

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-312/86-17
Docket No. 50-312
License No. DPR-54
Licensee: Sacramento Municipal Utility District
P. O. Box 15830
Sacramento, California 95813
Facility Name: Sacramento Municipal Utility District (SMUD)

Inspection Conducted: April 16 - May 17, 1986

Inspector:

Andrew Hon
A. Hon, Reactor Inspector

6-5-86
Date Signed

Approved by:

L. Miller
L. Miller, Chief, Reactor Projects Section

6-5-86
Date Signed

Summary:

Inspection on April 16 - May 17, 1986 (Report No. 50-312/86-17)

Areas Inspected: Routine unannounced inspection by one regionally based inspector of licensee surveillance program, restart items, licensee event reports and open items. Inspection procedures 61725, 93702, 92700, 90712, 62704, and 30703 were performed.

Results: In the areas inspected, no violations or deviations were identified.

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DETAILS

1. Persons Contacted (Licensee Personnel)

- *G. Coward, Manager, Nuclear Plant
- *S. Redeker, Nuclear Operations Manager
- *B. Croley, Nuclear Technical Manager
- *J. Field, Nuclear Technical Support Superintendent
- *L. Fossum, Nuclear I&C Maintenance Superintendent
- *R. Columbo, Regulatory Compliance Superintendent
- *J. Irwin, Supervisor, I&C Maintenance
- *C. Stephenson, Regulatory Compliance Engineer
- N. Thibodaux, Surveillance Scheduling Engineer
- R. White, Electrical Engineer

Other licensee employees contacted included engineers and technicians.

*Attended the exit meeting on May 16, 1986.

2. Surveillance Testing and Calibration Control Program

The objective of this inspection was to assess the licensee's programs for control and evaluation of (1) surveillance tests, calibrations, and inspections required by Section 4 of the Technical Specifications, and (2) calibration of safety-related instrumentation not specifically controlled by Technical Specifications. (SMUD's in-service testing program for pumps and valves per 10 CFR 50.55a(g) was reviewed extensively during a previous inspection (85-23). Thus, it was not reviewed during this inspection).

a. Surveillance Testing

Section 4 of the Technical Specifications specifies the minimum frequency and type of surveillance to be applied to unit equipment for various operating conditions. The responsibility for SMUD's surveillance program was assumed by the Technical Support Superintendent and implemented by the Surveillance Specialist. The governing procedure was AP.303 "Surveillance Program." It specified the requirements and the responsibilities of various supervisors with respect to the program.

The licensee's master schedule for surveillance testing/calibration/inservice inspection and testing required by the Technical Specifications and 10 CFR 50.55a(g) was a manual system maintained by the Surveillance Specialist. The schedule specified the frequency, defined the plant group responsible for performing the surveillance, and tracked the surveillance test status. From the master schedule, a weekly update of the surveillance schedule were distributed to the Group Supervisors responsible for performing the tasks. A daily overdue list was also generated for the plant management meeting each morning. The inspector found this manual system adequate but susceptible to errors and oversights. SMUD was in the process of converting it to a computerized system.

The requirements for conducting test and calibration data review and corrective actions were formally established in AP.303 "Surveillance Program." The inspector found them to be adequate.

SMUD recently initiated procedure AP.303A, "Writer's Guide for Surveillance Procedures," in March 20, 1986, as part of SMUD's surveillance program improvement to ensure that individual surveillance procedures were standardized in format, style, and content. This document provided administrative and technical guidance to be used when preparing surveillance procedures. The inspector reviewed it and concluded that SMUD's surveillance procedures would be enhanced when all surveillance procedures were written to the guide's standards.

The Technical Specifications are amended periodically, and the surveillance procedures should be revised accordingly. However, the inspector found that the licensee did not have a formal procedure to ensure that Technical Specification amendments received by the Regulatory Compliance Department were transmitted to the Technical Support Department, which generates appropriate procedural revisions. The inspector sampled five recent Technical Specification Amendments and found one of them, Amendment No. 58, dated November 6, 1984, was not incorporated in the applicable Surveillance Procedure, SP 205.03, Rev.9, "Inservice Inspection of UngROUTed Tendons in Prestressed Concrete Containment Structure," which was dated March 4, 1986. The actual surveillance was not due until 1987 because this was a 3-year interval surveillance. Thus, the Technical Specification had not yet been violated. In addition, the inspector found that SG.104, "Cross-Index of Technical Specification and Surveillance Procedures," dated December 20, 1985, was not complete and up to date. For example, the cross-indexing of Technical Specification 4.17.6, "OTSG Auxiliary Feedwater Header Surveillance" and SMUD's Surveillance Procedure, SP 210.06, dated April 1986, were not in SG.104. This indicated a weakness in the licensee's program to ensure the current Technical Specification Surveillance requirements were met. Licensee management stated at the exit meeting that SMUD was overhauling its entire surveillance program, and committed to correct the above weakness by September 1986. This will be reviewed during future inspections (Open item 86-17-01).

b. Calibration of safety-related instruments not specifically controlled by Technical Specifications

The Technical Specifications do not specify calibration requirements for all instruments. Yet, in order for the plant to operate within Technical Specification requirements and respond to abnormal plant conditions, operators are required to monitor various plant parameters. Thus, a formal system to control and evaluation calibration of these safety-related instruments is prudent.

The inspector found that the licensee's preventive maintenance and calibration program primarily covered only instruments identified in the surveillance procedures. However, the licensee did not have a

formal program to identify instruments in the control room which were needed according to the emergency procedures or Technical Specifications. In March 1986, the licensee's operating staff had found safety-related instruments in the control room, such as high pressure flow indicators, did not have current calibration stickers affixed to the back of the modules (Occurrence Description Report, 3/19/86). The licensee determined later that these instruments were actually calibrated or part of loop checks per Technical Specification Surveillance requirements, but the calibration stickers had not been updated.

At the exit meeting, the inspector stated that if the above condition (lack of a formal program to identify instruments needed for abnormal operations and ensure that they are properly calibrated) was left uncorrected, it could result in out of calibration control room instruments which the operators might rely on during abnormal plant operations. In response, the licensee committed to establish a program to identify those instruments needed for Technical Specification compliance and abnormal operations, and to include them in the master calibration schedule before restart. This corrective action will be reviewed during future inspections (Open Item 86-17-02).

c. Quality Assurance (QA) Activity

The inspector reviewed samples of SMUD's QA monitoring and audit documents on the Surveillance Program. It appeared that QA coverage in this area to be adequate.

No violations or deviations were identified.

3. Licensee Event Report (LER) Followup

The following LERs were reviewed for conformance with the 10 CFR 50.73 reporting requirements:

- ° LER 85-01, Rev. 1, "Loss of Containment Integrity Via Open Valves"
- ° LER 85-10, Rev. 1, "Reactor Coolant System Nonisolable Leak"
- ° LER 86-04, Rev. 0, "Missed Fire Watch on Inoperable Fire Doors"
- ° LER 86-05, Rev. 0, "Seismic Spacing of Nuclear Service Batteries"

The reporting requirements were met and the corrective actions will be reviewed for final close out during future inspections. These reports are remarked open.

The corrective actions for the following LERs were reviewed:

- a. (Closed) LER 79-21. Replacement of main feedwater nozzles delayed from the 1981 to the 1982 refueling outage.

Summary: In 1979, SMUD found an error in the reference heat balance which resulted in an error for the Effective Full Power Day (EFPD) calculations. As a result, the Axial Power Shaping Rods (APSRs) were withdrawn about 7 EFPDs earlier than permitted by Technical Specifications. SMUD's evaluation determined that the heat balance error was attributed to a degradation of the feedwater flow nozzle and replacement was planned the 1981 refueling. On April 29, 1981, SMUD informed the NRC that the replacement was postponed until the 1982 refueling outage due to the necessary supplier lead time.

Status: SMUD performed the nozzle replacement work under Engineering Change Notice ECN A-3168 in May 1985. The inspector reviewed the work package for the nozzle replacement work and found it satisfactory. Thus, this item is closed.

- b. (Closed) LER 83-07 and 83-17. Replacement of Wilmar Electronics Relays.

Summary: During calibration testing of the reactor coolant pump power relays on March 30 and 31, 1983, four relays were defective and one was incapable of being calibrated. One additional relay had already been taken out of service in February, 1983. As corrective action, the relays were sent to be rebuilt by the manufacturer, Wilmar Electronics, Inc. SMUD was also considering replacement of all Wilmar relays with a more reliable type. Several replacement programs were under consideration.

Status: SMUD evaluated several replacement alternatives, and decided to purchase 6 underpower and 6 phase balance relays of the new type from Wilmar, initially. At the next refueling outage, 4 of each would be installed. The old type relays removed, if not defective, could be saved as spares. During the following core cycle, 6 more underpower and 6 more phase balance relays of the new type would be bought, with 4 of each going into service at the following refueling outage. For the next two refueling outages, 4 each new type underpower and phase balance relays would be procured and installed. The licensee explained that this phase-in approach would allow them to spread out the cost of change out, gain experience with the new type relays without risking the whole system, and replace unreliable components in a relatively short time. The engineering and procurement for this task was underway.

The inspector considered SMUD's action reasonable. Thus, this item is closed.

4. Followup Item - (Closed) Notice of Violation No. 50-312/85-23-02: Inadequate Calibration. Lack of Proper Calibration Records and Improper Closure of Audit Findings.

Summary: During previous inspections (85-23 and 86-01), the inspectors found that two plant gauges (PI-23804 and PI-23848) had no calibration

record. SMUD committed to include them in the calibration program. In addition, the inspector found that another group of SMUD's staff issued changes to Surveillance Procedures and added new requirements to record temperature reading from existing instruments TI-48703, TI-29123, and TI-29124. However, these instruments were not included in the site preventive maintenance calibration program. SMUD committed to review the calibration requirements for these instruments and assure the procedure writers were aware of the new license commitments.

Status: The inspector reviewed SMUD's document and verified SMUD recalibrated these instruments and included them in the Preventive Maintenance Calibration Program. The remaining issue of assuring that procedure writers are aware of new license commitments and instruments were calibrated will be followed under open item 86-17-01 (paragraph 2.a of this report).

Thus, this item is closed.

5. Restart Issue - RV: MA-2, SMUD: 16.C(2). Implement Program to Assure Integrity of Plant Electrical Terminations.

The inspector monitored SMUD's electrical termination inspections and repairs as a result of the December 26, 1985 event (Inspection Report 86-07).

During this inspection period, SMUD's visually inspected all Safety Feature Actuation System (SFAS), Reactor Protection System (RPS), Non-nuclear Instrumentation (NNI), and Integrated Control System (ICS) cabinets supplied by Bailey. The inspection, utilizing the more stringent current construction standard, identified a number of discrepancies such as (1) improper size lug for conductor; (2) conductor recessed in lug barrel or conductor too long and under terminal screw; (3) incorrect size lug hole for terminal screw; and (4) bent and twisted lug. NCRs were written and were being dispositioned by replacement of the rejected lugs or acceptance based on engineering judgement.

To facilitate the inspection of the lugs installed face down (so that the barrel was not visible), SMUD adopted a tug test program to determine the secureness of these lugs without having to remove them. This tug test was also used to determine the secureness of other lugs with conductor strands recessed in the lug barrel. A pull force of approximately 3 lbs. tension was used in the tug test. One tug test failure occurred in which an internal cable pulled out due to crimping near the barrel end and damaged the conductor strands. A separate NCR was written to cover this failure because it appeared to be a new and unique failure mode.

Since the lug which failed the tug test would have passed the visual inspection criteria, the licensee expanded the tug test to include all other Bailey cabinets (RPS, NNI, ICS, and Main Consoles). As a result of this expand inspection, three more lug failures occurred - two in the Main Console and one in the RPS Cabinet. These failures were also due to crimping of the Bailey supplied terminations too close to the lug barrel end causing damage to conductor strands. These failures were documented, and the terminations were replaced. The overall control room cabinet

electrical termination work is expected to be completed in June. Furthermore, the licensee will evaluate 10 CFR Part 21 reporting requirements on the potentially generic issue of Bailey crimped termination failures. The inspector will also evaluate the generic issue based on the licensee's final report. (Open Item 86-17-03).

The inspector reviewed samples of NCR's work ordered and observed some of the field work and found them satisfactory.

No violation or deviation identified.

6. Exit Meeting

On May 15, 1986, an exit meeting was conducted with licensee representatives identified in paragraph 1. The inspector summarized the scope of the inspection and findings as described in this report.