

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No.: 50-312/85-08

Docket No. 50-312

License No. DPR-54

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: March 14, - May 3, 1985

Inspectors:

J. H. Eckhardt, Senior Resident Inspector

6/17/85
Date Signed

G. P. Perez, Resident Inspector

6/17/85
Date Signed

Approved by:

L. F. Miller Jr., Chief
Reactor Projects, Section 2

6/17/85
Date Signed

Summary:

Inspection between March 14-May 3, 1985 (Report 50-312/85-08)

Areas Inspected: This routine inspection by the Resident Inspectors involved the areas of operational safety verification, observation of refueling activities, evaluation of the battery maintenance program, surveillance, maintenance observations, and procedure reviews. This inspection involved 330 hours onsite by two resident inspectors.

Results: Of the areas inspected, two violations were identified: one violation in the area of battery maintenance and testing, and one violation in the area of nonconformance reports.

Also, one unresolved item in the area of battery testing was identified.

8507160557 850617
PDR ADOCK 05000312
Q PDR

DETAILS

1. Persons Contacted

a. Licensee Personnel

- *P. Oubre', Manager of Nuclear Operations
- *G. Coward, Plant Superintendent
- *H. Canter, QA Operations Surveillance Supervisor
- *R. Colombo, Regulatory Compliance Supervisor
- *W. Spencer, Operations Superintendent
- *S. Crunk, Regulatory Compliance Engineer
- *J. Field, Engineering and Quality Control Superintendent
- *R. Lawrence, Mechanical Maintenance Supervisor
- *R. Miller, Chemistry and Radiation Protection Superintendent
- *S. Redeker, Shift Technical Advisor Supervisor
- *J. Jewett, Site Quality Assurance Supervisor
- *J. Williams, Supervising I&C Engineer
- *D. Yount, Electrical Superintendent
- *J. Wheeler, Electrical Engineer
- *A. Lacy, Startup
- *J. Irwin, Instrumentation & Control

*Attended the Exit Meeting on May 3, 1985.

2. Operational Safety Verification

On March 15, 1985, the licensee commenced a ninety day outage. The outage will include:

- ° Partial refueling of core.
- ° Steam generator eddy current testing, tube pulling, and plugging.
- ° Auxiliary boiler tube replacement.
- ° Turbine inspection.
- ° Main generator inspection.
- ° Heating ventilation and air conditioning modifications for the control room, technical support center, and nuclear service equipment building.
- ° Feedwater heaters inspection and tube plugging.
- ° Reactor coolant pumps B and D seal replacement.
- ° 10 CFR 50, Appendix R modifications.
- ° Letdown piping modification and cooler replacement.

During the report period, the inspectors observed control room operations, reviewed applicable logs, and interviewed control room operators. The inspectors verified that surveillance tests required during the shutdown were accomplished, reviewed clearance records, and verified containment integrity. Tours of the auxiliary building, turbine building, fuel handling buildings, and reactor building, including exterior areas, were made to assess equipment and plant conditions. Also, the tours were made to assess the effectiveness of radiological controls and adherence to regulatory requirements. This included reviews of Radiation Work Permits (RWP) for completeness, protective clothing requirements, and verification that workers understood the RWP's

requirements. The inspector monitored the administrative controls for exposure, approval, and reviewed selective dosimetry cards for accuracy of accumulative dose. During tours of controlled access areas for recalibration dates of selected portable radiation detectors and friskers were verified to be valid.

The inspectors observed plant housekeeping and looked for potential fire and safety hazards. The inspectors informed the licensee of cases of improper safety eye-wear, and eight filled nitrogen gas tanks unrestrained, and left on their sides on top of the Auxiliary Building. The licensee took immediate corrective action for all cases.

No violations or deviations were identified.

3. Refueling Activities

Refueling (fuel movement) commenced on April 19, 1985 and was completed on April 30, 1985. Prior to fuel movement the inspectors verified that the surveillance testing required for refueling had been completed. During a review of Refueling Procedure B-8, prior to refueling, the inspector noted an error in the procedure. This is further discussed in Section 7 of this report. The licensee corrected this procedure prior to refueling. Also, prior to refueling, the inspector reviewed the reactor cavity seal plate design. The seal plate at Rancho Seco is a mechanical type seal; a steel ring and gasket bolted in place.

The inspectors witnessed approximately fourteen hours of actual refueling activities. During these observations, the inspector verified:

- ° Containment integrity was maintained in accordance with the Technical Specifications.
- ° Communications were as required.
- ° Refueling cavity water level was as required.
- ° Boron concentration was in accordance with Amendment 126 to the Technical Specifications.
- ° The licensee's staffing was as required.

During refueling, the refueling equipment had reliability problems and a plastic cover from an underwater light was lost. Numerous malfunctions in the refueling bridge and the fuel transfer mechanisms occurred both prior to and during fuel movement. The licensee's actions to correct these problems appeared to be adequately controlled. During fuel movement, an underwater light was lowered into the refueling cavity with the clear plastic light cover not properly retained. The cover was lost during the operation, and was finally located (with a camera) at the bottom of the reactor vessel. The licensee has contracted with General Electric to ascertain the effect of not removing the plastic cover.

The activities in the spent fuel storage area were also evaluated during refueling. This included verification that the spent fuel area ventilation system was operating, minimum water level requirements, and radiation and airborne radioactivity monitors were operable.

No violations or deviations were identified.

4. Battery Maintenance, Surveillance, and System Walkdown

The inspector reviewed the Technical Specifications surveillance requirements for the safety related station batteries. The surveillance program was defined by procedure SP 206.04, Rev. 6, "Testing of Diesel Engine Batteries and 125 volt D.C. systems," and implemented by procedures EM. 104 Rev. 8, "Station Battery Pilot Cell Test", EM.105 Rev. 11, "Station Battery I.C.V., Specific Gravity and Temperature Test," and EM. 106 Rev. 4, "Station Battery Test Discharge and Equalize Charge". The inspector identified errors or weaknesses in the procedures, exemplified by the following:

- a. EM.104 Rev 8: ° Section 5.2.1., pilot cell criteria for performing equalizing charges, required a comparison of specific gravity measurements of the pilot cell, yet specified a difference in cell voltage as the acceptance criteria, instead of a specific gravity measurement.
- b. EM.105 Rev. 11: ° Section 5.3 required an equalizing charge when any battery cell's voltage fell below the average voltage for the battery by .005 volts. This was apparently an error since recording of cell voltage was only performed to two decimal places.
 - ° It was noted that the procedure listed some but not all criteria for an equalizing charge, e.g. the procedure did not require an equalizing charge when specific gravity of a cell was below 1.210 points.
- c. EM.106 Rev. 4 ° The procedure did not specify the step which was to be used when starting an equalizing charge (without performing a test discharge first). Thus the correct starting step was ambiguous.
 - ° After an equalizing charge has been performed and completed, no confirmatory measurement of pilot cell specific gravity or cell voltage was required to ensure that the equalizing charge was effective.
- d. SP 206.4 ° The procedure does not detail all the possible criteria for an equalizing charge.

The results of the battery tests from January 2, 1985 thru April 22, 1985, eighty-four separate documents, were reviewed to verify that they were in conformance with technical specifications and procedure requirements. Also, the results were reviewed for indication of a second level review by personnel other than the individual directing the test, to ensure that deficiencies identified during testing were properly

reviewed and resolved. The inspector identified the following errors during this review:

- ° Six instances of conflicting dates on the weekly storage battery report, so that the date on which the data was collected was ambiguous.
- ° Eight instances of arithmetic mistakes in calculating temperature corrected specific gravity.
- ° Two cases of not recording the pilot cell number on the weekly report.
- ° Fourteen instances of the wrong pilot cell used for the weekly test.
- ° Three instances where an equalizing charge should have been applied but was not.
- ° One instance of SP 206.04's weekly record sheet (week of 1-7-85) recording a weekly result twice, once as unsatisfactory and the other as satisfactory.

Technical Specification 6.8 "Procedures" requires in part that: "Written procedures shall be established, implemented and maintained covering the activities preformed below: ... c. Surveillance and test activities of safety related equipment" Also Technical Specification 4.6.4 requires in part that: "Batteries in the 125 volt DC systems shall be tested as follows: ...c. Each time data are recorded, new data shall be compared with old to detect signs of deterioration"

Contrary to the above, the procedures for battery testing (SP 206.04, EM. 104, EM. 105, and EM 106) contained numerous procedural errors, and incorrect data. In certain cases, these directly resulted in an inaccurate comparison of the new test data to the old data. This is a Severity Level IV violation (50-312/85-08-01).

In accordance with procedure EM 106 the licensee performs a duty cycle discharge test on a refueling outage interval. This involves discharging the batteries for a load and time period equivalent to the time and load experienced during the worst case design accident. The inspector reviewed a portion of the most recent test results and found the results in compliance with the procedures. However, Technical Specification 4.6.4.D requires the 125 volt DC system be tested: ... "During each refueling interval, the battery shall be subjected to a rated load or equivalent test...." This test is explained in the Technical Specification Bases as a surveillance which has been demonstrated over the years to provide an indication of a cell becoming unserviceable long before it fails." It is not clear that the licensee's duty cycle discharge test presently provides information to determine whether the battery meets its specifications or rating and whether the battery rate of deterioration is increasing, even if there is ample capacity to meet

the load requirements. The licensee has committed to address this concern.

This is considered an unresolved item. (50-312/85-08-01)

In addition to this evaluation of the battery surveillance and maintenance program, the inspector performed a walkdown of the system including the battery chargers. The physical and cleanliness condition of the rooms and equipment was satisfactory. No violations or deviations were identified during the walkdown.

5. NRC Headquarters Request

The inspectors were requested by NRC Headquarters to review the licensee's actions involving a safety issue addressed in IE Information Notice 84-06, "Steam Binding of Auxiliary Feedwater Pumps." The notice dealt with the safety implications of back leakage into the auxiliary feedwater (AFW) system from the main feedwater systems. This leakage could constitute a common mode failure that could lead to the loss of AFW capability and, further, lead to the potential for water hammer damage to the AFW system piping.

The licensee has never experienced any steam binding of the AFW pumps due to back leakage, indicating adequate check valve reliability in the AFW system. The licensee performs periodic check valve full stroke tests and has started a program for visually inspecting the check valve intervals by inserting a fiberscope through the drain valve. Furthermore, the licensee also monitors the temperature of the AFW pump casing for detection of potential back leakage. The Equipment Attendant is required to physically touch the pumps casing and record the relative temperature, (hot or cold), in the shift logs.

It appears, that the licensee's experience to date indicates adequate AFW system check valve reliability, and the periodic surveillances and checks provide early indication for assessing main feedwater system back leakage into the AFW piping and pumps. This item is closed.

6. Maintenance Observations

The inspector evaluated or observed portions of the maintenance activities listed below, verified that work was accomplished in accordance with approved procedures, by qualified personnel, and that LCO requirements were met during the repairs:

- ° Feedwater heater repairs.
- ° Main feed water pump overhaul.
- ° Main fuel handling bridge repairs.
- ° OTSG tube eddy current testing.
- ° "A" Diesel Generator-biannual inspection.

No violations or deviations were identified.

7. Independent Inspection

The inspectors reviewed the Technical Specification definitions for cold shutdown, and discovered that prior to Amendment No. 61 the definition contained an incorrect reference. The definition referenced Technical Specification 3.2.1, which should have been Specification 3.1.2. The licensee was informed of this error, and took corrective action. The inspector reviewed previous amendment changes issued from the NRC and found no indication of the error. Therefore, it appeared that the error occurred in the licensee's process of preparing approved amendments for issuance into the control copies of the Technical Specification.

The inspector also noted errors in the following procedures:

- ° B-8 "Refueling" Rev. 12, contained errors in enclosure 5.3, Containment Isolation Valve Lineup, regarding incorrect numbers for penetrations.
- ° Surveillance Procedure SP 205.07 referred to a surveillance procedure that had been deleted in 1981. This is discussed in more detail in Section 6.c of Inspection Report 50-312/85-04.
- ° The errors in the battery maintenance procedures as discussed in Section 4 of this report.

The inspectors stated that the licensee should emphasize to the procedure users to appropriately identify types of errors. This is considered an open item (50-312/85-08-01).

8. Review of Nonconformance Report on HVAC System

The licensee is modifying the present Heating, Ventilation and Air Conditioning (HVAC) for the control room and integrating the system with the HVAC for the Technical Support Center. During the testing of the refrigeration system, many leaking joints and valves were noted. NCR 4433, Rev. 1 was issued to repair two cracked valves, HVS-012 and HVS-005; the cracks were located at the socket joint area of the valve bodies. The licensee believes the cracks were caused by temperature transients due to brazing operations on the socket.

The licensee dispositioned this NCR for repair action involving the removal of these valves from the system. The valves' function was to provide isolation of the external piping from the internal components in the refrigeration units to minimize refrigerant loss during maintenance. Therefore, the removal of these valves will not affect the operation of the system.

In reviewing the NCR, the inspector noted that the disposition would involve the revision of approximately seven drawings. Quality Control Instruction No. 1 (QCI 1) "Processing of Nonconforming Reports-NCRs" states in part: "...The assigned cognizant engineer is responsible for

identifying on the NCR all associated drawings that must be updated as a result of his disposition."

Contrary to the above, the disposition of NCR 4433, Rev. 1 required removing valves HVS-012 and HVS-005 from the system piping of condensing units U-545A and U-545B for the Auxiliary Building's Heating, Ventilation and Air Conditioning System. This involved the update of seven drawings. These drawings were not identified as required on NCR 4433, Rev. 1. This is a Severity Level V violation (50-312/85-08-02).

9. Exit Meeting

The inspector met with licensee management personnel denoted in paragraph 1 at the conclusion of the inspection on May 3, 1985. The scope, observations, and finding of the inspection were discussed.