

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

REGION V

Report No. 50-206/80-14
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: Camp Pendleton, California
Inspection conducted: April 15-18, 1980
Inspectors: J.R. Curtis 6/10/80
R. R. Curtis, Radiation Specialist Date Signed
H. North 6/10/80
H. North, Radiation Specialist Date Signed
Approved By: F. A. Wenslawski 6/10/80
F. A. Wenslawski, Chief, Reactor Radiation Safety Section Date Signed
Approved By: H. E. Book 6/10/80
H. E. Book, Chief, Fuel Facility and Materials Date Signed
Safety Branch

Summary:

Inspection on April 15 to 18, 1980 Report No. 50-206/80-14

A special inspection was conducted to determine the circumstances and events that occurred at the San Onofre Unit 1 nuclear facility when nine SCE employees were found to have radioactive contamination on their skin upon exiting the exclusion area and removing protective clothing. The inspection involved 44 hours on site by two radiation specialist inspectors.

Results: As a result of this inspection one item of noncompliance with technical specification requirements (T.S. 6.11) was identified.

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DETAILS

1. Persons Contacted

- *R. Brunet, Superintendent SONGS-1
- *M. Sullivan, Chemical and Rad Protection (C and RP) Supervisor, SONGS-1
- J. Mortenson, C. and R.P. Shift Supervisor, SONGS-1
- *E. Bennett, C. and R.P. Shift Supervisor, SONGS-1
- *D. Duran, C. and R.P. Engineer, SONGS-1
- M. Wharton, Station Engineer, SONGS-1
- V. Salvatore, Station Engineer, SONGS-1
- *J. Albers, C. & R.P. Engineer, SONGS-2/3
- D. Geeter, SCE, Division Maintenance Mechanic
- R. Peralta, SCE, Division Maintenance Mechanic
- O. Zacherson, SCE, Division Maintenance Mechanic
- R. Lucuata, C. & R.P. Technician, SONGS-2/3
- *G. MacDonald, SCE, Quality Assurance SONGS-1
- *D. Nunn, SCE, Manager, Quality Assurance

*Indicates those present at the exit interview.

2. Investigation of Circumstances in Which Nine SCE Employees had Skin Contamination

San Onofre Unit 1 was shut down on April 9, 1980 because of high primary to secondary steam generator tube leakage. Since a routine refueling outage was scheduled to commence on April 11, the reactor remained shut down and refueling, other planned maintenance work, and steam generator repair work was begun.

Between about 10:40 P.M. on April 12 (Saturday) and 2:00 A.M. on April 13 (Sunday), nine workers involved in steam generator entries experienced skin contamination. The contamination was identified when the workers left the controlled area. Levels ranged from 2000 to 500,000 cpm. All workers were successfully decontaminated by washing and showers. External exposures were as expected, and no radiation overexposures occurred. Whole body counts of the workers were made on the following day and showed a maximum internal deposition of 10 to 11 percent of the maximum permissible body burden of I-131. This matter was promptly reported to the NRC under the newly revised requirements of 10 CFR 50.72.

The inspectors investigated the circumstances and status of the situation in which the nine SCE employees preparing the steam generator for repair were found to have radioactive contamination on their skin and clothing when they left the work place.

The inspectors discussed this matter with representatives of licensee management and technical staff, attended meetings between supervisory personnel and the individuals involved, reviewed appropriate procedures, radiation surveys, and other records pertinent to the event, and interviewed numerous SCE personnel including five of the persons contaminated and members of the Radiation Protection staff who were on duty during the event.

3. Inspection Conclusion Regarding Occurrence

It was the conclusion of the inspectors that a combination of circumstances had contributed to the occurrence. Because of an increase in the rate of steam generator (SG) tube leakage, the licensee had shut down for refueling two days sooner than scheduled, and had promptly arranged for SG entry to do a preliminary leak inspection. The initial entry was made an urgent priority and insufficient attention was given to preplanning and logistical preparations. As a result, several problems and delays were experienced during the job. As an example, the licensee was using for the first time a new type of "wet suit" protective outer clothing. This clothing had not been tested under working conditions and was found to tear during the job. In addition, only a limited number of wet suits were available. A special light used in the SG's broke and a replacement could not be readily located. The majority of the maintenance crew (five out of six) performing the task were inexperienced at it. The radiation protection technician covering the job did not aggressively perform his duties, particularly with respect to removing the highly contaminated protective clothing from the workers. Finally, the job lasted for a long time and the crew performing the task had been in a work status for more than 14 hours at the time the contamination had occurred.

4. Results of the Inspection

As a result of this special inspection, two instances were identified of failure to follow written procedures that are required by Technical Specifications.

Section 6.11, Radiation Protection Program, requires that "Procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20 and shall be approved, maintained and adhered to for all operations involving personnel radiation exposure.

Specifically, the licensee failed to implement the actions prescribed in Radiation Protection Procedure S-VII-1.4, Rev. 5 - April 1979, Entering and Leaving Steam Generators.

Instance one:

Section III B 2. "Determine airborne particulate and iodine levels prior to entry, ...for each steam generator involved."

On April 12, 1980, air sampling surveys performed in connection with the entry into steam generators "A", "B and C" were made outside of steam generator A and C and inside the manway in generator C. Air sampling surveys for each steam generator were not performed prior to entry.

Instance two:

Section III E 2 states that "The worker should stand still and let the Chemical/Radiation Protection Technician remove the face shield, respirator, rubber gloves, plastic boots and rain gear.

At the conclusion of the entries into the steam generators on April 12 & 13, 1980, the above mentioned potentially contaminated items of protective equipment were removed by the individual worker or other members of the work crew, not by the Chemical/Radiation Protection Technician.

5. Exit Interview

An exit interview was held following the inspection, at which licensee representatives were advised of the findings of the inspection. Licensee management and staff had devoted considerable attention to the subject of this inspection since it occurred and corrective actions to prevent re-occurrence were being formulated and implemented. Formal action to implement procedural improvements had been initiated and were to be submitted through licensee review and approval channels.