Rancho Seco had concluded that the spent fuel pool cooling system met the maintenance rule criteria of 10 CFR 50.65(a)(2) because of its high reliability and minimal down time based on several years of operational experience, that a failure of the system had low safety significance, and that the current preventive maintenance program had been shown to be effective in maintaining the system operable.

6 Independent Spent Fuel Storage Installation (60854)

6.1 Inspection Scope

Rancho Seco plans to move the spent fuel currently stored in the spent fuel pool to an on-site ISFSI. This inspection reviewed the activities and progress of the ISFSI since the previous inspection.

6.2 Observation and Findings

Rancho Seco had contracted with Vectra Technologies, Inc., to provide a combined storage and transportation cask design for use at the Rancho Seco ISFSI until the U.S. Department of Energy takes title to the fuel. The facility design is a variation on Vectra's Standardized NUHOMS storage system. The fuel will be placed in steel canisters. The canisters will be welded shut and transferred to concrete horizontal storage modules for storage at the ISFSI. The steel canisters will be transported to the ISFSI in an overpack. Vectra is pursuing certification of the canister-overpack combination, known as the MP-187 transport cask, for spent fuel transport under 10 CFR Part 71. This will allow future transport of the canisters off site without repackaging the spent fuel. As part of the 10 CFR Part 72 site-specific license for the ISFSI, the canister overpack will be certified to store a canister in a vertical orientation in case a canister develops a leak while in a horizontal storage module. This is necessary for accident recovery, as the canisters will

not be able to return to the spent fuel pool once all fuel is transferred to dry storage and the pool is decommissioned.

All 22 horizontal storage modules planned for the Rancho Seco ISFSI were in place on the concrete ISFSI pad, approximately 300 meters west of the western cooling tower. A road had been paved between the spent fuel building and the ISFSI and electrical systems and television monitoring cameras had been installed at the ISFSI pad. The microwave anti-intrusion system was in place and ready for testing. The inspectors examined the modules and the underlying concrete pad, including the location of a superficial crack, which had since been repaired, that formed during delivery of the third horizontal storage module. The transfer trailer, hydraulic ram, truck, and vacuum dryer were located on site. The welding equipment previously on site had been temporarily transferred to another nuclear facility employing the NUHOMS system. Appropriate staff had been trained to maneuver the transfer trailer and truck. Annual requalification training was forthcoming.

Despite the apparent readiness, Rancho Seco was more than a year away from loading fuel into canisters due to several unresolved technical issues with the canister and overpack designs. Two major issues dealt with the thickness of the lead shielding between the inner and outer steel shells of the overpack and the potential for hydrogen generation in the canister. The dry cask storage industry was alerted to the hazard of hydrogen generation by coatings in spent fuel canisters by the Point Beach hydrogen ignition on May 28, 1996. After this event, Vectra realized that the Rancho Seco canister design posed a risk for hydrogen generation. This was due to hydrogen off-gassing from a neutron poison in the canister known as boral and the flame-sprayed aluminum used on the 26 spacer discs in the Rancho Seco design. Although flame-sprayed aluminum generated less hydrogen than the carbo-zinc 11 coating used in the VSC-24 cask of Point Beach, there is more coated area in the Rancho Seco design. Rancho Seco and Vectra were exploring three options to resolve the issue of hydrogen generation from the coating.

Vectra plans to address all outstanding MP-187 cask design issues and submit a revised safety analysis report on the cask to the NRC by the summer of 1997. Assuming that no major technical problems will be identified during this review, Rancho Seco plans to provide the NRC with a revised safety analysis report for the 10 CFR Part 72 license approximately 60 days later. This revised safety analysis report will include the necessary analyses to use the MP-187 overpack as a vertical storage cask to provide a recovery mechanism in the event of a canister leak. In addition, Rancho Seco and Vectra plan to request a meeting with the NRC staff approximately 60 days after submission of the 10 CFR Part 71 safety analysis report to discuss preliminary results of their review.

The Rancho Seco facility did not have a single failure-proof crane for moving casks from the spent fuel pool to the transfer trailer. Rancho Seco had not ruled out purchasing such a crane. As an alternative, impact limiters for the cask loading pit and several locations between the pool and the trailer were being designed to protect structures from damage should the cask be dropped. During the transfer from the spent fuel pool to the trailer, Rancho Seco had adopted a policy of adhering to both 10 CFR Part 50 and Part 72

requirements, wherever applicable. If the two regulations were inconsistent, then Rancho Seco planned to adopt the more conservative requirement.

Not all ISFSI operating procedures had been completed. Procedures had been developed to the extent possible, but some remained incomplete pending issuance of the final Technical Specifications that will accompany the 10 CFR Part 72 license. In the near term, some spent fuel handling and storage procedures may not be completely divorced from 10 CFR Part 50 requirements. Rancho Seco plans to maintain the 10 CFR Part 50 license until 2012. If DOE has not removed the spent fuel from the ISFSI when Rancho Seco wishes to terminate their 10 CFR Part 50 license, then the 10 CFR Part 72 license will be amended, if necessary, to encompass all remaining site procedures and programs.

6.3 Conclusion

Plans for loading spent fuel into the ISFSI had been deferred as a result of delays in Vectra gaining NRC certification for the MP-187 transport cask under 10 CFR Part 71. Rancho Seco's current schedule showed the first fuel load occurring in September 1998.

7 Procedures and Records (39701/42700/61700)

7.1 Inspection Scope

Technical Specification D6.8 requires that certain plans, procedures, manuals, and programs be maintained by Rancho Seco. This inspection included verification of selected documents to ensure that the requirement of Technical Specification D6.8 was being met.

7.2 Observation and Findings

With Rancho Seco's recent decision to initiate incremental decommissioning, this inspection reviewed a number of selected documents to ensure that the procedures and programs were current and being maintained. A random selection of various documents were reviewed in the Rancho Seco library to confirm that updates were being generated and were being incorporated into the controlled copies of the documents. Particular attention was directed toward documents related to the radiological protection programs. Attachment 2 to this inspection report provides a list of the documents that were reviewed. No discrepancies were found during the review.

7.3 Conclusion

Procedures, manuals, plans and programs reviewed during this inspection were found to be current and properly maintained. Adequate radiological procedures were in place to support the planned decommissioning activities.

8 Followup (92701)

8.1 (Open) Inspection Follow-up Item 50-312/9603-01: Incorporation of the new 49 CFR requirements into the radwaste shipping procedures. Procedure RP 309.I.08 entitled, "Radioactive Waste Shipment," had not been revised. Rancho Seco is in the process of selecting a burial site. Once a burial site is selected and a contract is in place, Rancho Seco will incorporate the burial site's license requirements into this procedure. For the interim, radwaste will be stored on site in the interim on-site storage building until it can be shipped off site.

ATTACHMENT 1

PARTIAL LIST OF PERSONS CONTACTED

J. Delezenski, QA/Licensing/Administrative Superintendent
J. Field, Technical Services Superintendent
D. Gardner, Incremental Decommissioning Team Leader
R. Lawrence, Principle Mechanical Engineer
R. Mannheimer, Licensing Engineer
K. Miller, Project Manager, ISFSI
S. Nicolls, Radiation Health Supervisor
S. Redeker, Plant Manager
J. Roberts, Maintenance Superintendent
T. Tucker, Operations Superintendent
B. Wilson, Radiation Protection/Chemistry Superintendent
N. Zimmerman, Engineering Technician

INSPECTION PROCEDURES USED

37001	10 CFR 50.59 Safety Evaluation Program
39701	Records Program
42700	Plant Procedures
60854	Preoperational Testing of an ISFSI
61700	Surveillance Procedures and Records
62707	Maintenance Observations
83100	Occupational Exposure During SAFSTOR and DECON
84750	Radioactive Waste Treatment, Effluent, and Environmental Monitoring
86700	Spent Fuel Pool Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-312/9701-01	URI	Use of the Decommissioning Plan to meet 10 CFR 50.59 safety evaluation review criteria

Discussed

50-312/9603-01	IFI	Incorporation of the new 49 CFR requirements into the radwaste shipping procedures

LIST OF ACRONYMS

CFR	Code of Federal Regulations
ISFSI	Independent Spent Fuel Storage Installation
mR	milliRoentgen
NRC	Nuclear Regulatory Commission
ppm	parts per million
SMUD	Sacramento Municipal Utility District

ATTACHMENT 2

LIST OF DOCUMENTS REVIEWED

Radiation Protection Plan and Procedures

RP 305	"Radiation Protection Plan," Revision 4, dated 3/21/94
RP 305.04	"Radiation Work Permits," Revision 5, dated 6/27/95
RP 305.07	"Area Definitions, Postings, and Requirements," Revision 5, dated 1/1/94
RP 305.08A	"Routine and RWP Surveys," Revision 4, dated 10/31/96
RP 305.08C	"Airborne Radioactive Surveys," Revision 1, dated 1/1/94
RP 305.08D	"Quarterly Radiation Trending Surveys," Revision 1, dated 2/22/96
RP 305.09	"Contamination Limits and Control for Plant Surfaces," Revision 4, dated 1/30/96
RP 305.09A	"Removal of Tools and Equipment from Controlled Area, Revision 4, dated 11/14/96
RP 305.09B	"Personnel Contamination Monitoring," Revision 3, dated 12/12/95
RP 305.09C	"Decontamination Procedures," Revision 1, dated 5/23/88
RP 305.09D	"Personnel and Clothing Decontamination and Reports," Revision 4, dated 1/16/96
RP 305.09E	"Hot Particle Controls," Revision 2, dated 3/14/96
RP 305.11	"Radioactive Material Handling," Revision 3, dated 3/14/96
RP 305.16	"Radioactive Material Receipt," Revision 3, dated 3/25/96
RP 305.17	"Radiation Protection Internal Inspections," Revision 3, dated 1/11/96
RP 305.22	"Department Training and Qualifications," Revision 2, dated 4/29/93
RP 305.36	"Radiation Protection Occurrence Reporting," Revision 3, dated 3/21/90
RP 305.38	"DAC-Hrs Calculations," Revision 1, dated 1/1/94
RP 305.39	"Radiological Characterization Surveys," Revision 0, dated 8/4/92
RP 305.40	"Radiation protection Responder Instructions," Revision 1, dated 7/28/94

Radiation Work Permits

Note: All RWPs are dated 1/1/97 unless otherwise noted.

RWP 97-01	RP	"Routine Tasks and Job Coverage"
RWP 97-02		"Walkthrough Inspections in Radiologically Controlled Areas"
RWP 97-03		"General Housekeeping and Decon of Areas, Tools, and Equipment"
RWP 97-04		"Operations Department Routine Tasks
RWP 97-05		"Security Surveillance and Response in the RCA"
RWP 97-06		"Routine Maintenance"
RWP 97-07		"Radiation Protection Routine Tasks and Job Coverage"
RWP 97-08		"Operations Department Routine Functions, Valve Lineup, and Inspections"
RWP 97-09		"General Housekeeping and Minor Decon and Maintenance"
RWP 97-10		"Radioactive Material Transfer, Storage, Inventory, and Shipping"
RWP 97-11		"Off-site Fire/Emergency Response"
RWP 97-12		"Entry into RCA without a TLD"
RWP 97-13		"Dismantlement, Survey, and Decon of Secondary System," dated 1/27/97
RWP 97-14		"Tank Farm-Replace Mechanical Seal," dated 2/10/97
RWP 97-101		"Movement of Spent Fuel and Irradiated Components in SFP"
RWP 97-102		"Remove, Inspect, Repair Non-irradiated Tools in SFP"

Safety Evaluation Reviews

(1) DCP R94-0002, Combine the functions of the Interim Data Acquisition and Display System computer, Bailey computer, radiation monitor computer, and the annunciator windows into the Plant Integrated Computer System (PICS) personal computer system.

(2) STP 1339, Revision 0, "Plant Integrated Computer System Test"

(3) DCP R91-0001AC 50.59, Revision 2, "Horizontal Storage Module Temperature Monitoring System"

(4) Incremental Decommissioning Action Plan Safety Review

Other Programs

Radiological Environmental Monitoring Program (REMP), Revision 9, dated 1/27/97

Addendum to the Annual Radiological Effluent Release Report for 1995

Annual Radiological Effluent Release Report for 1996

Annual Radiological Environmental Operating Report for 1995

Offsite Dose Calculation Manual (CAP-0002), Revision 7, dated 9/7/95

Fire Protection Plan, dated 7/15/95

Quality Manual, dated 7/31/95

Process Control Program, dated 8/9/93

Radwaste Control Manual, dated 1/21/97

Procedure D.6.13, "Process Control Program," Revision 1, dated 8/9/93

Procedure B-10, "List of Operable/Functional Required Systems," Revision 14, dated 2/28/97