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OFFICE OF INSPECTION AND ENFORCEMENT

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REGION V

Report No. 50-312/81-17

Docket No. 50-312 License No. DPR-54 Safeguards Group _____

Licensee: Sacramento Municipal Utility District
P. O. Box 15830
Sacramento, California 95813

Facility Name: Rancho Seco Unit 1

Inspection at: Herald, California (Rancho Seco Site)

Inspection conducted: May 1-31, 1981

Inspectors: Harvey L. Canter, Senior Resident Inspector 6/22/81
Date Signed

John O'Brien, Unit Resident Inspector 6/22/81
Date Signed

Philip Morrill, Reactor Inspector 6/22/81
Date Signed

Approved By: T. Young, Jr. Acting Chief, Reactor Projects Section 6/22/81
#2, Reactor Operations and Nuclear Support Branch Date Signed

Summary:

Inspection between May 1-31, 1981 (Report No. 50-312/81-17)
Areas Inspected:

Long term shutdown activities; operational safety verification; monthly maintenance observations; monthly surveillance observations; zero power testing observations; RCS identified and unidentified leak rate verification; review of plant operations; followup on regional requests; followup on Headquarters requests; followup on significant events; and, independent inspection effort. The inspection activities involved 168 inspector hours by the Resident Inspectors and 7 hours by one Regionally based inspector.

Results: Of the eleven areas inspected, no items of noncompliance or deviations were identified.

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DETAILS

1. Persons Contacted

- *R. Rodriguez, Manager, Nuclear Operations
- P. Oubre", Plant Superintendent
- *D. Blachly, Operating Supervisor
- N. Brock, Electrical/I & C Maintenance Supervisor
- D. Cass, Mechanical Maintenance Supervisor
- *Q. Coleman, Quality Assurance Engineering Technician
- *R. Colombo, Technical Assistant
- G. Coward, Maintenance Supervisor
- D. Elliott, Quality Assurance Engineer
- *B. Fraser, Mechanical Engineer
- D. Gardiner, Senior Chemical & Radiation Assistant
- *H. Heckert, Engineering Technician
- F. Kellie, Plant Chemist
- V. Lewis, Site Project Engineer
- *J. Mau, Training Supervisor
- *R. Miller, Chemistry/Radiological Supervisor
- R. Moore, SMUD Special Agent
- T. Perry, On-site Quality Assurance Supervisor
- S. Rutter, Quality Assurance Engineer
- L. Schwieger, Quality Assurance Director
- T. Singer, SMUD Inspector
- B. Stiver, Mechanical Engineer
- J. Sullivan, Quality Assurance Engineer
- T. Tucker, Outage Coordinator
- J. Uhl, Mechanical Engineer
- D. Whitney, Engineering and Quality Control Supervisor
- B. Wichert, Mechanical Engineer
- W. Wilson, Senior Chemical & Radiation Assistant

The inspectors also talked with and interviewed several other licensee employees, including members of the engineering, maintenance, operations, and quality assurance (QA) organizations.

*Denotes those attending the Exit Interview on May 29, 1981.

2. Inspection During Long Term Shutdown

During the report period the inspector observed control room operations, reviewed applicable logs and conducted discussions with control room operators. The inspector verified surveillance tests required during the shutdown were accomplished, reviewed tagout records, and verified applicability of containment integrity. Tours of Auxiliary Building and Reactor Building accessible areas, including exterior areas were made to assess equipment conditions, plant conditions, radiological controls, safety, and adherence to regulatory requirements and to verify

That maintenance requests had been initiated for equipment in need of maintenance. The inspector observed plant housekeeping/cleanliness conditions, including potential fire hazards, and verified implementation of radiation protection controls. The inspector by observation and direct interview verified that the physical security plan was being implemented in accordance with the station security plan. The inspector reviewed the licensee's jumper/bypass controls to verify there were no conflicts with technical specifications and verified the implementation of radioactive waste system controls. The inspector witnessed portions of the radioactive waste systems controls associated with radwaste shipments and barreling.

No items of noncompliance or deviations were identified.

3. Operational Safety Verification

The Reactor Plant was critical between May 8, 1981 and May 17, 1981. The plant was shutdown on May 17, 1981 due to a "B" steam generator tube leak. In addition to the items mentioned in Paragraph 2, the inspector verified the operability of the following safety features systems or subsystems: containment spray, auxiliary feedwater and the "A" diesel generator.

No items of noncompliance or deviations were identified.

4. Zero Power Testing

The inspector observed the reactor plant startup on May 8, 1981, and witnessed the completion of zero power testing. He verified that the control rod withdrawal sequence and surveillance testing required to be performed prior to startup were satisfactorily completed, that the limiting conditions for operations were met and that startup activities were conducted in accordance with Technical Specification requirements.

No items of noncompliance or deviations were identified.

5. Maintenance Observations

The inspectors observed portions of the maintenance activities listed below and verified that work was accomplished in accordance with approved procedures, that work was accomplished by qualified personnel, that provisions for stationing a fire watch to oversee activities involving welding and open flame were complied with and that LCO requirements were met during repair.

- (a) 5/6/81 - 5/7/81 - Pressurizer level leg drain valve repair.
- (b) 5/16/81 - 5/31/81 - "B" OTSG tube inspection and plugging operation.
- (c) 5/28/81 - 5/29/81 - "B" OTSG booster drain pump repair.

The inspector examined the following maintenance procedures in his review of above items:

- (a) M-13, OTSG tube plugging procedure
- (b) M-15, OTSG manway and handhole removal and replacement
- (c) M-115, Maintenance cleanliness control
- (d) AP-35, Tool inventory control
- (e) MT-013 Control of mechanical torquing devices

No items of noncompliance or deviations were identified.

6. Surveillance Observations

The inspectors observed portions of the below listed surveillance testing to verify that the tests were covered by properly approved procedures; that the procedures used were consistent with technical specification requirements; that a minimum crew requirements were met; that test prerequisites were completed; that special test equipment was calibrated and in service; and, that the test results were adequate.

- (a) 5/11/81-(SP205.02) Local Component Leak Rate Test (Personnel Hatch-inner and outer door seals)
- (b) 5/19/81-(SP206.03B) - Diesel Generator "B" monthly test.

No items of noncompliance or deviations were identified.

7. Reactor Coolant System Identified and Unidentified Leak Rates

The inspector obtained plant specific data to verify the licensee's calculation of identified and unidentified reactor coolant system leak rates. The inspector determined that reactor coolant system leak rates were within the limiting conditions for operation during the period examined. The inspector examined the licensee's procedures for determination of reactor coolant system leak rates to verify their adequacy. The inspector's independent calculations verified the adequacy of the licensee's procedure and calculations.

No items of noncompliance or deviations were identified.

8. Review of Plant Operations

Environmental Protection

The inspector verified the installation and operability of four environmental sampling stations and associated equipment. The inspector accompanied licensee's technicians during portions of their gathering of

environmental samples and observed the handling of these samples. He also reviewed various environmental media sample records for completeness and accuracy.

No items of noncompliance or deviations were identified.

9. Followup on Regional Requests

During the month of May 1981, personnel from the Region V office of the NRC in Walnut Creek, California, requested information from the Resident Inspectors regarding the operation and maintenance of the Rancho Seco power plant. Information was obtained and transmitted to the Region V office concerning:

- (a) High pressure injection pump testing (STP-101).
- (b) Plant startup and zero power testing.
- (c) Unidentified and identified leak rate calculation data.
- (d) Plant status during significant events.

No items of noncompliance or deviations were identified.

10. Followup on Headquarters Requests

During the month of May, 1981, personnel from the NRC headquarters in Bethesda, Maryland, requested information from the Resident Inspectors relating to the visit to Rancho Seco of two International Atomic Energy Agency (IAEA) officials scheduled for May 26-27, 1981. The information was transmitted to the NRC Headquarters.

On May 26-27, 1981, the Resident inspectors observed portions of the inspection performed by IAEA representatives H. Gonzalas-Montez (SPAIN), and P. Ikonomou (GREECE) along with NRC representatives from NMSS, IE, and NRR. These personnel conducted the first of a series of inspections at Rancho Seco. Tours were made with NRC inspectors of several vital areas. Reactor vessel "seals" were installed. Discussions were held with licensee personnel on the subjects of the Design Information Questionnaire and the draft Facility Attachment. The commitments made in this and possible future meetings will be required of the licensee by license condition or amendment. These commitments are those which will be used in assuring to the IAEA that the United States is meeting its obligations under the Nuclear Nonproliferation Treaty's US/IAEA Safeguards Agreement.

No items of noncompliance or deviations were identified.

11. Followup on Significant Events

a. Unidentified Leakage Greater Than One-Gallon-Per-Minute

On May 4, 1981, while conducting Zero Power Physics Testing, prior to resumption of power operation, plant operators noted a slow

continuous decrease in makeup tank level. Based on this observation, they performed the facility surveillance procedure which determines the amount of Reactor Coolant System (RCS) leakage. This procedure determined that there was leakage at a rate of approximately 5 gallons per minute (gmp). This was in excess of the Limiting Condition for Operation (LCO) of one gpm. The plant was shutdown and operators sent into the Reactor Building to investigate. A one inch drain isolation valve for a pressurizer level reference leg was found to be leaking. The reactor was cooled down and depressurized. The Reactor Coolant System was drained to facilitate repair of this drain valve. The valve was repaired, and the Reactor Coolant System refilled. The RCS was heated up, the reactor was taken critical, and Zero Power Physics Testing resumed on May 8, 1981. The NRC was promptly notified of this event via the Emergency Notification System and the licensee is expected to followup on this event with a 30-day written report.

No items of noncompliance or deviations were identified.

b. Spill of Contaminated Water

At 8:15 am on May 12, 1981, a routine sample was taken from the Demineralizer Reactor Coolant Storage Tank. After drawing the sample, a technician failed to fully close the sample valve. At about 3:00 pm on May 12, 1981, a puddle of water was observed by licensee personnel in the tank farm area near the sample point. The partially opened valve was identified and fully closed. A calculation of water inventory indicated that an estimated 73 gallons was lost from the Demineralizer Reactor Coolant Storage Tank. The licensee was able to recover between 7 and 7.5 gallons of the 73 gallons spilled. The rest of the water soaked into the gravel and dirt surface of the tank farm. There are no plant drains in the involved area. The tank contains water contaminated with Tritium. A May 12, 1981, sample of the tank (and recovered water) showed a tritium concentration of 0.197 microcuries/milliliter. The licensee estimated the total release to be 0.05 curies of tritium. The reactor plant was at 40 percent reactor power during the event, and no effect on normal plant operations was observed. The licensee is expected to report this item to the NRC in a written report by June 13, 1981.

No items of noncompliance or deviations were identified.

c. Steam Generator Tube Leak

At about 2240 on May 16, 1981, while the Reactor was at 98 percent power, the licensee determined on the basis of radiation monitor readings and alarms (condenser air ejector radiation monitor and loop "B" main steam line radiation monitor), that primary-to-secondary, steam generator leakage had occurred. Analysis of grab samples of the air ejector exhaust and various turbine and auxiliary building atmospheres confirmed the leakage. After evaluating the data the licensee classified the leak as an "unusual event", started to

reduce power, and at 2340, notified the NRC Headquarter's duty officer via the Emergency Notification System (ENS), that an "unusual event" was occurring. Other local authorities were also notified in accordance with the emergency procedures. A primary system leak rate calculation was performed and yielded a value of 1.7 gpm. This was later supported by an independent leak rate calculation based on the change in tritium concentration in the condenser. At about 0055 on May 17, 1981, the turbine and reactor was tripped, and the "B" steam generator was isolated. Plant cooldown on the "A" steam generator was commenced. A review of Reactor Coolant System parameters for the plant cooldown showed that temperatures, Reactor Coolant System (RCS) pressure, and pressurizer level were uniformly reduced and controlled within the requirements of the technical specifications. At about 1005, the reactor was at cold shutdown with the RCS pressure about 42 psig and RCS temperatures about 135°F. With this reduced pressure, and with no vacuum in the condensers, the steam generator leakage and releases to the turbine building atmosphere were terminated.

The noble gas release rate at 0100 on May 17, 1981, was about 0.039 Ci/hr., which was estimated to be less than one percent of the rate allowed by the Technical Specifications (TS). At 0900 on May 17, 1981, the rate was about 0.01 percent of the TS limit. These releases and subsequent cleanup of the secondary steam plant was monitored by a Radiation Specialist from the NRC Region V office.

Water samples obtained from the steam generators at 1000 on May 17, 1981, indicated that the boron concentration in the "B" steam generator was about 1500 ppm while that in the "A" steam generator was about 90 ppm. May 18, 1981, samples showed the "A" steam generator boron concentration increased to about 1000 ppm. This was due to an improper lineup of the annulus drain system before startup and caused some added effort in the cleanup of the secondary plant.

Following shutdown of the plant, the licensee completed the inspection of the affected "B" steam generator. The inspection involved eddy current testing of about 486 tubes in the "B" steam generator. The inspection included all tubes in the three rows of tubes closest to each side of the open tube inspection lane, and previous tubes of concern, between the fourteenth tube support plate and upper tube sheet. The eddy current and fiberoptics inspection determined that the leakage occurred at the level of the fifteenth tube support plate in Tube No. 77-17, which is located in the row immediately adjoining the inspection lane. This tube inspection indicated a circumferential through wall crack. The licensee believes that the crack was not initially circumferential, but progressed to that condition during plant cooldown. Leak rate calculations further indicated that this was possible. The inspection further revealed that Tube No. 75-18 has 60-90% degradation of wall thickness at the level of the fifteenth support plate, but no wall penetration was found. Also, Tubes No. 75-19

and 75-27 were found to have about 20% degradation of wall thickness with no wall penetration at the level of the fifteenth tube support plate. All four tubes mentioned above had stabilizer rods installed at the upper end and were plugged at the lower tube sheet. The tube plugging work was completed on May 29, 1981. The RCS was refilled and a steam bubble drawn in the pressurizer on June 2, 1981. The plant will remain in cold shutdown to permit further decontamination of the secondary coolant system. It is expected this decontamination will not be completed before June 15, 1981.

A transient assessment program report on this event is being prepared by the licensee and the Babcock and Wilcox engineers. The assessment of the event will consider whether changes to the emergency procedures for this type of an event are needed. The report is expected to be issued by late June.

No items of noncompliance or deviations were identified.

12. Independent Inspection Effort

Discussions were held between the Resident Inspectors and operations, security and maintenance personnel in an attempt to better understand problems they may have which are related to nuclear safety. These discussions will continue as a standard practice.

On numerous occasions, during the month of May, 1981, the Resident Inspectors attended operations status meetings. These meetings are held by the Operations Supervisor to provide all disciplines onsite with an update on the plant status and ongoing maintenance work.

In addition to the above, independent inspection effort was performed on the following items:

- a. Secondary Plant Chemistry Cleanup
- b. Tours of the New Protected Area Perimeter
- c. Prompt Dissemination of Information

As a result of this inspection effort the inspector determined that a formal mechanism does not exist for promptly informing plant management and safety review groups of items of operational significance, and documenting such items.

The licensee's administrative procedure AP-22, "Reporting of Reportable Occurrences" is the formal document which partially addresses the issue, but there is no mention of promptness in this procedure.

This matter came to the inspector's attention while reviewing licensee documentation relating to the reportability of an accident involving

disposal of liquid radwaste. This matter was discussed with the Manager of Nuclear Operations who made the following commitments:

- (1) Review and revise as necessary, AP-22 so as to address the timeliness of writing the report and submitting it to the appropriate supervisors.
- (2) Issue to all groups at Rancho Seco who may be involved with AP-22's, a statement emphasizes the importance of a timely multidisciplinary review of the vents, so that adequate corrective action is taken before a nonreportable event (interms of Regulatory Guide 1.16, Rev. 4) becomes a reportable event.

Pending completion of the above commitments, this item will remain unresolved. (81-17-01).

No items of noncompliance or deviations were disclosed.

13. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of non-compliance, or deviations. An unresolved item disclosed during the inspection is discussed in Paragraph 12.c.

14 Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) throughout the month and at the conclusion of the inspection of May 29, 1981. They summarized the scope and findings of the inspection activities. The licensee acknowledged the inspector's comments.