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

REGION V

Report No. 50-361/79-03
50-362/79-03

Docket No. 50-361
50-362

License No. CPPR-97
CPPR-98

Safeguards Group _____

Licensee: Southern California Edison Company

P. O. Box 800 - 2244 Walnut Grove Avenue

Rosemead, California 91770

Facility Name: San Onofre Units 2 and 3

Inspection at: Construction Site, San Diego County, California

Inspection Conducted: January 23-26, 1979

Inspectors: J. H. Eckhardt, Reactor Inspector — 2/8/79 Date Signed

L. E. Vorderbrueggen, Reactor Inspector — 2/8/79 Date Signed

Approved By: R. C. Haynes, Chief, Projects Section, Reactor Construction and Engineering Support Branch — 2/8/79 Date Signed

Summary:

Inspection on January 23-26, 1979 (Report Nos. 50-361/79-03 and 50-362/79-03)

Areas Inspected: Routine, unannounced inspection by regional based inspectors of construction activities including: containment post tensioning system, safety related components (refueling water and condensate storage tanks), and auxiliary intake cooling system. The inspection involved 50 inspector-hours onsite by two NRC inspectors.

Results: Of the three areas inspected, no items of noncompliance or deviations were identified.

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DETAILS

1. Individuals Contacted

   a. Southern California Edison Company (SCE)

   *H. B. Ray, Manager, Quality Assurance
   *L. D. Hamlin, Project Manager
   *L. L. Seyler, Project QA Supervisor
   P. A. Croy, Site QA/QC Supervisor
   *D. B. Schone, Lead Engineering Site Representative
   *P. R. King, QA Engineer
   W. L. Rossfeld, QA Engineer
   M. Rodin, QA Engineer
   T. D. Garven, QA Engineer
   S. S. Dziewit, QA Engineer
   D. C. Pile, Associate Construction Engineer

   b. Bechtel Power Corporation (Bechtel)

   *J. E. Geiger, Project Field QA Supervisor
   *C. A. Blum, QC Supervisor
   *J. R. Caldwell, Project QA Supervisor
   *R. W. Welcher, Project QA Engineer
   *W. D. Nichols, Assistant Project Field Engineer

   c. U. S. Nuclear Regulatory Commission

   *R. J. Pate, Resident Inspector

   *Denotes those attending exit interview.

2. Containment Post Tensioning

   Post tensioning of the Unit 2 containment was complete. Quality records associated with the following Unit 2 horizontal tendons were reviewed and compared to requirements of Quality Control Instruction No. 114, "Post Tensioning System Installation": horizontal tendon 2-1, 3; 2-3, 2; 18-3, 2; 55-2, 1; and 110-1, 3. The records included installation, tensioning, and greasing operations. No deviations or items of noncompliance were identified.

3. Safety Related Components (Refueling Water and Condensate Storage Tanks)

   The NRC inspector examined Unit 2 tanks erected by Brown Minneapolis Tank Company (BMT) and compared the completed work to requirements

of Quality Control Instruction (WPP/QCI-217), Specification for Refueling Water and Condensate Storage Tanks (Spec. No. SO23-407-13), and applicable drawings. The Seismic Class I tanks included a Condensate Storage Tank (ASME Class 3) and two Refueling Water Tanks (ASME Class 2).

In addition, the NRC inspector reviewed the following SCE reports related to BMT work:

a. Audit Report BPCS-52-78 (9/5, 22 and 10/10/78)

b. Field Surveillance Report M-102-78 (6/7/78)

c. Field Surveillance Report M-212-78 (10/27/78)

d. Field Surveillance Report M-217-78 (11/3/78)

e. Field Surveillance Report M-244-78 (12/5/78)

f. Field Surveillance Report M-251-78 (12/12/78)

Also, Nonconformance Reports M-261, 262, and 265 were reviewed and indicated that ASME Code welding requirements had been violated in certain cases. Although the resolution of the nonconformances was appropriate, the nature of the nonconformances was discussed with the licensee and the need for close attention regarding Unit 3 tank erection was emphasized.

Quality records associated with the Unit 2 tank work had been temporarily removed from the site by BMT in order to review and assemble the records prior to turnover to Bechtel. The problems associated with not maintaining the records onsite for review were discussed with the SCE Quality Assurance Manager. The records will be reviewed by the NRC inspector during a subsequent inspection after they are turned over to Bechtel. (50-361/79-03-01)

No deviations or items of noncompliance were identified during the examination of BMT work.

4. Offshore Circulating Water System

a. General

A separate offshore intake and diffuser outfall system is provided for supplying cooling water to each unit. The four underwater conduits are made up of essentially identical reinforced concrete segments 20-feet in length, 18-feet inside

diameter, 1-foot wall thickness, and 131 tons overall weight. Each conduit is placed in a separate trench in the ocean floor and covered with a 4-foot minimum rock backfill blanket to a level slightly below the originally undisturbed ocean floor. Each main intake is located approximately 3,350 feet from the plant sea-wall and each discharge conduit extends approximately 8,450 feet from the sea-wall. The A/E for the system is the licensee, and Guy F. Atkinson Co. (GFA) is the constructor. The conduit segments are fabricated by Ameron, Inc. at the site laydown area, and a specially built transport vehicle is used to transport them to the seafront installation trestle. GFA has engaged Ocean Systems Co. for diving service to control underwater placement of the segments and the backfill operation. The licensee has contracted Parker Diving Service Co. to perform their underwater QA/QC surveillance; all other work surveillance is performed by the licensee.

b. Current Status

The intake for Unit 2 was completed in July 1978. This includes the auxiliary intake structure that is mounted on the main intake conduit approximately 100 feet shoreward from the main intake structure. As of January 26, 1979, the status of the other conduits was as follows:

Unit 2 discharge complete out to 6,740 feet from sea-wall.
Unit 3 discharge complete out to 1,110 feet from sea-wall.
Unit 3 intake complete out to 423 feet from sea-wall.

c. QA Program

The ultimate heat sink for each unit is based upon a minimum flow of 4% through the intake conduit to the auxiliary salt water pumps which supply the component cooling water heat exchangers. For this purpose, each intake conduit is provided with an auxiliary intake structure. This auxiliary feature was incorporated pursuant to licensee discussions with NRR subsequent to the submittal of the FSAR, and was described in FSAR Amendment 12, dated November 1978. Consequently, the licensee upgraded from Quality Class 3 to Class 2 that portion of each intake system out to and including the auxiliary intake structure. This upgrading required the development of a QA program for all remaining work on that portion of each intake system. The QA program is entitled Integrated Manufacturing and Quality Plan (IMQP) and was issued for use on 4/18/78. Additionally, the

licensee attempted to backfit the program to the maximum extent possible in regard to collecting relevant quality records and procedures pertinent to work already completed on Unit 2 intake.

The inspector reviewed the licensee's IMQP. It is directed principally to the fabrication of the auxiliary intake structure conduit segment, the riser sections and velocity cap which make up the structure, and the installation of those components, connecting conduit segments and backfill materials. It provides for material and special process control, inspection hold and witness point requirements, and test controls. The inspector concluded that the IMQP was adequate.

d. Observation of Work

At the time of the inspection, the only installation work in progress was on the Unit 3 discharge conduit. Since the procedures and technical requirements are identical for both conduits, the inspector observed a portion of the installation of a discharge conduit segment. This included the placement and lubrication of the continuous O-ring sealing gasket, handling and trestle transport of the segment, lowering of the segment into position in the ocean trench, and monitoring the conversation between the diver and crane operator as the segment was being aligned with and joined to its mating segment. The inspector also examined the conduit segment that was to carry the Unit 3 auxiliary intake riser structure. It had been placed in storage on the waterfront awaiting assembly of the buttress supports on the bottom and the riser block on top. The segment contained no concrete spalls, cracks or exposed reinforcing and displayed good workmanship. All work appeared to conform to the requirements.

e. Quality Records Review

The inspector examined representative records pertaining to the fabrication and installation of the Unit 2 auxiliary intake structure. Included were the following documents:

- Auxiliary Intake Structure Technical Specification
- Procedure for Underwater Repair of Concrete Surface Spalling
- Procedure for Underwater Repair of Concrete Cracks of Surface Width $\geq$10-Mils
- Procedure for Preheat and Bending of ASTM 615 Grade 40 Reinforcing Rod

- Procedure and Qualification Record for Butt Welding ASTM 615 Reinforcing Rod
- Procedure and Qualification Record for Cross Member Tack Welding
- Design Review of 4,000 psi - 28 Day Concrete Mix Design
- Test Laboratory Records of Mix Design Cylinder Tests
- Design Review of Buttress Rebar Details
- Design Review of Buttress Rigging Scheme
- Design Review of Buttress Forming Scheme
- Parker Diving Service Inspection Reports (approximately 25)

No items of noncompliance or deviations were identified by the inspector.

The inspector also reviewed the licensee's report of Audit No. SCES-06-78 conducted in early December 1978 on the activities and records associated with the auxiliary intake structures. A formal plan was developed and used for the audit, and the audit report was timely and comprehensive.

5. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on January 26, 1979, and summarized the scope and findings of the inspection as stated in this report.