U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-206/92-34, 50-361/92-34, 50-362/92-34

Docket Nos. 50-206, 50-361, 50-362

License Nos. DPR-13, NPF-10, NPF-15

Licensee: Southern California Edison Company
Irvine Operations Center
23 Parker Street
Irvine, California 92718

Facility Name: San Onofre Units 1, 2 and 3

Inspection at: San Onofre, San Clemente, California

Inspection conducted: December 1, 1992 through January 8, 1993

Inspectors: C. W. Caldwell, Senior Resident Inspector

D. L. Solorio, Resident Inspector

Approved By: DF Kirsch for H. J. Wong, Chief
Reactor Projects Section II

1/26/93
Date Signed

Inspection Summary

Inspection on December 1, 1992 through January 8, 1993 (Report Nos. 50-206/92-34, 50-361/92-34, 50-362/92-34)

Areas Inspected: Routine resident inspection of Units 1, 2 and 3 Operations Program including the following areas: operational safety verification, radiological protection, security, evaluation of plant trips and events, monthly surveillance activities, monthly maintenance activities, and independent inspection. Inspection procedures 61726, 62703, 71707, and 93702 were covered.

Safety Issues Management System (SIMS) Items: None

Results:

General Conclusions and Specific Findings:

Weaknesses

Several weaknesses were noted in the performance of maintenance and testing activities. In particular, the inspector noted that Station Technical personnel (performing an inservice test) did not fully

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understand the intent of Radiation Exposure Permit requirements. As a result, they entered a contaminated area without the requisite protective clothing specified in the Radiation Exposure Permit (Paragraph 5.a). The inspector also noted that Maintenance craft personnel did not properly restore a battery charger to its original configuration after testing. In addition, both their supervisor and a QC inspector (tasked with oversight of the work activity) did not note the discrepancy (Paragraph 6.a).

Significant Safety Matters:

Summary of Violations:

One violation was identified during this inspection period which involved the failure by station technical personnel to follow Radiation Exposure Permit requirements (Paragraph 5.a). In addition, one non-cited violation involving failure to follow procedure during restoration from a battery charger test in Unit 1 was identified (Paragraph 6.a).

Open Items Summary:

During this report period, two new followup items were opened and none were closed.

DETAILS

1. Persons Contacted

Southern California Edison Company

H. Ray, Senior Vice President, Nuclear
*H. Morgan, Vice President and Site Manager
*R. Krieger, Station Manager
J. Reilly, Manager, Nuclear Engineering & Construction
B. Katz, Manager, Nuclear Oversight
*R. Rosenblum, Manager, Nuclear Regulatory Affairs
K. Slagle, Deputy Station Manager
R. Waldo, Operations Manager
*L. Cash, Maintenance Manager
*D. Breig, Manager, Station Technical
*M. Short, Manager, Site Technical Services
M. Wharton, Manager, Nuclear Design Engineering
P. Knapp, Manager, Health Physics
*J. Fee, Assistant Manager, Health Physics
W. Zintl, Manager, Emergency Preparedness
D. Herbst, Manager, Quality Assurance
*C. Brandt, Quality Assurance
C. Chiu, Manager, Quality Engineering
J. Schramm, Plant Superintendent, Unit 1
*V. Fisher, Plant Superintendent, Units 2/3
G. Hammond, Supervisor, Onsite Nuclear Licensing
*J. Jamerson, Lead Engineer, Onsite Nuclear Licensing
*D. Axline, Engineer, Onsite Nuclear Licensing
*D. Wilcockson, Onsite Nuclear Licensing
J. Reeder, Manager, Nuclear Training
H. Newton, Manager, Site Support Services
*R. Neal, Supervising Engineer, Station Technical
*A. Thiel, Manager, Electrical Systems Engineering, Station Technical
*W. Frick, Assessment Supervisor, Nuclear Oversight
*B. Carlisle, Manager, Electrical, Nuclear Engineering
*M. Herschthal, Manager, Nuclear Systems Engineering, Station Technical

*Denotes those attending the exit meeting on January 11, 1993.

The inspectors also contacted other licensee employees during the course of the inspection, including operations shift superintendents, control room supervisors, control room operators, QA and QC engineers, compliance engineers, maintenance craftsmen, and health physics engineers and technicians.

2. Plant Status

Unit 1

Unit 1 was permanently shutdown on November 30, 1992.

Unit 2

The Unit operated at power during the period.

Unit 3

The Unit operated at power during the period.

3. Operational Safety Verification (71707)

The inspectors performed several plant tours and verified the operability of selected emergency systems, reviewed the tag out log and verified proper return to service of affected components. Particular attention was given to housekeeping, examination for potential fire hazards, fluid leaks, excessive vibration, and verification that maintenance requests had been initiated for equipment in need of maintenance. The inspectors also observed selected activities by licensee radiological protection and security personnel to confirm proper implementation of and conformance with facility policies and procedures in these areas. Several minor discrepancies were identified and discussed with the shift supervisor for resolution.

No violations or deviations were identified.

4. Evaluation of Plant Trips and Events (93702)

Prompt Onsite Response To Events At Operating Power Reactors (93702)

In early December 1992, operators requested that management evaluate the need for monitoring station service transformer (SST) voltages for the No. 1, 2 and 4 transformers (there are a total of four transformers) in Unit 1. The system design engineer was consulted and determined that 480V SST No. 3 had operated with the transformer tap settings configured for Modes 5 and 6 operation since May 1991. Unit 1 restarted from a steam generator repair outage in May 1991, without reconfiguring the SST tap settings for Mode 1 through 4 operation and operated that way until the shutdown on November 30, 1992.

On December 28, 1992, the system design engineer initiated nonconformance report (NCR) number 92120064 to document the discrepancy associated with SST No. 3. Operability of the transformer in Modes 1 through 4 will be addressed by a Nuclear Engineering Design Organization (NEDO) analysis which is scheduled for completion in late January or early February 1993. The inspector considered that since Unit 1 was permanently shutdown on November 30, 1992, there was no immediate safety concern. However, since SST No. 3 tap settings were configured for Modes 5 and 6 during plant operation, the inspector will review the evaluation when available to determine if there were any operability concerns when Unit 1 was in Modes 1 through 4 as inspector followup item (50-206/92-34-01).

No violations or deviations were identified.

5. Bi-Monthly Surveillance Activities (61726)

During this report period, the inspectors observed or conducted inspection of the following surveillance activities:

a. Observation of Routine Surveillance Activities (Unit 2)

S023-V-3.5.4, "Inservice Testing of Check Valves (Quarterly Frequency) - Attachment 3, High Pressure Safety Injection Check Valves"

S023-V-3.4.8, "Saltwater Cooling Inservice Pump Test - 2MP113"

S023-V-3.4.4, "High Pressure Safety Injection Inservice Pump Test - Attachment 1, 2P017"

On December 17, 1992, the inspector observed performance of a quarterly inservice test (IST) on Unit 2 high pressure safety injection (HPSI) pump P017 as prescribed in procedure S023-V-3.4.4. The inspector noted that the engineer and his supervisor crossed radiological boundaries by reaching into and touching objects within a contaminated area. However, they were not wearing the required protective clothing (coveralls, cloth hood, rubber gloves, or cordero covers) specified by applicable Radiation Exposure Permit (REP).

Station procedure S0123-VII-9.9, TCN 11-3, "Radiation Exposure Permit Program," states, in part, that all personnel covered by the REP shall follow the requirements specified in the REP. REP-00700, Revision 16, "Visual Inspection; All Areas Except Containments," used by the engineer and the supervisor required that the following protective clothing be worn for entry into contaminated areas: coveralls, cloth hood, rubber gloves, and cordero covers. However, the inspector observed the system engineer reach into a contaminated area to place a vibration monitoring probe on the pump housing to take IST vibration data, without wearing the requisite protective clothing specified in the REP. The inspector also observed the engineer's supervisor reach into the contaminated area and touch scaffolding without wearing the requisite protective clothing specified in the REP. Failure to adhere to REP requirements is an apparent violation (50-361/92-34-02).

The inspector noted that the engineer and the supervisor did not recognize that their performance was in violation of their REP requirements until Health Physics (HP) management contacted them subsequent to discussions with the inspector. The inspector was concerned with the supervisor's performance since his actions could be interpreted by subordinates (i.e., the system engineer) as condoning noncompliance with an REP. In addition, discussions with several past and present system engineers indicated that reaching in

without protective clothing was a customary practice (while performing ISTs) if the pump was in a contaminated area.

On December 17, 1992, HP management initiated two Radiological Observation Reports (RORs) to document the inspector's observations in accordance with SO123-VII-9.3, TCN 5-3, "Reporting Radiological Incidents." The purpose of the RORs was, in part, to identify potential and actual radiological incidents and establish a method to implement corrective actions to prevent recurrence. Copies of these reports were sent to the appropriate supervision for the system engineer and the supervisor, requesting response to HP with corrective actions to prevent recurrence. The inspector reviewed the ROR responses and considered them acceptable.

Subsequent to discussions with the inspector, in an effort to preclude further violations of REPs, HP implemented the following interim actions:

- ISTs of pumps in contaminated areas were coordinated with system engineers to facilitate entrance into contaminated areas. In the case of the HPSI pumps, the contaminated areas are normally too small to allow individuals to stand inside them and perform the IST. As a result, HP will expand the boundary to allow the engineer enough room to work within the contaminated area.

- Selected ISTs will be monitored to verify system engineer performance and adherence to REP requirements.

In an effort to preclude further violations of REPs, Station Technical (STEC) has taken the following interim actions:

- A memorandum was routed to system engineers to assure they understand the REP requirements for jobs they perform and that REP 00700 does not allow reaching into contaminated areas.

- Engineering supervisors were instructed to observe engineers and provide coaching on good work practices during their weekly management monitoring of the engineers.

- A Technical Division Investigation Report was initiated to identify root causes for the observed deficiencies.

Long term corrective actions proposed (scheduled to be implemented late January or early February, 1993) included a coordinated effort between HP and STEC to develop an REP that will allow system engineers to reach into contaminated areas for the performance of pump IST monitoring.

b. Observation of Routine Surveillance Activities (Unit 3)

SO23-3-3.5, "CEA (Control Element Assembly) Monthly Operability Test."

SO23-3-3.17, "Main Steam Isolation Valve Operability Test."

Within this area inspected, one violation was identified.

6. Monthly Maintenance Activities (62703)

During this report period, the inspectors observed or conducted inspection of the following maintenance activities:

a. Observation of Routine Maintenance Activities (Unit 1)

MO92121891000, "Need To Adjust Station Service Transformer #2 Tap Setting To Tap #2 to Lower 480V Bus Volts Per SO1-9-3 If Outage Exceeds 7 Days."

MO92041671000, "Charger Capacity Test."

On December 1, 1992, a capacity test was performed on Unit 1 battery charger 'A' in accordance with maintenance order (MO) 92041671000 and procedure SO123-I-2.5, "Battery Service and Charger Surveillance." During preparation for the test, electricians lifted two of the four cables (one positive and one negative) and documented that activity on a lifted lead form. However, during restoration from the test, a different crew of electricians did not properly reterminate the cables to the original configuration. As a result, the charger was inoperable until the next day when it was realized that it had been improperly configured. This was complicated by the fact that for a period of time, the redundant charger, 'B', was inoperable since it had been cleared for maintenance.

The improper termination by the electricians was due to their misinterpretation of the lifted lead form (LLF), and failure to follow procedure. Step 6.6.6.1 of procedure SO123-I-2.5 required the electrician to lift two of four leads from the charger to allow room to connect the load bank for testing the charger capacity. This was done and documented on the LLF. The two lifted leads were pulled out of the cabinet in such a manner that they were not visible from the front of the cabinet. When the test was completed, a second electrical crew did not see the two lifted leads that had been pulled out of the cabinet. They reviewed the LLF and assumed that the remaining two connected leads were the leads recorded on the LLF, and moved them to different terminal posts within the charger cabinet. Step 6.7.16.1 of SO123-I-2.5 required the electricians to return the battery charger to the pretest configuration in accordance with step 6.6.6.1; but, the

electricians, and their supervisor, failed to follow this step in the procedure. Additionally, a quality control inspector observing the work failed to assure proper restoration of the circuits.

In response to this problem, the licensee performed several actions. The first was to perform a calculation to determine the significance of operating the charger with two of the four cables connected. The calculation, A-92-E-003, revealed that current carrying capacity of the two cables during design basis accident conditions was sufficient to ensure that some margin remained. As a result of this effort, the licensee concluded that the safety significance of the problem was minimal.

The second action was performance of an assessment to determine the root cause and corrective actions for the event. Maintenance Division Experience Report 92-008 documented the results of the licensee's assessment. The licensee determined that the personnel involved erroneously "locked-on" to what they believed was a plausible set of circumstances in setting up for the test. Thus, they did not properly consider the information provided in the lifted lead form. In addition, the QC inspector did not ensure verbatim compliance with the maintenance procedure.

For corrective action, the licensee properly restored the charger cables. In addition, proposed actions for Electrical Maintenance personnel included review of the incident with all electricians, a review to ensure adequate implementation of the Maintenance Stop/Self Checking program, and a review of the event for disciplinary action. Corrective actions proposed for QC personnel included training on work package familiarization, inspector responsibilities, and inspector observation on the job.

Step 6.7.16 to procedure SO123-I-2.5 required that the battery charger be returned to its original pretest configuration. Step 6.7.18 required that a second qualified person verify that all cables have been properly terminated. In addition, step 5 of MO92041671 required that QC witness the completion of work to return the charger to its original configuration.

Failure of the Electrical Maintenance personnel to follow the requirements of procedure SO123-I-2.5 and of the QC inspector to follow the requirements of MO92041671 is a violation. However, the issue was licensee identified, was determined to be of low significance, and corrective actions (proposed and implemented) appear adequate to minimize the potential for further occurrences. As a result, this issue is not being cited since the criteria specified in Section VII.B of the Enforcement Policy were satisfied (50-206/92-34-03).

c. Observation of Routine Maintenance Activities (Unit 3)

CM92121389000, "Corrective Maintenance - A Fine Crack Has Been Discovered between Cell 5 (-) and 6 (+) As Documented On QA (Quality Assurance) Report 2E-023092. Jumper Out Cell 6 (Cell 5 Is Presently Jumpered Out) And Jumper In Spare Cell 62."

MO91062381000, "Pressurizer Heater Bank 3E128 Feeder Breaker Control Check and Relaying Preventive Maintenance."

MO92080695000, "Connect Spare Battery Charger to Battery 3D2"

CM92090262000, "Corrective Maintenance - PSV8155 (Unit 3 High Pressure Safety Injection pump P017 inlet relief valve) Is Leaking By At A Rate of Approximately 10 Drops Per Minute."

The inspector reviewed test procedure, SO23-I-8.88, TCN 1-12, "Valves-Cold Bench Testing & Calibration of SR & NSR (Safety Related and Non-Safety Related)," associated with testing of relief valve PSV8155. During the review, the inspector noted that the wrong lift pressure acceptance criteria had been written in the procedure. The inspector pointed out this deficiency to the maintenance craftsmen who subsequently corrected it.

Followup discussion with maintenance craft and supervision responsible for documentation of the acceptance criteria determined that the craft supervisor had simply written in the wrong number in the procedure. Both the maintenance craftsmen and the supervisor indicated that they understood the purpose of specifying a range for valve lift pressure in accordance with procedures. The inspector considered their explanation acceptable and considered that no further followup action was necessary.

Within this area inspected, one non-cited violation was identified.

7. Exit Meeting

On January 11, 1993, an exit meeting was conducted with the licensee representatives identified in Paragraph 1. The inspectors summarized the inspection scope and findings as described in the Results section of this report.

The licensee acknowledged the inspection findings and noted that appropriate corrective actions would be implemented where warranted. The licensee did not identify as proprietary any of the information provided to or reviewed by the inspectors during this inspection.