

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION V

Report No. 50-206/80-16
Docket No. 50-206 License No. DPR-13 Safeguards Group _____
Licensee: Southern California Edison Company
2244 Walnut Grove Avenue
Rosemead, California 91770

Facility Name: San Onofre Unit 1

Inspection at: San Onofre, California

Inspection conducted: May 5-30, 1980

Inspectors: _____
L. F. Miller, Resident Inspector _____ Date Signed _____

_____ R. J. Pate, Senior Resident Inspector _____ Date Signed _____

_____ Date Signed _____

Approved By: B. H. Faulkenberry 7/2/80
B. H. Faulkenberry, Chief, Reactor Projects Section 2, _____ Date Signed _____
Reactor Operations (and Nuclear Support Branch)

Summary:

Inspection on May 5-30, 1980 (Report No. 50-206/80-16)

Areas Inspected: Routine, resident inspection during long term shutdown; monthly surveillance observations; monthly maintenance observations; inspection of refueling activities; review of core power distribution limit procedures, shutdown margin procedures, and licensee responses to IE Bulletins; independent inspection; licensee event reports and follow-up on loss of salt water cooling event.

Results: Of the nine areas inspected, no items of noncompliance or deviations were identified in seven areas. One apparent item of noncompliance was identified in one area (Deficiency - Failure to properly implement Operating Instruction S-3-1.3, Paragraph 5). One deviation was identified in one area (Failure to maintain adequate housekeeping and cleanliness control, Paragraph 7).

DETAILS

1. Persons Contacted

- *D. Nunn, Manager, Quality Assurance
- *R. Brunet, Superintendent, Unit 1
- *B. Curtis, Station Supervising Engineer
- *M. Wharton, Supervisory Engineer
- *W. Frick, Nuclear Engineer
- *D. Dunn, Project QA Supervisor
- *G. McDonald, QA/QC Supervisor

The inspector also interviewed other licensee employees during the inspection.

*Denotes those attending the Exit Interview on May 30, 1980.

2. Refueling Activities

The inspector verified by direct observation that core monitoring, fuel handling, fuel accountability, storage, boron concentrations, pool water level, and refueling crew manning were in accordance with the licensee's Technical Specifications and procedures. Portions of several shifts of activity were observed. However, two licensee events related to this refueling occurred which will be reviewed by the inspector in June 1980. These were Licensee Event Report Nos. 80-18 (damaged in-core instrumentation thimble) and 80-17 (erroneous boron concentration analyses).

No items of noncompliance or deviations were identified.

3. Monthly Surveillance Observation

The inspector observed portions of the alignment of the source range nuclear instrument channels, boric acid flow verification checks, diesel generator battery testing, area radiation monitoring system checks, and hydraulic snubber inspections. He verified that these were performed in accordance with the licensee's procedures, that the test instruments used were calibrated, that test data was accurate and complete, and that test discrepancies were resolved. He observed that qualified personnel performed the tests and that the test results were in accordance with appropriate Technical Specification requirements.

No items of noncompliance or deviations were identified.

4. Monthly Maintenance Observation

The inspector observed portions of the reactor coolant pump flywheel inspection and repair, steam generator eddy current testing, boric acid system overhaul, charging and auxiliary feedwater pump overhauls, diesel

generator inspection and source range detector replacement. These activities appeared to be conducted in accordance with the applicable written procedure or technical manual. The inspector noted that the applicable limiting conditions for operation were met during these activities, quality control records were established, qualified personnel performed the work, and appropriate radiological and fire protection measure were established.

No items of noncompliance or deviations were identified.

5. Determination of Reactor Shutdown Margin

The inspector reviewed the licensee's shutdown margin determination procedure, Operating Instruction 5-3-1.3 and checklist P550 216. As a result of this review, the inspector determined that on April 9, 1980, the operating instruction was not properly implemented, resulting in the calculation of an incorrect shutdown margin. For the determination of the concentration of boron required within the primary coolant, before one is allowed to breach containment integrity, the operating instruction specified that an iterated value of the hot boron worth coefficient be obtained from a graph designated as Figure A.11. Contrary to what was specified, the operator used the inverse value of the "Inverse Boron Worth at Hot Full Power, All Rods Out, Equilibrium Xenon" coefficient from a graph designated as Figure 5.9. Fortunately the resulting error in the calculation of the required boron concentration was small and on the conservative side. Whereas the correct calculation would have predicted a required concentration of boron of 761 ppm, the erroneous calculation predicated a required concentration of boron of 840 ppm.

Technical Specification 6.8.1 requires that written procedures and administrative policies be established, implemented and maintained that meet or exceed the requirements and recommendations of Sections 5.1 and 5.3 of ANSI 18.7-1976. ANSI 18.7-1976, Paragraph 5.3, requires that activities affecting safety at nuclear power plants be described by written procedures of a type appropriate to the circumstances and be accomplished in accordance with these procedures. Operating Instruction S-3-1.3; and the associated Calculation Sheet 1, was the licensee's procedure for the shutdown margin calculation to determine the correct increase in boron concentration necessary to obtain the shutdown margin required by Technical Specification 3.6.B. whenever containment integrity is to be breached.

This is a deficiency. (80-16-01)

After discussions with the inspector, a licensee representative stated that the procedure for shutdown margin determination would be made more explicit and self-sufficient. In particular, it would more clearly define the appropriate graphs to be used in each instance, and the appropriate value for effective Xenon power. (80-16-02) The inspector stated that the licensee's procedure appeared to appropriately account for each reactivity effect anticipated during a shutdown. The inspector verified that the shutdown margin calculated was that which was required by the Technical Specifications, that the resulting boron changes were confirmed by chemical analysis after the boron addition for shutdown and that the calculations were being performed as frequently as required by the Technical Specifications.

6. Surveillance of Core Power Distribution Limits

The inspector determined that the licensee was using a locally modified version of the Westinghouse INCORE Code originally supplied by Westinghouse to San Onofre Unit 1. The inspector observed that the licensee had not continuously maintained a record of the changes which had been made to the code. The changes that have been made, to date, appear to have been mostly format type changes; however, with no record of the changes being maintained, the inspector could not actually determine the types of changes or modifications which have occurred. A licensee representative stated that a system for documenting such changes would be devised and that a system for having all future changes formally reviewed and approved would be evaluated. (80-16-02)

The inspector verified that appropriate core parameters were part of the INCORE input, that all detectors' data was normalized to a reference tube, that output hot channel factors were within the values for the Technical Specifications, that axial flux difference values were maintained within limits, and that the technical personnel analyzing the INCORE output appeared competent.

Licensee personnel were unable to comprehensively explain predicted vs. reaction data due to the tabular form of the output data. The inspector observed that recent advances in computer graphics might be used to produce a more usable presentation of the data, and should be considered.

The inspector was informed by licensee personnel that since the last refueling outage, as many as 13 out of the 30 incore detector thimbles had been out of service at one time. The inspector noted that the Technical Specifications do not specify what constitutes an operable incore flux monitoring system, but that some criteria should be established. The licensee stated that preliminary discussions with Westinghouse had been conducted, but that they were not prepared to make any commitments

at this time. The inspector stated that this would be carried as an Outstanding Item and inspections in this area would continue during the next calendar month. (80-16-03)

No items of noncompliance or deviations were identified.

7. Inspection During Long Term Shutdown

The inspector observed control room operations, reviewed logs and instrumentation, and discussed plant status with control room operators. He toured throughout the facility, including the controlled areas, warehouse and reservoir. During these tours, he observed that on two occasions, housekeeping in the controlled areas was poor.

On May 14, 1980, while safety-related work was in progress on the charging pumps and the boric acid system in the charging pump room, the inspector observed that the room was extremely dirty. Debris covered most of the floor. The debris appeared to consist of piles of core drilling dust, used protective clothing, discarded lumber, untended welding and electrical cable, disassembled scaffolding components, polyethylene sheeting and dirt. Also on May 19, 1980, the inspector observed that several cubic yards of combustible material (empty paper sacks, untreated wood, polyethylene trash bags filled with paper and polyethylene trash) were observed outdoors adjacent to the northwest corner of the sphere enclosure building and adjacent to the containment sphere equipment hatch (which was open).

Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," ANSI 18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants," and ANSI N45.2.3-1973, "Housekeeping During the Construction Phase of Nuclear Power Plants," together define housekeeping requirements for the control of work activities affecting quality at a nuclear power plant.

ANSI N45.2.3-1973, Paragraph 3.2.1, "Cleanness," states that the work area shall be kept sufficiently clean and orderly...where large accumulations of materials occur on a nonroutine basis, the material shall be promptly removed or stored neatly. Garbage, trash, scrap, litter and other excess materials shall be collected, removed from the job site, or disposed of in accordance with specified requirements or planned practices. Such excess material shall not be allowed to accumulate and create conditions that will adversely affect quality."

Contrary to the above regulatory guides and standards, on May 14, 1980, the charging pump room was not kept sufficiently clean and orderly and on May 19, 1980, large amounts of combustible materials were located adjacent to the containment sphere equipment hatch. This is a deviation. (80-16-04)

In each of the cases described above, the inspector notified the licensee of the inadequate housekeeping condition and the condition was promptly corrected.

The inspector reviewed the Temporary Modifications Log (lifted leads and jumpers) and the active "Clearance" file several times in this period. Selected lifted leads, jumpers and clearance tags were verified to be in place as indicated by the applicable log. The inspector observed numerous plain, torodial pieces of yellow construction paper hanging from the operators for switches and valves in the control room. These pieces of paper, known locally as "donuts," were not described by either the licensee's procedure for tagging equipment which must not be operated or changed, nor by the procedure for tagging equipment to ensure the safety of men at work. The pieces of paper appeared to be in use to highlight off-normal switch or valve positions or operation. Licensee personnel stated that they had originated after TMI from yellow "CAUTION" tags to prevent obscuring other control panel indications. After discussions with the inspector, the licensee stated that in the future the tags would contain information similar to that found on the yellow "CAUTION" tags, or would reference that information by some other method. This item will be inspected further in future inspections. (80-16-05)

The inspector walked down portions of the newly installed boric acid safety injection and feedwater systems to verify operability. The inspector witnessed portions of the radioactive waste packaging and crating operations, and observed that the physical security plan appeared to be correctly executed by the staff.

8. Independent Inspection

- a. The inspector investigated reports from several licensee personnel that electrical drawings of the facility did not always reflect the existing plant configuration. This information appeared to be substantiated. For example, Drawings 5102163-11, Rev. 11, 510351-1, Rev. 1, and 5150876-7, Rev. 7, each referenced relays which as of May 26, 1980, were reportedly not installed. The referenced relays were part of a planned change to the 4160 volt electrical system which had not been made. The drawings were approved by the licensee in April and July of 1979, but the changes were just being performed at the time of the inspection. The inspector determined that the licensee adequately identified this program deficiency in Corrective Action Request SOI-F-223, dated November 16, 1978; and that the licensee had developed an adequate procedure for configuration control, E+C 26-7-10 dated January 14, 1980. However, the inspector observed that the licensee had not eliminated from the present set of controlled drawings any previously existing drawing errors of the type identified by CAR SOI-F-223 and by the inspector. A licensee

representative stated that prior to resumption of power operations, all construction projects completed during the refueling outage would be reviewed to ensure that the controlled drawings for these projects had configuration control reports which clearly identified the correct system status to the operator. In addition, a licensee representative agreed that the licensee would perform a careful review of the controlled copy of all drawings in the control room prior to resumption of power operations. (80-16-06)

b. Electrical Cable Termination

The termination of control cables for the Boric Acid System was observed in progress. The termination (crimping) tool being used did not have a calibration stricker. Upon follow-up, the inspector found that the tool was new and had not been calibrated. Bechtel QA personnel had placed the tool under administrative control by having a QC inspector record each termination made with the tool. The tool was then sent out for calibration. Later, it was determined that the tool was within calibration during this time period.

No items of noncompliance or deviations were identified.

9. IE Bulletins and Circulars

a. (Open) Bulletin 79-17

The inspector determined that the licensee was reviewing its contractor's report on the effect of the near ocean environment on Schedule 10 stainless steel piping. This bulletin remains open pending the inspector's review of the licensee's determination from that report.

b. (Open) Bulletin 79-18

The inspector determined that the licensee plans to complete the required modifications around June 7, 1980. The inspector stated that the installation would be reviewed at a later date.

c. (Open) Bulletin 79-23

The licensee stated that the report of the 24 hour diesel endurance test was being prepared. The inspector stated that it would be reviewed at a later date.

d. (Closed) Bulletin 79-24

The inspector reviewed the licensee's new procedure, S-3-2.39, "Maintaining Operability of Safety Related Lines During Sub-Freezing Conditions." The inspector stated that the procedure appeared to adequately prepare for sub-freezing conditions, should they occur. This bulletin is closed.

e. (Open) Bulletin 79-25

The inspector reviewed the licensee's response. It appeared adequate pending the results of the overtravel measurements required by the bulletin. The inspector stated that these results would be reviewed at a later date.

f. (Open) Bulletin 79-27

The inspector reviewed the licensee's response to Items 1 and 3 of the bulletin. The inspector noted that the licensee had interpreted the bulletin to require only an analysis of the loss of its 120 VAC buses, but not its 125 VDC bus which is one of two power sources to "vital" buses 1, 2 and 3, nor its 480 VAC buses. This appears to be a significant omission from the requirements of the bulletin to review the "Class 1-E and non-Class 1-E buses supplying power to safety and non-safety related instrumentation and control systems which could affect the ability to achieve a cold shutdown." The inspector questioned licensee management regarding this omission. Their position was that Bulletin 79-27 requirements only apply to buses that directly power instrumentation. They do not believe that the 125 VDC and the 480 VAC buses fall into this category. However, they do intend within the next few months to complete the analysis and development of procedures for loss of these buses. Work has already started in this area. This item remains open pending review of the licensee's response to Item No. 2.

g. (Closed) Bulletin 79-28

The inspector reviewed the licensee's response and stated that it appeared acceptable.

h. (Open) Bulletin 79-14

The inspector accompanied licensee contractor personnel as they inspected a portion of the "B" feedwater line on May 7, 1980. Their inspection was thorough and appeared to meet the requirements of the bulletin for inaccessible support inspections. This bulletin remains open pending review by NRR of the licensee's submittals.

No items of noncompliance or deviations were identified.

10. a. Licensee Event Report 80-03 (Additional Follow-up)

The inspector reviewed the licensee action to prevent failure of plant valves to function due to desiccant in the instrument air lines. The inspector confirmed that the modifications were made to the instrument

air filters. The blowdown of each air line that supplies safety related valves and the test operation of each valve was in progress. Also, the licensee had identified that the desiccant had deteriorated in the air drying towers. This deterioration of the desiccant had contributed to and may have been the source of the desiccant in the air lines. The desiccant in the tower was replaced with new material. The licensee had not addressed the possible effects of residual desiccant in the air pilot valves for each of the air operated valves, but committed to address this area of concern prior to startup from the present refueling outage. This area will be reviewed again prior to the plant startup. (80-16-07)

b. Licensee Event Report 80-08

The completed installation of the redesigned and rebuilt pipe supports for the north and south salt water cooling pumps were reviewed. The new supports appeared to be equal to or better than the original supports. Also, the repair of the foundation pedestal was observed. The repair was completed in accordance with the station drawing 567822-9 as revised by DCN No. 2 and attached Field Changes Notices.

No items of noncompliance or deviations were identified.

11. Exit Interview

The inspector met with the licensee representative (denoted in Paragraph 1) at the conclusion of this inspection on May 30, 1980. The inspector summarized his findings as identified in this report.