

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-206/85-35, 50-361/85-34, 50-362/85-33  
Docket Nos. 50-206, 50-361 and 50-362  
License Nos. DPR-13, NPF-10 and NPF-15  
Licensee: Southern California Edison Company  
P. O. Box 800, 2244 Walnut Grove Avenue  
Rosemead, California 91770  
Facility Name: San Onofre Nuclear Generating Station Units 1, 2 and 3  
Inspection at: San Clemente, California  
Inspection conducted: November 12-15, 1985

Inspectors: Kenneth D. Dreyfus 11/27/85  
K. Ivey, Jr., Reactor Inspector Date Signed  
James F. Melfi 11/27/85  
J. Melfi, Reactor Inspector Date Signed  
Approved By: Clifford A. Clark for 12/2/85  
T. Young Jr., Chief, Engineering Section Date Signed

Summary:

Inspection during the period November 12-15, 1985 (Report Nos. 50-206/85-35  
50-361/85-34 and 50-362/85-33)

Areas Inspected: A routine unannounced inspection of the implementation of selected TMI Action Items, followup of inspector identified items, and followup of Generic Letters. The inspection involved 53 hours by two NRC inspectors on Module Nos. 30703, 92701B, 25565, 92703, and 25401B.

Results: No violations or deviations were identified.

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DETAILS

1. Personnel Contacted

F. Briggs, NSSS Electrical Supervisor  
S. Foglio, NSSS Engineer  
J. Redmon, Instrumentation and Control (I&C) Electrical Engineer  
C. Brandt, Quality Assurance Engineer  
\*M. Freedman, Compliance Engineer  
B. Douglas, Compliance Engineer  
\*C. Kergis, Lead Compliance Engineer  
\*R. Santosuosso, Assistant Maintenance Manager  
\*T. Mackey, Jr., Supervisor, Compliance  
\*D. Peacor, Station Emergency Preparedness Manager  
\*K. Slagle, Manager, Administration  
\*A. Hammons, Quality Assurance  
\*B. McGee, Supervisor, Site Procedures  
\*J. Grosshart, Quality Assurance Engineer  
\*T. Herring, NSSS Engineer  
\*M. Short, Unit 1 Project Manager  
\*P. Stewart, NRC Resident Inspector  
J. Walderhaug, Computer Engineer  
R. Jervey, Quality Assurance Engineer

\*Denotes those individuals attending the exit meeting, November 15, 1985.

The inspectors also held discussions with other licensee personnel during the inspection.

2. TMI Action Plan Items

a. Unit 1

(1) Item II.B.2.3 (Closed) "Environmental Qualification of Equipment"

Environmental qualification of electric equipment important to safety was inspected and documented in NRC Inspection Report No. 50-206/85-30. The inspection was to verify conformance with 10 CFR 50.49 which includes radiation qualification of equipment and therefore included the requirements of this TMI item. This item is closed.

No violations or deviations were identified.

(2) Item II.F.2.3.B (Open) "Level Instrumentation for Detection of Inadequate Core Cooling"

In association with this NUREG-0737 item Generic Letter 82-28 "Inadequate Core Cooling (ICC) Instrumentation System" requested that licensees submit a reactor coolant inventory system design and evaluate the current ICC instrumentation at their plants. The licensee has committed to submit an evaluation of the current ICC instrumentation capabilities and

a justification for relief from the requirement to install a reactor vessel level measurement system by March 1, 1986.

No violations or deviations were identified.

(3) Item II.K.3.1.B (Closed) "Automatic PORV Isolation/ Test Signal"

In a letter dated September 13, 1983 (Crutchfield to Dietch), the NRC Division of Licensing concluded that the requirements of this item for Unit 1 were met by the existing PORV, safety valve, and reactor high-pressure trip setpoints and that an automatic PORV isolation system is not required. Therefore, this item is closed.

No violations or deviations were identified.

b. Unit 3

Item II.E.1.1 (Closed) Auxiliary Feedwater System Reliability Evaluation

The inspectors verified that:

- (1) The Technical Specifications limit operation with one Auxiliary Feedwater Train out-of-service to 72 hours with a subsequent action time limit of 12 hours. (Tech. Spec. 3.7.1.2)
- (2) The Technical Specifications require verification of position of all locked open manual valves during monthly inspections of the system (Tech. Spec. 4.7.1.2.1.a.2 and 4.7.1.2.1.a.3). The procedure for this verification is also available (Procedure S023-3-3.16 "Auxiliary Feedwater System Monthly Tests").
- (3) The licensee has performed tests that verify that adequate procedures exist for refilling the steam generator, preventing feedwater hammer. (Feeding Integrity Test #34A-201-01, performed 1982)
- (4) Procedures are available to plant operators for transferring to and from alternate water sources. Procedure S023-9-5, "Condensate Storage and Transfer System" provides procedures to fill condensate storage tank T-121 from condensate storage tank T-120, makeup demineralizer, and fire protection system water.
- (5) The licensee has procedures available to ensure that after an AFWS outage due to maintenance or periodic test, the AFWS valves are properly aligned and a second operator verifies the alignment. (Procedure S02-0-13 "Work Authorizations" pp.6.13 system restoration).
- (6) Technical Specifications require a flow test of the AFWS to verify normal flow path from the primary water source to the steam generators following a cold shutdown (Tech. Spec.

4.7.1.2.2). The procedure for this is S023-3-3.16.2 "Auxiliary Feedwater Flow Test", which is performed prior to entering Mode 2 after a cold shutdown.

- (7) Redundant AFW primary water level indication and low level alarms are available in the control room.
- (8) The licensee has performed 48-hour endurance tests on all AFW pumps. NRC acceptance of the pump test results are documented in a letter dated October 27, 1984 (Knighton to Baskin).

c. Item I.D.2 Safety Parameter Display System

(1) Unit 1 (Open)

The licensee currently utilizes a technical data transmission system that allows persons in the TSC and EOF to receive plant status information during an emergency condition. This system has not been evaluated to determine its adequacy in fulfilling the SPDS function and there is no SPDS display in the control room.

The licensee plans to complete development of the SPDS design criteria when the Human Engineering Discrepancies (HEDs) are resolved in the Control Room Design Review (CRDR).

The present schedule for development of the SPDS criteria is by October 10, 1986 with submittal of the criteria to the NRC by January 9, 1987. This item is open for Unit 1.

(2) Unit 2 (Closed)

The SPDS function is performed by the Critical Factors Monitoring System (CFMS) and the SPDS. Included in these systems is the Q-SPDS (for seismically qualified parameters). This item was open previously, (IR 50-361/85-12) with the only item necessary for closure being installation and implementation of the Heated Junction Thermocouple (HJTC) system. Completion of the HJTC system and input to the SPDS has been verified in previous NRC inspections (IRs 50-361/85-13 and 85-20). This item is closed for Unit 2.

(3) Unit 3 (Open)

The SPDS function is performed by the critical function monitoring system (CFMS) and the qualified safety parameter display system (QSPDS) which is seismically qualified.

The CFMS and QSPDS inputs and associated software will be implemented by the end of the first refueling outage (January 1, 1986). The HJTC system will be verified and validated operational at that time. (Ref. letter October 28, 1982, Baskin to Knighton).

Therefore, the licensee is committed to completion of an SPDS system by January 1, 1986. This item is open for Unit 3.

No violations or deviations were identified.

3. NRC Open Items and Followup Items

a. 50-361/85-16-01 (Closed) "Trending of Reactor Trip Breaker (RTB) Information"

Previous Inspection

The licensee's response to Generic Letter 83-28 "Generic Implications of ATWS Events at the Salem Nuclear Power Plant" stated that, "the RTB undervoltage device and shunt trip device independent actuation, trip time and trip torque are all measured, and trending of these parameters is evaluated and documented". The inspectors were not satisfied that their review of the trending documentation was complete and left it as an open item for future NRC inspection.

This Inspection

The licensee's NSSS Electrical Department has implemented a computerized trending program for RTB parameters that is backed up by hand-drawn graphs. Each time a maintenance or surveillance activity is performed on the RTBs, parameter information is input to the program for trending. Parameters trended by this program include undervoltage trip time, shunt trip time, and trip torque. The inspectors concluded that this program satisfies the requirements of GL 83-28 and therefore, this item is closed.

No violations or deviations were identified.

b. 50-361/85-16-02 (Closed) "Vendor Recommendations for RTBs"

Previous Inspection

The licensee's response to GL 83-28 stated that, "All vendor-recommended RTB modifications have been reviewed and implemented as appropriate." The inspectors verified that vendor recommendations on RTBs were reviewed with the exception of GE Service Advisory Letter (SAL) No. 175-9.21 "AK-25 RTBs Shunt Trip Paddle". Verification of licensee action on SAL 175-9.21 was made an open item for a future NRC inspection.

This Inspection

GE SAL 175-9.21 concerned improper heat treating of RTB shunt trip paddles in production from February 1983 through April 1984. Improper heat treating could result in surface cracking on the paddle. The inspectors discussed the licensee's procedures for review of RTB vendor information with the cognizant engineer and verified that the licensee had reviewed this item. The licensee determined that the shunt trip devices in use at the plant were not

included in the production group in question and performed a visual inspection of the shunt trip paddles. The paddles displayed no signs of surface cracking. The licensee also included a step in procedure No. S023-I-9.27 "Breaker - GE AK 2-25 Annual Routine Maintenance" to require visual inspection of the shunt trip paddles for cracking. This item is closed.

No violations or deviations were identified.

- c. 50-361/85-22-02 (Closed) "Review of Surveillance 4.8.1.1.2.D.6 and FSAR"

Previous Inspection

In comparing the technical specification surveillance requirements to the licensee's procedures and the FSAR, the inspectors noted that due to the wording of two surveillance requirements, the technical specifications may not be consistent with the plant design. The inspectors left this item open for future NRC inspection.

This Inspection

The inspectors reviewed the potential inconsistencies and held discussions with licensee personnel to obtain the following conclusions to the two potential inconsistencies.

- (1) Problem: Surveillance requirement 4.8.1.1.2.d.6 requires that an a simulated loss of the emergency diesel generator with offsite power not available, the loads are shed from the emergency busses. The plant design for this scenario has the high pressure safety injection (HPSI) pumps remaining connected to the bus.

Findings and Conclusions:

TS 4.8.1.1.2.d.6 requires that "...the loads are shed from the emergency buses and that subsequent loading of the diesel generator (DG) is in accordance with design requirements".

The licensee stated that this statement means the loads are shed from the emergency buses in accordance with design requirements just as the subsequent loading of the DG is in accordance with design requirements. Furthermore, NRC Generic Letter 83-30 recognized that the surveillance requirement served no purpose, and suggested submitting a TS change request to delete the requirement. Accordingly, SCE submitted Proposed TS Change NPF-10/15-91 to NRR on January 15, 1984. To date, the proposed change has not been approved.

- (2) Problem: Surveillance requirement 4.8.1.1.2.d.7.b requires that on a simulated loss of offsite power in conjunction with an ESF test signal, the...DG starts and enerizes the...buses within 10 seconds. As described in the FSAR (Section 8.3.1.1.4.6), the diesels are designed to start and

load within 10 seconds of a loss of voltage signal (LOVS), however, on a loss of power to the emergency buses, an approximately one second delay occurs before the generation of a LOVS. The surveillance requirements are not clear concerning whether the one second delay is considered in the testing.

Findings and Conclusion:

TS 4.8.1.1.2.d.7.b was written to test the capability of a DG to start and energize emergency buses and does not test the LOVS time delay. However, the LOVS circuitry is response time tested per TS 4.3.2.3 and Table 3.3-5 in accordance with the degraded bus voltage trip setting curve (TS Figure 3.3-1). This curve clearly specifies a trip setpoint of one second when the bus reaches zero (0) volts as described in the FSAR.

The inspectors discussed these findings with the inspector who initiated the item and concluded that this item is closed.

No violations or deviations were identified.

d. Generic Letter 85-06 (Closed) "QA Guidance for ATWS Equipment That Is Not Safety-Related"

On June 1, 1984, the NRC approved publication of a final rule, 10 CFR 50.62, regarding the reduction of risk from anticipated transients without scram (ATWS) events for light-water cooled nuclear plants. This generic letter was issued to provide explicit QA guidance for non-safety related equipment encompassed by the ATWS rule. Section 50.62(d) of the rule required that each licensee develop and submit a proposed schedule for meeting the requirements of the rule within 180 days after issuance of the QA guidance (issued April 16, 1985).

The licensee responded to this item with separate letters for Unit 1 and Units 2 and 3 on October 15, 1985. Their responses were as follows:

Unit 1: Provisions for automatic initiation of auxiliary feedwater were installed as part of the TMI upgrades. The equipment is primarily safety-related and portions of the system that utilize control grade equipment will be upgraded to safety-related during an upcoming refueling outage. The licensee plans to evaluate the methods proposed by the Westinghouse Owners Group for independent and diverse initiation of a turbine trip and implement the design which is best suited for the unit. The licensee has scheduled implementation of the turbine trip design prior to return to service from the Cycle 10 refueling outage, which corresponds to the second refueling outage following publication of the rule.

Units 2 and 3: The licensee's approach was developed through participation in the Combustion Engineering Owners' Group. The licensee plans to install a Diverse Scram System (DSS) independent from the existing reactor trip system (RTS) from the most accessible

sensor output circuit to interruption of power to the control rods. The licensee stated that with the completion of the DSS, the existing turbine trip function, and the existing diversity between the RTS and the emergency feedwater actuation system, the requirements of the ATWS rule will be met. The licensee has scheduled the implementation of the DSS for the first refueling outages which begin after June 1, 1987 (Cycle 4 refueling outage for Units 2 and 3).

No violations or deviations were identified.

e. NUREG/CR-3791 "Closeout of IE Bulletin 79-09" (Units 2 and 3)

IE Bulletin 79-09, "Failures of GE Type AK-2 Circuit Breakers in Safety-Related Systems", was issued for response and specific actions by all licensees and construction permit holders on April 17, 1979. The bulletin was closed for Unit 2 in Inspection Report 50-361/81-07 and for Unit 3 in IR 50-362/81-02.

Additional problems with GE Type AK-2 breakers and Reactor Trip Breakers in general resulted in the issuance of other Bulletins and Information Notices, and Generic Letter 83-28. NUREG/CR-3791 suggested followup inspection to verify that the latest GE Service Advisory Letter (SAL) recommendations pertinent to GE AK-2 circuit breakers have been incorporated into the licensee's maintenance procedures.

The inspectors verified that the licensee has incorporated GE SAL recommendations into their maintenance procedures (see paragraph b).

No violations or deviations were identified.

4. Exit Meeting

On November 15, 1985, an exit meeting was held with the licensee personnel identified in paragraph 1. The inspectors summarized the scope of the inspection and findings as described in the report.