



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV

611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-8064

September 27, 1996

Richard Ferreira, Assistant General Manager,  
Energy Supply and Chief Engineer  
Sacramento Municipal Utility District  
6201 'S' Street  
Sacramento, California 95852

SUBJECT: NRC INSPECTION REPORT 50-312/96-03;72-11/96-01

Dear Mr. Ferreira:

An NRC inspection was conducted September 9-12, 1996, at your Rancho Seco nuclear reactor facility. The enclosed report presents the scope and results of that inspection.

The inspection covered the activities associated with the continued effort to maintain the facility in a SAFSTOR condition and the preparations for the eventual movement of the reactor spent fuel to the Independent Spent Fuel Storage Installation (ISFSI). Specifically, the areas examined during this inspection included Technical Specification compliance for the spent fuel pool and radiological protection program, implementation of the new 49 CFR requirements for shipping radioactive material, the 10 CFR 50.59 safety evaluation process for making changes to facilities and programs, preoperational activities associated with the dry cask storage program, and followup of Licensee Event Report (LER) 96-01 related to the movement of spent fuel without a certified fuel handler present.

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,

A handwritten signature in black ink, appearing to read "Ross A. Scarano".

Ross A. Scarano, Director  
Division of Nuclear Material Safety

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

Enclosure:

NRC Inspection Report  
50-312/96-03; 72-11/96-01

cc w/enclosure:  
Jan Schori, General Manager  
Sacramento Municipal Utility District  
6201 'S' Street  
P.O. Box 15830  
Sacramento, California 95852

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

Jerry Delezinski, Licensing Supervisor  
Sacramento Municipal Utility District  
Rancho Seco Nuclear Generating Station  
14440 Twin Cities Road  
Herald, California 95638-9799

Robert B. Borsum, Licensing Representative  
B & W Nuclear Technologies  
Nuclear Power Division  
1700 Rockville Pike - Suite 525  
Rockville, Maryland 20852

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

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

Charles Bechhoefer, Chairman  
Atomic Safety and Licensing  
Board Panel  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

---

Richard F. Cole, Atomic Safety and  
Licensing Board Panel  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Thomas D. Murphy, Atomic Safety and  
Licensing Board Panel  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Ms. Helen Hubbard  
P.O. Box 63  
Sunol, California 94586

Dana Appling, General Counsel  
Sacramento Municipal Utility District  
6201 'S' Street  
P.O. Box 15830  
Sacramento, California 95852

James P. McGranery, Jr., Esq.  
Dow, Lohnes & Albertson  
Attorneys At Law  
Suite 500  
1255 Twenty-Third Street, N.W.  
Washington, D.C. 20037-1194

Mr. Steve Shu  
Radiologic Health Branch  
State Department of Health Services  
P.O. Box 942732  
Sacramento, California 94234

bcc to DMB (IE01)

bcc distrib. by RIV:

- LJCallan, RA
- Dweiss, OC/LFDCB (4503)
- \*CLCain, DNMS/TA
- SSBajwa, NRR/DOPS/ONDD (11B20)
- RFDudley, NRR/DOPS/ONDD (11B20)
- GHMarcus, NRR/DRPW/PD111-3 (13E21)
- WDReckley, NRR/ADPR/CBLA (12D22)
- MGRaddatz, NMSS/SFPO (6G22)
- PLEng, NMSS/SFPO (6F18)
- VLTharpe, NMSS/SFPO (6G22)
- FAWenslawski, WCFO
- \*DBSpitzberg, DNMS/NMLB
- \*JVEverett, DNMS/NMLB
- \*NMLB-5th floor (Hodges)
- \*MIS System
- \*RIV Files (2)-4th floor file room (Part 50 Docket)
- \*RIV Files - 5th floor file room (Part 72 Docket)
  
- \*W/IFS Form

DOCUMENT NAME: G:\FCDB.O\JVE\RS603RP.JVE

To receive copy of document, indicate in box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

DNMS:NMLB	NMLB	C:DNMS:NMLB	ADD:DNMS	D:DNMS
JVEverett <i>JVE</i>	RFDudley <i>RFD</i>	DBSpitzberg <i>DBS</i>	GCPangburn <i>GCP</i>	RAScarano <i>RAS</i>
09/15/96	09/27/96	09/25/96	09/27/96	09/27/96

OFFICIAL RECORD COPY

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket No.: 50-312/72-11

License No.: DPR-54

Report No.: 50-312/96-03;72-11/96-01

Licensee: Sacramento Municipal Utility District

Facility: Rancho Seco Nuclear Generating Station

Location: Rancho Seco Nuclear Generating Station  
14440 Twin Cities Road  
Herald, California

Dates: September 9-12, 1996

Inspectors: J. V. Everett, Health Physicist  
R. F. Dudley, Project Manager

Approved By: D. Blair Spitzberg, Ph.D, Chief  
Nuclear Materials Licensing Branch

ATTACHMENTS: Partial List of Persons Contacted  
List of Inspection Procedures Used  
List of Items Opened, Closed, and Discussed  
List of Acronyms

## EXECUTIVE SUMMARY

Rancho Seco Nuclear Generating Station  
NRC Inspection Report 50-312/96-03;72-11/96-01

This inspection included aspects of the licensee's SAFSTOR activities and dry cask storage program including spent fuel pool technical specification compliance, radiological protection program implementation, incorporation of the new 49 CFR into the radiological shipping program, 10 CFR 50.59 safety evaluation program, and a review of the preoperational activities associated with the Independent Spent Fuel Storage Installation (ISFSI).

- A review of selected surveillance records for the Rancho Seco spent fuel pool and radiological program indicated that site activities were being conducted in compliance with the requirements established in the permanently defueled Technical Specifications (Section 1).
  - Radiological controls were being implemented effectively at Rancho Seco to control personnel exposures to very low levels. Contamination control processes appeared to be effective in preventing the spread of radiological contamination to new areas of the plant and to minimizing personnel contamination incidents (Section 2).
  - Implementation of the requirements of the new 49 CFR concerning shipping of radioactive material had been completed for the Rancho Seco procedures related to small samples and laundry. However, the site procedure for shipping radwaste off site had not been revised since Rancho Seco is not currently shipping any radwaste (Section 3).
  - Acceptable programs were being implemented at Rancho Seco 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).
  - Delays have occurred in the dry cask storage program due to the licensing process to obtain both a 10 CFR Part 72 license for storage and a 10 CFR Part 71 license for shipping. The redesign of the spacers in the canister to address issues related to the use of the canister for shipping will effect both the Part 71 and Part 72 NRC review schedules. An industry wide issue concerning hydrogen generation due to interaction of the cask coating with the boron in the spent fuel pool water during loading and shield lid welding had also resulted in additional delays. Overall, however, Rancho Seco had progressed to an advanced stage of readiness to move fuel. Based on planned fabrication schedules for the transfer cask and the metal canisters, a fall 1997 fuel movement schedule appeared possible (Section 5).
-

- Licensee examination of the 493 spent fuel bundles resulted in the identification of 10 fuel bundles which have failed fuel elements. Rancho Seco will have a special failed fuel canister which can hold up to 13 failed fuel bundles, thereby providing ample provisions for the damaged fuel (Section 5).
- The Emergency Action Levels recently developed by Rancho Seco to classify emergency conditions appeared to be comprehensive and of sufficient detail to be readily usable during an emergency (Section 6).
- Followup on three issues was included as part of this inspection. LER 9601 reported the movement of fuel during the fuel examination project without direct supervision of a certified fuel handler. This has been dispositioned as a noncited violation (Section 7.1). Violation 50-312/9003-01, resulting from a 1990 incident in which spent fuel pool water was inadvertently transferred to the borated water storage tank is closed due to adequate corrective actions taken by the licensee (Section 7.2). Inspection Followup Item (IFI) 50-312/9601-01 concerning Technical Specification clarification for the spent fuel building jib crane has been submitted by the licensee to the NRC and is currently undergoing review. This item will remain open until completion of the NRC review (Section 7.3).

## Report Details

### Summary of Plant Status

Rancho Seco was shut down in 1989 and is currently in a SAFSTOR condition with active progress being made toward the completion of the ISFSI. The Rancho Seco facility was being maintained in an adequate condition. Staffing was approximately 150 employees plus several contractor employees. No major changes in staffing or position assignments had been made since the last inspection. Programs for the safe storage of the spent fuel and for the control of radioactive materials was being properly maintained and implemented.

## **1 Spent Fuel Pool and Radiological Technical Specifications (86700)**

### **1.1 Inspection Scope**

The Rancho Seco Permanently Defueled Technical Specifications establish specific requirements for the radiological protection program and for the spent fuel pool. This inspection verified that these requirements were being complied with and properly documented.

### **1.2 Observations and Findings**

Section D 3/4 of the Rancho Seco Permanently Defueled Technical Specifications established a number of requirements for the spent fuel pool and the radiological protection program. Technical Specification D 3/4.1 required the water level of the spent fuel pool to be maintained at 37 feet or greater during fuel handling operations. When fuel handling operations are not in progress, spent fuel pool water level shall be maintained at 23 feet 3 inches or greater. Daily surveillance records for 1996 were randomly reviewed by the inspector. Required daily surveillances were documented on Surveillance Form SP.2, "Daily Instrument Checks and System Verifications." Water levels were recorded as being above 37 feet for all records reviewed.

Technical Specification D 3/4.2 required the spent fuel pool water temperature to be maintained below 140 degrees Fahrenheit. A random selection of daily surveillance records for 1996 were reviewed. Pool water temperature surveillances were also recorded on Surveillance Form SP.2. All records showed a water temperature below the required Technical Specification with typical temperatures between 70 and 85 degrees Fahrenheit.

Technical Specification D 3/4.4 required the radiation levels in the spent fuel storage area to be monitored by a fixed radiation detector. The radiation monitor surveillance schedule required weekly instrument channel checks, monthly



instrument channel tests, and quarterly instrument channel calibration. The weekly instrument channel checks were documented on Surveillance Form 2B.225, Document ID SP-3 entitled, "Weekly Selected Instrument Checks, Inspections, and System Verifications." The weekly surveillances for August and September were reviewed and found to be complete. The monthly instrument channel tests were recorded on Surveillance Form 2B.200, Document ID SP.412A entitled, "Monthly Spent Fuel Area Radiation Monitoring Test." The months of June, July, August, and September were reviewed and found to be complete. The quarterly instrument channel calibrations were recorded on Surveillance Form 2B.200, Document SP.413E entitled, "Quarterly Spent Fuel Area Radiation Monitoring Calibration." The records dated May 29 and August 26, 1996, were reviewed and found to be complete.

Technical Specification 3/4.5 required the spent fuel pool water chemistry to be maintained with chloride and fluoride levels below 0.15 ppm. The chemistry surveillance records for the period from May 1995 through August 1996 were reviewed. No detectable levels of fluorides or chlorides were found in the spent fuel pool water. Minimum detectable limits for the chlorides and fluorides were 0.01 ppm.

Technical Specification D 4/3.6 established a 10 curie limit on the following tanks: (a) A and B regenerant hold-up tanks, (b) demineralized reactor coolant storage tank, (c) miscellaneous water hold-up tank, (d) borated water storage tank, and (e) outside temporary tanks. Surveillance Record SP.950 entitled, "Weekly Liquid Holdup Tank 10 Curie Limit Surveillance," for August was reviewed. Currently, Regenerant Tank B is out of service. All other tanks had activities below 1 milliCurie.

Technical Specification D 3/4.7 established requirements for leak tests of all sealed sources greater than 100 microcuries beta/gamma or 5 microcuries alpha. The removable contamination limit is 0.005 microcuries. Currently Rancho Seco has 19 sources requiring leak tests. Records were reviewed for the November 11, 1995, and the May 21, 1996, leak tests. No sources were found with smearable contamination levels in excess of the Technical Specification limit.

### 1.3 Conclusion

A review of selected surveillance records for the Rancho Seco spent fuel pool and radiological program indicated that site activities were being conducted in compliance with the requirements established in the permanently defueled Technical Specifications.

## 2 Radiological Exposure Controls (83100)

### 2.1 Inspection Scope

Rancho Seco is currently in a SAFSTOR condition with minimal site activities underway except for continued maintenance of facilities and preparations for the dry cask storage activities. Radiological conditions of the facility were reviewed to determine if current radiological controls were being effective in minimizing the spread of contamination and in maintaining personnel exposures low, consistent with an effective ALARA program.

### 2.2 Observation and Findings

Personnel radiation exposures for 1995 and 1996 have been kept at very low levels. For 1995, records indicated a total site exposure for all employees of 679 millirem. The projected exposure for 1995 had been 1454 millirem. For the first half of 1996, total site exposures were 447 millirem with the highest exposure for any individual being 59 millirem. The projected exposure for the first half of 1996 was 570 millirem.

The exposures received had been primarily due to maintenance and surveillance activities. The health physics and mechanical maintenance departments were the primary groups receiving exposures. For the first half of 1996, the radiation protection department accounted for 247 millirem. The mechanical maintenance department received 145 millirem. The primary dose contributor in 1996 was the corrective maintenance work on the spent fuel pool mast in February and March. In an effort to further reduce exposures, the radiation protection personnel had reduced the periodic surveillances of many high radiation areas and had posted these areas as requiring radiological surveys prior to entry. Access to these areas was infrequent and radiological surveys were showing conditions that were not changing significantly over time. This approach was initiated to reduce the exposure to radiation protection personnel who had been entering the areas to perform periodic routine surveys. The underground tank farm was an example of one of these areas.

The largest source terms on site were within containment. Equipment in containment, resin beds, and waste tanks ranged from 1 to 3 rem/hour. The containment was maintained as a locked high radiation area. In addition, the tank room (miscellaneous waste tank), crud filter room, and the radwaste filter room were maintained as locked high radiation areas.

Only one contamination incident had occurred to-date in 1996. This involved a hot particle detected in the hair of a worker exiting a contaminated area. The worker had been performing routine housekeeping duties in the spent fuel pool building. Upon exiting the area, he was found to have 9000 counts/minute on the back of his head. The radioactive particle was removed and was identified by gamma scan as

---

Co-60. The hot particle skin dose was determined to be 112 mrem. Investigation of the area found no additional hot particles.

The isotopes of Co-60 and Cs-137 are the most commonly found contamination on site. The containment building is relatively clean of contamination due to previous decontamination of areas in the containment. For most areas, only shoe covers and gloves are required as precautions for entry.

The respiratory protection program was still being maintained to support potential future dismantling efforts. The self-contained breathing apparatus (SCBA) program was also being maintained at a reduced level with approximately 30 employees currently SCBA qualified of which most were radiation protection and maintenance personnel.

A tour of the change room area and radiologically controlled access point was conducted. Survey maps with current survey data and contamination levels were posted at the access control point. These survey maps were updated monthly. Radiation Work Permits (RWP) were available for individuals to read and sign. There were 17 active RWPs for personnel to use. RWPs covered activities such as security patrols, area walkdowns, and specific maintenance work activities. Persons entering the radiologically controlled area obtained an alarming electronic dosimeter and logged in on a computerized system. Upon exiting, the individual completed an exit survey and logged out on the computerized system.

### 2.3 Conclusion

Radiological controls were being implemented effectively at Rancho Seco to control personnel exposures to very low levels. Contamination control processes appeared to be effective in preventing the spread of radiological contamination to new areas of the plant and to minimize personnel contamination incidents.

## 3 **Implementation of the new 49 CFR Shipping Regulations (TI2515/133)**

### 3.1 Inspection Scope

New requirements for shipping radioactive materials became effective on April 1, 1996. These new rules were promulgated to bring U.S. radioactive material shipping regulations into conformance with international shipping regulations. A review of the Rancho Seco procedures was conducted to determine if the new requirements of 49 CFR had been incorporated.

### 3.2 Observation and Findings

Rancho Seco had implemented the new transportation requirements from 49 CFR for shipping activities currently being conducted for small radioactive samples and

laundry. The four procedures revised were RP 305.16, Revision 3, dated March 25, 1996, entitled, "Radioactive Material Receipt," RP 309.I.01, revision 3, dated 4/1/96 entitled "Radioactive Material Shipment," RP 309.I.02, Revision 2, dated May 1, 1996 entitled, "DOT Subtype Determination," and RP 309.I.04, Revision 6, dated May 25, 1996 entitled, "Radioactive Laundry Shipments and Receipt." These procedures were found to have incorporated the applicable requirements from the new 49 CFR into the procedures.

Rancho Seco had not, however, implemented the new 49 CFR requirements for Procedure RP 309.I.08 entitled, "Radioactive Waste Shipment." This procedure is the primary procedure for shipping radwaste off site. Rancho Seco has not shipped any radwaste since 1991. When Rancho Seco resumes shipment of radwaste, the radwaste shipping procedure will be revised prior to any actual shipment. To track the eventual incorporation of the new 49 CFR requirements into the Rancho Seco radwaste shipping procedure, IFI 50-312/9603-01 is opened.

### 3.3 Conclusion

Implementation of the requirements of the new 49 CFR concerning shipping of radioactive material had been completed for the Rancho Seco procedures related to small samples and laundry. However, the site procedure for shipping radwaste off site had not been revised since Rancho Seco is not currently shipping any radwaste.

## 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 effect the dry cask storage program being licensed under 10 CFR Part 72 have an equivalent requirement specified in 10 CFR 72.48. This inspection reviewed the safety review activities that had been completed since the last inspection review in January 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, respectively, provided that the changes do not involve an unreviewed safety question. Rancho Seco administrative procedures required that the licensee's Plant Review Committee (PRC) review 10 CFR 50.59 and 10 CFR 72.48 determinations which were required for plant modifications. Licensee procedures also required that the PRC review all "Deviation from Quality" reports which were dispositioned for "repair", "accept-as-is" or "interim-accept-as-is".

A review was completed of over 200 summaries of 10 CFR 50.59 and 10 CFR 72.48 determinations that had been reviewed by the PRC during the period from January 9, 1996 until August 15, 1996. From these summaries, the following four issues were reviewed in detail:

- (1) Plant Modification DCP R95-003 DBR, Rev. 1 - Modification of Turbine Gantry Crane Limit Switch Programmable Setpoint Intervals from 1/8 inch to 1/4 inch;
- (2) Deviation from Quality DQ-95-0090 - Turbine gantry crane cable (Quality Class 1) included on purchase request with quality Class 2 items (mixing of quality classes on single purchase request);
- (3) Procedure Change A.21, Rev. 33 - Added requirement to have spent fuel pool liner leak valves closed with cask in spent fuel building; and
- (4) Procedure Change M.145, Rev. 4 - Change requirement for turbine gantry crane tie-down from 25 mph wind to 30 mph wind.

In the cases reviewed, adequate determinations regarding the applicability of NRC regulations were made.

In addition to the four issues listed above, certain procedure changes, design changes, and special tests were reviewed to evaluate the adequacy of licensee determinations regarding unreviewed safety questions made under 10 CFR 50.59 and 10 CFR 72.48. Documents examined included test procedure STP-1337, Turbine Building Gantry Crane Acceptance Test, plant modification DCP R95-0003, Rev. 3 - Turbine Gantry Crane Upgrade Modification, and test procedure STP-1340 - Horizontal Storage Module Temperature Monitoring System Test.

In the cases evaluated, the actions taken by the licensee were consistent with NRC regulations and did not involve any unreviewed safety questions.

#### 4.3 Conclusion

Acceptable programs were being implemented at Rancho Seco 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 Preoperational Activities at the ISFSI (60854)

### 5.1 Inspection Scope

Rancho Seco has completed a significant portion of the activities necessary for the eventual movement of the spent fuel to a dry cask storage system licensed under 10 CFR Part 72. This inspection reviewed the progress of activities for the ISFSI.

### 5.2 Observations and Findings

Rancho Seco is using the Vectra NUHOMS design for the planned future storage of the spent fuel currently stored in the spent fuel pool. The fuel is over 7-years old with a significant portion of the fission products decayed away. The fuel will be placed in storage canisters, welded shut and transferred in a transfer cask to the concrete horizontal storage modules located on a concrete pad adjacent to and just outside the industrial area (old protected area). This ISFSI, licensed under 10 CFR Part 72 will be the storage location for the spent fuel until the federal government accepts the Rancho Seco fuel.

All 22 horizontal concrete storage modules had been assembled at Rancho Seco. The security system is in place with startup testing beginning within a month of the inspection. The welding equipment, transport vehicles, vacuum drier, ram, plasma torch, and auxiliary trailer are onsite. Several components relating to the cask monitoring system and lifting yoke are not on site, but will arrive in early 1997.

The licensing process for the Part 71 license required additional analysis and design work for the spacers inside the canister. These spacers are key safety constraints should a canister be dropped. The redesign and supporting calculations are scheduled for completion by the end of December and submittal to the NRC by February 1997. This redesign also effects the part 72 review schedule. Canister and transfer cask fabrication is planned to start in February 1997 with an expected delivery date of June 1997. An estimated 3 months would then be needed by Rancho Seco to complete preoperational activities.

The recently issued NRC Bulletin 96-04, "Chemical, Galvanic, or Other Reactions in Spent Fuel Storage and Transfer Casks," issued on July 5, 1996, required each licensee planning to implement storage of spent fuel in a dry cask storage system to further evaluate the potential chemical, galvanic or other interactions that could occur during loading and storage of the fuel. The issue resulted from an incident at the Point Beach nuclear facility during the loading of one of their casks. The problem involved the generation of hydrogen due to an interaction with the carbozinc coating on the storage cask and the borated water from the spent fuel pool. The hydrogen was ignited during the effort to weld the lid on the cask.

The Rancho Seco canisters do not use the carbozinc coating. A flame sprayed aluminum coating is used. Vectra, the cask designer, has undertaken a testing

---

program to determine the rate of hydrogen generation for the aluminum coating and the Boral guide sleeves, which consists of powdered boron between sheets of aluminum. Results of the tests should be available within the next 2-3 months. Delays in cask fabrication are not expected.

In preparation for storage of the spent fuel, Rancho Seco completed a fuel examination effort involving the lifting and examination, using television cameras, of all 493 fuel bundles. The effort was initiated to determine the condition of the fuel bundles and identify those bundles that had failed fuel elements. A failed fuel element was one that had a gap of greater than a fuel pellet length and greater than 1/2 a fuel pellet width. If these conditions were exceeded, it could be possible for a fuel pellet to fall out of the fuel element.

The evaluation was conducted by Rancho Seco from January to March 1996 and independently reviewed by an outside organization. Ten fuel bundles were determined to have failed fuel elements, however none of the elements had a gap large enough for the fuel pellet to actually fall out. Since the failed fuel canister purchased by Rancho Seco has space for 13 failed fuel bundles, sufficient provisions had been planned for the failed fuel. Six of the failed fuel elements were determined to be from operations cycle 6 which had experienced a steam generator tube rupture and rapid depressurization of the primary system.

### 5.3 Conclusion

Delays have occurred in the dry cask storage program due to the licensing process to obtain both a 10 CFR Part 72 license for storage and a 10 CFR Part 71 license for shipping. The redesign of the spacers in the canister to address issues related to the use of the canister for shipping will effect both the Part 71 and Part 72 NRC review schedules. An industry wide issue concerning hydrogen generation due to interaction of the cask coating with the boron in the spent fuel pool water during loading and shield lid welding had also resulted in additional delays. Overall, however, Rancho Seco has progressed to an advanced stage of readiness to move fuel. Based on planned fabrication schedules for the transfer cask and the metal canisters, a fall 1997 fuel movement schedule appeared possible.

Licensee examination of the 493 spent fuel bundles resulted in the identification of ten fuel bundles which have failed fuel elements. Rancho Seco will have a special failed fuel canister which can hold up to 13 failed fuel bundles, thereby providing ample provisions for the damaged fuel.

## 6 **Emergency Preparedness (82701)**

### 6.1 Inspection Scope

An emergency plan and procedures are required for the licensing of the ISFSI. A previous inspection had reviewed the emergency planning effort and had identified

the potential need to strengthen the emergency action levels (EAL). This inspection briefly looked at the revised emergency action levels. A more detailed evaluation of the emergency planning program will be conducted by headquarters as part of the Part 72 license review process.

## 6.2 Observation and Findings

A review was conducted of the proposed EALs in Table 3-1 and Table 3-3 of the Rancho Seco emergency plan. The EALs are used to classify an emergency condition as either an Unusual Event or an Alert. The original draft version of the EALs that was reviewed in January 1996 was found to be very general. Rancho Seco had recently completed a more detailed version of the EALs that will undergo NRC licensing review. The EALs reviewed during this inspection were found to be well developed and very detailed. The EALs appeared to be appropriate for the two emergency classifications used in the Rancho Seco emergency plan. Classification of an event using the EALs should be relatively straight forward for the Rancho Seco personnel during an emergency.

## 6.3 Conclusion

The EALs recently developed by Rancho Seco to classify emergency conditions appeared to be comprehensive and of sufficient detail to be readily usable during an emergency.

## 7 **Followup (92701)**

- 7.1 (Closed) Licensee Event Report 50-312/96-01: Conducting fuel handling operations without direct supervision of a Certified Fuel Handler. The spent fuel currently stored in the Rancho Seco spent fuel pool was undergoing visual examination using a camera system to verify the integrity of the fuel elements in preparation for movement to the dry cask storage system. This process required the grappling of a fuel bundle by the fuel handling machine, lifting the fuel bundle a couple of inches to verify that the fuel grappling apparatus had securely engaged the fuel bundle, and then lifting the fuel bundle from its stored position while observing the condition of the fuel element, via cameras, during the lift. Technical Specification D 6.2.2d requires that a Certified Fuel Handler directly supervise all fuel movement activities. The activities to complete the fuel examination project were conducted over a period of several months starting in January 1996.

On April 24, 1996, the fuel inspection team returned from lunch and began preparation to resume fuel inspections. The spent fuel bridge operator engaged a fuel bundle with the grappler and lifted the fuel bundle 2 inches to verify proper engagement by the grappler. Prior to beginning the fuel examination effort, the members of the fuel inspection team realized that the Certified Fuel Handler was not present. He had not entered the fuel handling building with the other team



members and had stopped to talk to an electrical technician just outside the fuel building door.

Upon recognizing that fuel had been moved in violation of the Technical Specification, the spent fuel bridge operator lowered the fuel back to its storage location. The Certified Fuel Handler was notified of the fuel movement and a Potential Deviation from Quality report was written. This resulted in the issuance of LER 96-01 reporting the violation of Technical Specification D6.2.2d which requires a certified fuel handler to be present and to provide direct supervision of all fuel movement activities. Work was eventually continued on the fuel examination project, and no other incidents occurred during the project.

The violation of the Technical Specification had been quickly recognized by the workers and immediately corrected. Work had been stopped, and the event correctly documented. The workers recognized the need for an increased awareness to verify that the Certified Fuel Handler was present in the work area prior to grappling fuel bundles. The inspectors determined that the event was of minor significance, quickly identified by the licensee, immediately corrected, and properly documented. This violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.

- 7.2 (Closed) Violation 50-312/9003-01: Improper valve lineup on the spent fuel pool. NRC Inspection Report 50-312/90-03, dated April 5, 1990, included a Level 4 violation concerning the unintentional transfer of approximately 20,000 gallons of spent fuel pool water to the borated water storage tank. This occurred as a result of valve BWS-014 being left in the open position. Rancho Seco responded to the violation on May 7, 1990, listing several corrective actions.

Corrective actions committed to in the May 7, 1990, letter were completed by September 1990. There appeared, however, to be no closure of this violation in subsequent inspections at Rancho Seco between 1990 through 1993. Verification that the corrective actions were still being implemented by Rancho Seco was completed during this inspection in order to close this violation.

The main procedural corrective action taken by Rancho Seco involved the revision of two procedures to include an attachment listing the correct valve line-up positions for the system. Procedure A-20 "Borated Water Storage System," and Procedure A-21, "Spent Fuel Pool Cooling," were revised. Procedure A-20 was revised in 1990 but has since been voided due to the borated water storage tank being placed in lay-up. Procedure A-21 was issued as Revision 21 on April 24, 1990, and included Attachment 3 which specifically identified the proper valve line-up requirements including valve BWS-014. The current version of Procedure A-21 is Revision 34 dated August 28, 1996. Revision 34 still contains the attachment with the valve line-up requirements.

Based on completion of the corrective actions by Rancho Seco and verification during this inspection that the procedural changes made in 1990 to correct the problem are still in place, this violation is considered closed.

- 7.3 (Open) Inspection Follow-up Item 50-312/9601-01: Technical Specification revision. NRC Inspection Report 50-312/96-01, conducted in January 1996 identified the need to clarify Rancho Seco Technical Specification D3/4.3 to indicate that although handling of heavy loads over fuel in the spent fuel pool is prohibited; non-heavy loads (ie. loads not greater than the combined weight of a fuel element and its associated handling tool) may be handled over spent fuel in the pool. On March 18, 1996, the licensee submitted Proposed License Amendment No. 192, which requested the appropriate clarification, along with several other requested changes. This amendment is under review by the Office of Nuclear Reactor Regulation which has requested additional information of the licensee regarding the new design-basis cask handling accident. This open item will remain open until NRR issues the requested amendment.

7.4 Conclusion

Followup on three issues was included as part of this inspection. LER 9601 reported the movement of fuel during the fuel examination project without direct supervision of a certified fuel handler. This has been dispositioned as a noncited violation. Violation 50-312/9003-01, resulting from a 1990 incident in which spent fuel pool water was inadvertently transferred to the borated water storage tank is closed due to adequate corrective actions taken by the licensee. IFI 50-312/9601-01 concerning Technical Specification clarification for the spent fuel building jib crane has been submitted by the licensee to the NRC and is currently undergoing review. This item will remain open until completion of the NRC review.

## ATTACHMENT

### PARTIAL LIST OF PERSONS CONTACTED

R. Colombo, Special Nuclear Material Manager  
J. Delezenski, Superintendent, QA/Licensing/Administration  
R. Duperron, Security Shift Leader  
J. Field, Technical Services Superintendent  
D. Gardner, Radiation Protection/Chemistry Superintendent  
W. Koepke, QC Supervisor  
R. Mannheimer, Senior Nuclear Engineer  
K. Miller, Senior Program Manager  
W. Partridge, Supervisor, Radiation Engineering Specialist  
S. Porterfield, Radwaste Technical Analyst  
S. Redeker, Plant Manager  
G. Roberts, Maintenance Superintendent  
D. Tipton, Shift Supervisor  
T. Tucker, Operations Superintendent  
J. Walkin, Principal Mechanical Engineer  
W. Wilson, Radiation Protection/Radwaste Supervisor

### INSPECTION PROCEDURES USED

37001	10 CFR 50.59 Safety Evaluation Reviews
60854	Preoperational Activities at the ISFSI
82701	Operational Status of the Emergency Preparedness Program
83100	Occupational Exposure During SAFSTOR and DECON
86700	Spent Fuel Pool Activities
92701	Follow-up on Open Items
TI 2515/133	Implementation of Revised 49 CFR

### ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened

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

#### Closed

50-312/96-01	LER	Conducting fuel handling operations without direct supervision of a Certified Fuel Handler
50-312/9003-01	VIO	Improper valve lineup on the spent fuel pool

#### Discussed

50-312/9601-01	IFI	Technical Specification revision
----------------	-----	----------------------------------

---

**LIST OF ACRONYMS USED**

ALARA	As Low As Reasonable Achievable
EAL	Emergency Action Level
ISFSI	Independent Spent Fuel Storage Installation
IFI	Inspection Follow-up Item
LER	Licensee Event Report
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
PRC	Plant Review Committee
RWP	Radiation Work Permit
SCBA	Self-Contained Breathing Apparatus
VIO	Violation