

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos: 50-206/88-29, 50-361/88-30, 50-362/88-32
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 Nuclear Generating Station Units 1, 2 and 3.
Inspection Conducted: November 7 - November 10, 1988

Inspector: James F. Melfi
J. F. Melfi, Reactor Inspector
12/15/88
Date Signed

Approved By: S. A. Richards
S. A. Richards, Chief, Engineering Section
12/15/88
Date Signed

Summary:

Inspection on November 7, 1988 - November 10, 1988 (Report 50-206/88-29, 50-361/88-30, 50-362/88-32)

Areas Inspected: A routine, unannounced inspection by a regional based inspector of Generic Letters, Information Notices, Part 21 Reports, and followup items. Inspection procedures 30703, 25565, 71707 and 92701 were used.

Safety Issue Management System (SIMS) Items: None.

Results:

General Conclusions and Specific Findings:

The inspector evaluated the temperatures in containment for Units 1, 2, and 3 in accordance with Temporary Instruction (TI) 2515/98. For Unit 1, the inspector found that the temperatures in containment were higher than the assumed EQ temperature (108°F) in certain areas (e.g. pressurizer enclosure). The inspector also noted that the air around 2 cold leg temperature elements for unit 3 were also at a higher than the assumed (120°F) ambient air temperature. The licensee has performed evaluations on these higher temperatures.

The inspector also looked at various open items and the TMI action plan for unit 1. These items are further discussed in the report.

Summary of Violations and Deviations: No violations or deviations were identified.

Open Items Summary:

No new open items were opened. One item remains open pending further inspection (87-06-05).

The following items were closed.

Temporary Instruction 2515/98
Information Notice 85-71
Generic Letter 85-22

DETAILS

1. Persons Contacted

San Onofre Nuclear Generating Station

- *C. Couser, Compliance Engineer
- *M. Zenker, Compliance Engineer
- *R. Plappert, Compliance Engineer
- *R. Baker, Compliance Engineer
- *B. Storm, ISEG Supervisor
- *W. Lazear, QA Supervisor
- *G. Gibson, Compliance Engineer
- P. Croy, IST Engineer
- D. Higgins, HVAC Engineer
- S. Scholl, Supervising Engineer
- D. Borden, Lead QA Engineer
- F. Badwan, EQ Engineer

*Attended Exit Meeting, November 10, 1988.

The inspectors also held discussions with other licensee and contract personnel during the inspection. This included plant staff engineers, technicians, administrative and clerical assistants.

2. Temporary Instructions

(Closed) Temporary Instruction 2515/98, "Information on High Temperatures inside Containment" (71707)

This Temporary Instruction (TI) was issued to obtain historical information of containment temperatures during the summer months of 1987. This TI also required the inspector to assess whether the containment air cooling system maintains the air temperature below assumed limits, whether any dead air spaces exist in containment, and whether any environmental qualification (EQ) limits are exceeded. The issue of higher than assumed containment air temperatures was also looked at and documented in inspection reports 50-206/87-22, 50-361/87-20, and 50-362/87-22.

The inspector obtained the information for San Onofre Units 1, 2 and 3. Unit 1 is of an older (1967), three loop Westinghouse design and Units 2 and 3 are of an identical, newer (1982) Combustion Engineering design. The designs were assessed separately and are discussed below.

Unit 1 does not have a technical specification or an administrative procedure to record containment temperatures. The inspector was informed by the licensee that the official record of temperatures in containment is a strip chart recorder on panel RS-9, which is not located in the control room. An annunciator is located in the control room from RS-9, which is annunciated when certain containment temperature sensors reach setpoints. If this annunciator is activated, an operator is sent down to panel RS-9 to evaluate the alarm. The licensee has an EQ limit on containment temperature of 108°F. In assessing the information from the strip charts, the inspector assumed that the sphere space temperature element, TE-87, was

representative of average containment temperatures. The inspector reviewed the strip charts for the months in question (April through September, 1987) and noted the temperatures when the reactor was at power. Since the average temperatures were recorded at approximately midnight for units 2 and 3, the inspector also noted the temperatures of unit 1 at approximately midnight for consistency. The recorded average temperatures ranged from 110 to 118 °F, higher than assumed by the Environmental Qualification program. The inspector noted little diurnal variation in temperature. The licensee has had several previous problems in unit 1 containment with respect to environmental qualification as identified by previous licensee QA audits and in NRC violations. In response to these events, the licensee took ambient air temperatures in containment on August 2, 1988 when the reactor was at hot zero power (RCS temperature 533 °F, Pressure 2050 Psig). This survey found that some of the environmentally qualified, safety related equipment was operating at significantly higher than assumed ambient air temperatures (up to about 140 °F) for EQ, particularly near the pressurizer. The pressurizer enclosure apparently does not have enough air flow through it. The licensee did a review for the components (Crosby and Namco switches, and the Weed RTDs) in unit 1 where the temperatures were higher than assumed to assess the EQ qualified life. The Namco switches were justified based on a test report previously obtained on similar switches in units 2 and 3. The Crosby switches were also justified by the licensee to have an adequate EQ life remaining (NCR S01-P-6692). The licensee discussed the Weed Resistance Temperature Detector (RTD) temperatures with the manufacturer and they were informed by the manufacturer that the RTDs could operate satisfactorily at the slightly higher than assumed temperatures. The licensee was awaiting test data from the manufacturer for justification.

The inspector also noted during the review of the unit 1 strip charts that one temperature element, which monitors the non-environmentally qualified Control Rod Drive Mechanisms (CRDMs) was reading 200 to 230 °F when the reactor was operating. This temperature was significantly higher than units 2 and 3 CRDMs. The containment temperatures also seem to be readily affected by how many coolers are operating.

Units 2 and 3 are required by technical specification 3/4.6.1.5 to determine the containment average air temperature when the plant is in modes 1 through 4. This technical specification is implemented by procedure S023-3-3.26, "Once a Day Surveillance." The temperature limit assumed by the technical specification and the licensee's EQ program is 120 °F. The ambient air temperature for units 2 and 3 generally seem to run below the temperature limit. The inspector noted that unit 3 seems to have a higher average temperature than unit 2. Due to the problems identified in unit 1, the licensee performed a containment entry at hot zero power (RCS temperature 550 °F, Pressure 2250 Psig) into unit 3 on August 12, 1988 and found that the ambient air temperature was below assumed limits, except for the loop 1A and 2A cold leg temperature elements. The air around these two elements had a temperature of 156 °F and 136 °F respectively. The data taken for the cold leg temperature elements was inconsistent (i.e., not all were high), but the licensee updated the EQ package for these elements to justify the qualified life through April 15, 1989. From discussions with the licensee, the response seems appropriate. In reviewing the containment air flow drawings, the inspector did not identify any dead air spaces.

This information on the average containment temperatures was forwarded in a letter to the Office of Nuclear Reactor Regulation (NRR) on November 21, 1988.

This Temporary Instruction is closed.

3. Information Notices (92701)

A. (Closed), Unit 2, Information Notice 85-71, "Containment Integrated Leak Rate Tests"

This notice addresses a potentially significant problem pertaining to Containment Integrated Leak Rate Tests (CILRTs). The notice discussed a problem of misinterpretation between local leak rate testing (Type B and C tests) and CILRTs (Type A test). This notice was previously discussed in inspection report 50-361/86-16.

Several licensee's, including SONGS, were performing repairs and adjustments following type B and C tests, before conducting a Type A test, without adjusting the Type A test results for the Type B and C leakage rates. Without this adjustment, the "as found" condition of the primary containment cannot be properly determined.

The applicable procedures, S02-V-3.12, "Containment Integrated Leakage Rate Test" and S023-V-3.13, "Containment Penetration Leak Rate Testing," were reviewed. Based on the review, it appears that the licensee has taken steps to address the concerns of this notice.

This item is closed.

4. Generic Letters (92701)

A. (Closed) Unit 1, Generic Letter 85-22, "Potential for Loss of Post-LoCa Recirculation Capability Due to Insulation Debris Blockage"

This generic letter concerns the potential loss of recirculation capacity during a Loss Of Coolant Accident (LOCA). This letter informs the licensee of the concern of LOCA generated debris blocking the emergency sump.

The NRC analysis of this item was based on Regulatory Guide 1.82, Rev. 0. The generic letter informs the licensee of a new revision to this Regulatory Guide, with new insights about the amount of debris that might be generated during a LOCA.

This item was presented to the licensee in a previous inspection (50-206/86-11). At that time the licensee stated that they had not received this letter, and could not provide any documentation that the subject had been reviewed or evaluated. This item remained open pending the licensee's review.

The licensee reviewed this Generic Letter and performed an evaluation. Based on the inspector's review of this evaluation, and discussions with the licensee, this item is closed.

5. TMI Action Plan Requirements (Unit 1) (25565)

This section includes the status of TMI Action Items as determined by the inspector through review of documentation and discussion with licensee personnel.

a. (Open) I.D.2, "Safety Parameter Display System"

NUREG-0737 Position: Licensees shall install a Safety Parameter Display System (SPDS) that will display to operating personnel a minimum set of parameters which define the safety status of the plant. This SPDS augments the safety related instrumentation already in place. More detailed requirements for the SPDS were delineated in NUREG-0737, supplement 1. These requirements were as follows:

- (1) SPDS should provide a concise display of critical plant variables to aid operators in determining the plant safety status.
- (2) Each SPDS shall be provided in a location convenient to the operators.
- (3) The SPDS shall be suitably isolated from electrical and electronic interference with equipment and sensors in safety systems.
- (4) The selection of the specific information to be displayed shall be based on the engineering judgement of the licensee. The useful information is reflected in NRC staff documents such as NUREG-0696, NUREG-0835, and Regulatory Guide 1.97.
- (5) The SPDS shall be designed to incorporate accepted human factors principles.
- (6) The minimum information provided shall be sufficient to provide the operators information on a) Reactivity Control; b) Core Cooling and Primary System heat removal; c) reactor coolant system integrity; d) radioactivity control; and e) containment conditions.

The previous inspection reports on this item were 50-206/85-35 and 50-206/86-26. As noted in these inspection reports the licensee committed in a letter dated April 23, 1985 to the following actions:

- (1) Development of SPDS design criteria by October 10, 1986.
- (2) Submittal of finalized SPDS design criteria to NRR by January 9, 1987.
- (3) Submittal of SPDS upgrade plans to the NRC by May 1, 1987.

The current status of this item remains open. The SPDS is not currently installed in the control room. The inspector was informed that the licensee is not planning on installing the SPDS this outage and is discussing with NRR the implementation of this item. The inspector was informed that the licensee is currently expecting to install this TMI-item during the cycle XII (1992) refueling outage.

This item will remain open pending NRR evaluation and the installation of the SPDS.

b. (Open) II.E.1.1.2, "Auxiliary Feedwater System Evaluation - Long-Term System Modifications"

This item on Auxiliary Feedwater (AFW) had been previously inspected in inspection reports 50-206/84-23 and 50-206/86-26. The remaining NUREG-0737 requirements to be completed for SONGS 1 were as follows:

- (1) Upgrade the two control grade AFW trains to Safety Grade by the end of the cycle IX outage.
- (2) The installation and upgrade to safety grade of a third train of AFW by the end of the cycle X outage.

The licensee is currently expecting to install the upgrade to the AFW system this upcoming (cycle IX) outage, which begins in late November. The system will be inspected for the 2 items above when the installation is complete.

c. (Open) II.F.2.3.B, "Instrumentation for Detection of Inadequate Core Cooling - Installation of Level Instruments"

NUREG-0737 Position: Licensee's shall provide a description of any additional information or controls (primary or backup) proposed for the plant to supplement existing instrumentation (including primary coolant saturation monitors) in order to provide an unambiguous, easy-to-interpret indication of inadequate core cooling (ICC).

This NUREG-0737 item was previously addressed in inspection reports 50-206/85-35 and 50-206/86-26.

At the time of the last inspection, the licensee was to submit a letter to the NRC by the end of June, 1986 providing an assessment of the current ICC capability, plans for any required upgrade, and justification for relief from the requirement to install a reactor vessel level measurement system. The licensee sent a letter to the NRC (Medford to Thompson) dated June 20, 1986. This letter stated that the cost of a reactor coolant inventory tracking system at SONGS Unit 1 far exceeds the benefits of such a system. The licensee also stated in this letter that no additional ICC instrumentation is needed at SONGS Unit 1. The licensee committed in this letter to upgrade the core-exit thermocouple system to meet the requirements of NUREG-0737.

The licensee responded to a letter from the NRC (Trammel to Baskin) dated May 9, 1988 which requested additional information on post-TMI requirements with a letter dated August 8, 1988. The NRC requested the licensee to commit to install a Reactor Vessel Level Instrument System (RVLIS) at SONGS Unit 1. The licensee maintained that there was insufficient safety or technical benefit to justify the cost for the installation of such a system.

The licensee is currently planning to implement a Core Exit Thermocouple (CET) upgrade that will meet post-TMI separation and qualification requirements. The licensee is planning the CET upgrade for the Cycle XI refueling outage (December, 1990). This TMI item will remain open pending NRR evaluation and the implementation of the item.

6. Followup Items (92701)

(Open) 87-05-06, Unit 1, "Incorporation of Vibration Data Point Location Data in Procedures for all Pumps in the IST Program"

This item was opened up during the 1987 team inspection at San Onofre. Several team inspectors observed the licensee performing a pump Inservice Test (IST) on an AFW pump. The inspectors noted that neither the procedure used (SO1-V-2.14.1) nor the pump had specific locations annotated as to where vibration readings were to be taken. The licensee stated that an evaluation of an appropriate method to clearly define the methods where IST vibration data is taken would be performed.

At the time of this inspection it was determined that the licensee was identifying points in the IST procedures to take vibration data. The licensee had not fully implemented this item. This item will remain open pending incorporation into the procedures of where the vibration data is to be taken.

7. Independent Inspection

The inspector assessed the ability of the San Onofre Commitment Register (SOCR) System to track license historical commitments made to the NRC on specific systems. The inspector chose the Auxiliary Feedwater (AFW) and Component Cooling Water (CCW) systems to inspect. The inspector did not find any historical commitments on the CCW system. The inspector noted that the licensee was tracking commitments on the SOCR system for the AFW system.

8. Exit Meeting (30703)

The inspector met with the licensee representatives identified in paragraph 1 on November 10, 1988. The scope of the inspection and the findings up to that date were discussed. The inspector identified that additional information on the containment temperature for unit 1 was needed. The licensee sent the information to Region V, where it was reviewed, and the findings identified in this report.