U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-206/83-13
50-361/83-21
50-362/83-19

Docket Nos. 50-206, 50-361, 50-362 License Nos. DPR-13, NPF-10, NPF-15

Licensee: Southern California Edison Company
P. O. Box 800
2244 Walnut Grove Avenue
Rosemead, California 91770

Facility Name: San Onofre Units 1, 2 and 3

Inspection at: San Onofre Site, San Clemente, California

Inspector: D. F. Kirsch 5/12/83
for L. Miller, Senior Resident Inspector, Unit 1 Date Signed

Approved By: D. F. Kirsch 5/12/83
D. F. Kirsch, Chief, Reactor Projects Section No.3, Reactor Projects Branch No. 2 Date Signed

Summary:

Inspection on April 1 - 29, 1983 (Report Nos. 50-206/83-13, 50-361/83-21 and 50-362/83-19)

Areas Inspected: Routine, resident inspection of plant operations during long-term shutdown; monthly maintenance and surveillance activities; and review of onsite review committee activities, independent inspection, Licensee Event Reports, and previously identified items. This inspection involved 92 inspection hours by one NRC inspector.

Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

*H. Ray, Station Manager
J. Wambold, Station Maintenance Manager
*P. Croy, Manager, Compliance and Configuration Control
*G. McDonald, QA/QC Supervisor, Unit 1
*W. Moody, Deputy Station Manager
L. Brevig, Supervisor, Station Chemistry
*M. Speer, Compliance Engineer
*J. Reeder, Superintendent, Unit 1
*J. Curran, Manager, Quality Assurance
*R. Schwienberg, Manager, Unit 1 Project Construction

The inspector also interviewed other licensee and contractor personnel during this inspection.

*Denotes those attending the exit interview on April 29, 1983.

2. Inspection of Plant Operations During Long-Term Outage (Unit 1)

The inspector frequently observed Control Room operations for proper shift manning, adherence to procedures and limiting conditions for operation, and appropriate recorder and instrument indications. To determine operator awareness of plant status, the inspector discussed the status of annunciators with Control Room operators and observed shift turnovers. Selected morning meetings were attended to assess the licensee's outage coordination.

The Control Operator's log was reviewed to obtain information on plant conditions and to determine whether regulatory requirements had been met. Other logs, including the Watch Engineer's Log, were also reviewed several times. Selected maintenance orders for the current month were reviewed. The licensee's system for identifying equipment deficiencies appeared to be functioning adequately. The equipment control, abnormal equipment and clearance records were reviewed, and control room tags were verified to have been hung properly.

The inspector toured the accessible areas of the facility to assess equipment conditions, radiological controls, security, housekeeping, and fire protection.

The inspector's tours indicated that controlled area access points were generally clean and properly arranged. No potentially contaminated material was observed in uncontrolled trash containers. Selected portable radiation measuring instruments in use appeared operable and were in calibration.

Plant housekeeping was generally acceptable during this period. However, the inspector noted that, on April 25, 1983, several objects were observed by licensee personnel on the bottom of the spent fuel pool. These objects included several bottles ranging in size from a few inches tall to one that was approximately the size of a five gallon cotainer.

In addition, on April 26, 1983, it was observed that the top of the reactor vessel needed cleaning. The inspector discussed these housekeeping deficiencies with licensee representatives. The representatives stated that these two areas would be cleaned promptly, and that foreign material exclusion controls for these areas would be improved. This item remains open pending verification of corrective action. (50-206/83-13-01)

Manning of security posts, integrity of protected area barriers and isolation zones, conduct of search procedures, and personnel identification measures were all observed at intervals by the inspector.

No items of noncompliance or deviations were identified.

3. Independent Inspection (Unit 1 Chemistry Program)

The inspector examined records of the licensee's secondary chemistry for February 1983 and discussed these results with the Unit 1 Chemistry Supervisor. The inspector noted that these results were occasionally not consistent with the licensee's approved procedure S-E-3, "Outage Protection." The inspector was informed by the Unit 1 Chemistry Supervisor that this procedure was outdated and a more complete and detailed procedure was being drafted. In the interim, the supervisor stated that a department memorandum had been issued on July 9, 1982 to promulgate suggested chemistry limits. The inspector noted that the recommended limits of this procedure were generally observed in February, 1983. However, on three occasions (February 25, 28, and March 1, 1983) hydrazine concentration was significantly outside the control band of 50-150 ppm (24, 21 and 186 ppm, respectively). Moreover, the memorandum cited did not contain the elements of a procedure, and its assumptions concerning the steam generator layup status were outdated.

On April 7, 1983, the inspector met with the Unit 1 Chemistry Supervisor and the Station Chemistry Supervisor to discuss the concern that the secondary water chemistry controls, required by Paragraph 3.1 of the Operating License, were not being implemented. These personnel acknowledged the deficiencies observed by the inspector and stated that the need for a more detailed chemistry program had been recognized in December, 1982. They stated that this program was in the final stage of review at the time of the inspection, and subsequently had been issued as a Temporary Change Notice to the existing procedure. Subsequent to this meeting, the inspector met with representatives of the licensee's Quality Assurance department and reviewed audit records of the station chemistry program, dated January 17, 1983. The inspector concluded that this audit had previously identified the need for revision of the existing chemistry procedures. At the Exit Interview the inspector stated that the final approval of the revised water chemistry procedures and the required corrective action and recommendations of the licensee's Quality Assurance audit had acceptably resolved the weaknesses identified by this inspection. This item is closed.

No items of noncompliance or deviations were identified.

4. Monthly Maintenance Activities (Units 1, 2 and 3)

The inspector witnessed portions of the following activities:

a. Control Room Emergency Air Cleanup System Fan AME 419 Replacement and Testing (Unit 2)

b. Auxiliary Feedwater Pumps Flow Orifice Piping Repair (Unit 2)

c. Temperature Control Valve 1105A Actuator Troubleshooting (Unit 1)

d. Limitorque Valve Operator Semi-Annual Preventive Maintenance S01-I-6.53 (Unit 1).

The inspector determined that procedures or work orders used for these activities adequately described the maintenance required and were consistent with applicable limiting conditions for operation, clearances were obtained where necessary for protection of equipment and personnel, necessary tools were properly calibrated and used, and the activities were properly authorized.

The inspector observed that the licensee did not repair the damaged flow orifices for the auxiliary feedwater pumps. The orifices were returned to service unrepaired after performing an engineering evaluation which determined that the damage to the orifices was temporarily acceptable. The evaluation concluded that the pumps could be operated for at least 100 additional hours without further significant erosion. At the Exit Interview, the inspector advised the licensee that inservice testing and routine observation by operators of the auxiliary feedwater pumps should be carefully trended to ensure that the pumps did not become inoperable due to inadequate orifice performance. A licensee representative stated that this trending would be performed. (50-361/83-21-01 and 50-362/83-19-01)

The inspector noted that the limitorque valve operator maintenance procedure required the maintenance technician to lubricate the torque arm of the operator. Following discussions with licensee personnel, the inspector was informed that this step of the procedure was inappropriate for the valve operators in question (MOV 1100B and MOV 1100D). At the Exit Interview, a licensee representative agreed and stated that the procedure would be revised to delete this step. The inspector stated that this was adequate corrective action. This item is closed.

The inspector reviewed the maintenance program described by the licensee in their April, 1983 report titled "Reactor Trip Breakers" and Maintenance Procedure S023-I-4.66 (General Electric AK-2-25 Circuit Breaker Maintenance). The inspector discussed the proposed program with licensee personnel. A licensee maintenance representative explained that the commitments concerning breaker maintenance procedure details on pages 31-32 of the report were not intended to apply to routine maintenance, but only to the initial baseline maintenance which had been performed. Further, the intent of the maintenance department was to be guided in revisions to their maintenance frequency or procedures by the results of surveillance testing. The inspector requested that personnel

be specifically assigned responsibility for trending the surveillance and maintenance experience developed with the reactor trip breakers. The inspector also recommended that the Maintenance Procedure be revised to obtain as found pickup voltage for the undervoltage trip device and to specify quantitative acceptance criteria for armature and "rivet" clearance on this device. A licensee representative committed to these program modifications. The inspector stated that the licensee's program and procedure, modified as recommended, would be acceptable for the reactor trip breakers. This item remains open pending completion of these commitments (50-361/83-21-02 and 50-362/83-19-02).

No items of noncompliance or deviations were identified.

5. Monthly Surveillance Activities (Units 1, 2 and 3)

The inspector witnessed the following activities:

a. Containment Penetration Leak Testing (Penetrations 18 and 19), S023-V-3.13 (Unit 2)

b. Auxiliary Saltwater Pump G13C Post Maintenance Testing (Unit 1)

c. Reactor Coolant System Pressure Isolation Valve Leak Rate Measurement, S023-3-3.31.1 (Unit 2)

d. Containment Purge Isolation Actuation Monthly Surveillance, S023-II-4.6 Revision 3 (Unit 2).

For these surveillances the inspector verified that approved procedures were used, test equipment needed was calibrated prior to use, test prerequisites and acceptance criteria were met, and qualified personnel performed the work. Limiting Conditions for Operations applicable to the performance of the surveillances appeared to have been observed.

No items of noncompliance or deviations were identified.

6. Annual Review of Onsite Review Committee Activities (Unit 1)

The inspector completed the examination which was begun in March (Inspection Report No. 50-206/83-16). The inspector reviewed the minutes of the regular March meeting of the Onsite Review Committee (OSRC). The inspector confirmed that the decisions and recommendations made during that meeting had been reflected in the minutes. The inspector also confirmed, by discussion with the OSRC Secretary, that committee members had made the action item reports, assigned to them during the March meeting, at the April meeting.

No items of noncompliance or deviations were identified.

7. Follow-up on Inspector Identified Items (Unit 1)

a. (OPEN) (50-206/81-40-04): EFCOMATIC Valve Actuators

The inspector attended a meeting on April 19, 1983, convened by licensee personnel, to discuss the poor reliability of EFCOMATIC valve actuators. The inspector reiterated the position that the capability to promptly operate these valves would be necessary prior to startup of Unit 1. Licensee personnel acknowledged this position and stated that their investigation, of how to improve the reliability of these actuators until they can be replaced, is continuing. This item remains open.

b. (OPEN) (50-206/81-42-01): Drawing Reverification

The inspector examined the licensee's progress in completing the verification and revision of plant drawings. Licensee representatives stated that the field verification necessary to validate the piping and instrument drawings (P&IDs) had been completed. They explained that revised drawings resulting from this verification were expected to be issued as a set by approximately August 15, 1983. The inspector requested a summary of all drawing errors which had been identified and which would require plant modification to correct. Licensee personnel stated that three possible errors of this type had been found: missing safety injection system orifices Nos. RO-897, 898 and 899. These were identified on Nonconformance Report S01-P-1567 and an engineering evaluation of their necessity is in progress.

The inspector reviewed the progress charts for the electrical verification program and noted that progress since November, 1982 appeared to have been one third to one half of that which had been forecast. The personnel also explained that the electrical drawing verification work had progressed more slowly than planned due to a reduction in assigned personnel and the resulting reorganization of system responsibility.

The inspector concluded that the drawing reverification program continues to make acceptable progress, given the planned extension of the present outage into late 1983 or early 1984. The review of this program remains open.

No items of noncompliance or deviations were identified.

8. Follow-up on Licensee Event Reports (LERs) (Unit 1)

a. LER 83-001: Incorrect Light Bulb Degrades Diesel Control Circuit (OPEN)

The inspector examined and discussed the licensee's reports dated March 21 and April 1, 1983, and Station Incident Report (SIR) S01-83-005, an internal licensee document. These reports described the malfunctions, on February 21 and 23, of the diesel generator control circuit due to separate incidents of electrical shorts across indicating bulbs in the circuit. These events occurred with the unit in Mode 5 in an extended outage. The first event, on February 21, 1983, occurred when a burned out "D.C. Control Power On" bulb was replaced and immediately shorted, tripping circuit

breakers CB-3, 4, 7 and 8, deenergizing parts of the diesel control circuit (Elementary Drawing 5151362, Revision 7). The bulb was replaced and again immediately shorted, tripping CB 7 and 8. The bulb was replaced again and operated satisfactorily. No action to investigate the reason for or effect of the tripping circuit breakers was initiated at that time. Two days later, on February 23, 1983, a similar event occurred. The No. 1 diesel generator was rolled with air to remove condensed moisture from the cylinders and, inexplicably, started and continued to run. The licensee determined that this malfunction had occurred when the "Unit Starting" light shorted. This had caused circuit breakers CB-3, 4, 7 and 8 to open. This event had three significant effects.

a) Solenoid No. 5 deenergized, allowing full combustion air and fuel to be sent to the diesel, which was rolling.

b) The 'engine at speed' relay remained deenergized, so that at the normal setpoint of 200 RPM the field flash relay would not energize, and generator voltage buildup would rely on residual magnetism. Licensee testing has indicated this delays the generator voltage buildup approximately four-seconds.

c) The generator 'ready to load' relay remained deenergized, so the diesel generator load sequencer would never automatically close the diesel generator output breaker, if required, on a safety injection actuation coincident with loss of offsite power. In Mode 5, the safety injection system is disabled, so this loss of sequencing was not a violation of a limiting condition for operation.

The inspector concluded from these reports and an examination of the elementary diagrams that licensee personnel had correctly diagnosed the effect of a short in an indicating light on the diesel control circuit. The inspector stated that the failure to recognize the significance of the February 21, 1983 event, at the time it occurred, was reasonable, but expressed concern that this event had not been included in the LER.

The inspector noted that the licensee speculated that the shorts had occurred when a bulb of the wrong voltage rating was substituted in error. A simulated test was conducted by the licensee which showed that a 30 volt bulb would short if used in a 120 volt application, such as the diesel control circuit. The inspector determined that only 120 volt bulbs were available in the control room, but that 30 volt bulbs of similar appearance were available in an electrical maintenance shop. The 30 volt bulbs were distinguished from the 120 volt bulbs by a shorter, thicker filament and an easily removed stencilled rating on the bulb. The inspector then accompanied an operator who verified that no 30 volt bulbs were installed in the circuits of either diesel generator.

At the Exit Interview, the inspector summarized the review of this incident: the licensee had informed operators of this event, verified that no further incorrect bulbs were installed in the

diesel control panels, placarded the diesel engine local panel to indicate the correct voltage and wattage rating of bulbs, and initiated action to modify the control circuit so that a shorted socket would not have such a profound effect. One bulb of incorrect wattage (6 watts rather than the 3 watts required) was found in the No. 2 diesel panel. In addition to these actions, the inspector requested that formal training on the lessons of this event be performed for operators and electricians, that any safety-related equipment using indicating lights be checked to ensure that properly rated bulbs were installed, and that a revised LER describing the results of these actions and the event of February 21, 1983 be submitted. At the Exit Interview, a licensee representative made these commitments. The inspector stated that completion of these commitments would acceptably resolve this LER (50-206/83-13-03).

b. Special Report of November 30, 1982 (CLOSED)

The inspector reviewed the report, which discussed periods when the Turbine Lubrication Oil Reservoir Area and the Sphere Enclosure Building fire detection and sprinkler systems were out of service. The inspector had previously discussed the circumstances of this report with licensee personnel when they were discovered in November 1982 (Inspection Report 82-35). The inspector concluded that the licensee's compensatory measures for the inoperable systems were in accordance with the regulatory requirements. This LER is closed.

c. LER 82-07: Failure of EFCOMATIC Valve Actuator for CV-526 (CLOSED)

The inspector reviewed the report which discussed erratic operation of CV-526, the letdown isolation valve outside containment. The inspector noted that erratic performance of valves such as this which use EFCOMATIC actuators is under review by the licensee (50-206/81-40-04; see paragraph 7 of this report). The inspector concluded that the licensee's report of this event was timely, accurate, and consistent with regulatory requirements. This LER is closed.

No items of noncompliance or deviations were identified.

9. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) on April 29, 1983, to summarize the scope and findings of the inspection. Licensee representatives acknowledged the findings presented and discussed the corrective actions under consideration.