

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

REGION V

Report No. 50-206/80-33

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 (SONGS-1)

Inspection at: Camp Pendleton, California

Inspection conducted: December 15-18, 1980

Inspectors: G. P. Yuhas for 1-16-81  
M. Cillis, Radiation Specialist Date Signed

G. P. Yuhas 1-16-81  
G. P. Yuhas, Radiation Specialist Date Signed

Approved by: F. A. Wenslawski 1/16/81  
F. A. Wenslawski, Chief, Reactor Radiation Safety Section Date Signed

Approved By: H. E. Book 1/19/81  
H. E. Book, Chief, Fuel Facility and Material Safety Branch Date Signed

Summary:

Inspection on December 15-18, 1980 - Report No. 50-206/80-33

Areas Inspected: Special unannounced inspection by regional based inspectors of radiation protection program associated with the steam generator repair activity, handling of the NFS-4, NAC-1E cask, response to IE Bulletin 80-10, and followup on previously identified inspection findings. The inspection involved 54 inspector-hours onsite by two inspectors.

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

## DETAILS

### 1. Persons Contacted

- \*J. G. Haynes, Manager, Nuclear Operations
- \*J. M. Curran, Plant Manager, San Onofre
- \*R. R. Brunet, Superintendent, Unit 1
- \*B. L. Curtis, Project Manager, Steam Generator Repair
- \*K. N. Hadley, Superintendent of Plant Security
- \*R. V. Warnock, Radiation Protection Supervisor
- \*G. W. McDonald, Quality Assurance/Quality Control Supervisor
- \*J. D. Dunn, Project Quality Assurance Supervisor
- \*W. G. Frick, Compliance Engineer
- \*W. D. Allen, Consultant to SCE
- J. Rayn, Reactor Shift Supervisor
- \*E. J. Bennett, Chemistry and Radiation Protection Foreman

\*Denotes those individuals attending the exit interview on December 18, 1980.

In addition to the individuals noted above the inspectors met with and interviewed other members of the licensee's and contractor's staffs.

### 2. Licensee Action on Previous Inspection Findings

(Closed) (50-206/80-23-02) Unresolved item involving the spill of liquid radioactive waste that occurred on August 13, 1980. The licensee's final investigation of the incident identified that the nitrogen flow during the resin dewatering process exceeded the venting capabilities of the hold up tank. The imbalance of gas flow resulted in overpressurization of the west hold up tank and the subsequent spill discussed in Inspection Report No. 50-206/80-23. The final evaluation report did not reveal any significant findings to negate the initial corrective actions previously reviewed by the inspector. A review of weekly analysis of water samples taken from the yard drain since the incident indicated effluent releases were well below 10 CFR 20, Appendix B limits.

The licensee's investigation of the incident previous corrective actions taken, and additional actions being implement as a result of the licensee's final evaluation reports appear to be adequate. The inspector has no further questions concerning this matter.

Open (50-206/80-26-08) Noncompliance, failure to perform a survey or evaluation of the radiation hazard associated with handling of the NFS-4 NAC-IE shipping cask. On October 2, 1980 NRC Region V issued an Immediate Action Letter confirming actions the licensee agreed to take regarding the cask. Item 2 of that letter stated that the licensee would require prior NRC approval before working on the cask in any manner. Since the last inspection, (50-206/80-26) the licensee appointed a committee to develop and implement a plan to manage the cask. The inspector reviewed Special Procedure SPRP-009, "NAC-IE Shipping Cask Status Determination", discussed the procedure with members of the committee and concluded the licensee intends to

perform an adequate evaluation of the radiation hazards and take appropriate precautions when handling the cask. In a letter dated December 9, 1980 NRC Region V approved the licensees intent to evaluate the hazard, ensure the integrity of closure, decontaminate the cask and move it from the fuel handling building to a trailer located within the restricted area. During this inspection, the inspector met with committee members to review the licensee's progress. No work has actually begun since the desired continuous air monitoring device has not yet arrived onsite.

Regarding dose assessment for individuals involved in handling the cask on September 5, 1980, the inspector was informed by the licensee that bioassay measurements had been completed and indicate that no substantial intake of radioactive materials had occurred. Data from these measurements was not yet available onsite for review. Evaluation of extremity dose is still in progress.

Matters associated with the NFS4, NAC-IE cask will be reviewed in subsequent inspections.

### 3. Licensee Response to IE Bulletin

IE Bulletin 80-10, "Contamination of Nonradioactive Systems and Resulting Potential for Unmonitored, Uncontrolled Release of Radioactivity to Environment", was received and reviewed by the licensee. In a letter dated July 7, 1980 the licensee verified that items 1 and 2 of the Bulletin had been completed. The licensee's evaluation of the liquid radioactive waste spill described in Paragraph 2 above identified the need to re-examine their response to IE Bulletin 80-10. The inspector requested to review the engineering evaluation performed in response to this bulletin. A collation of data for this evaluation was not available onsite, therefore the inspector met with several licensee representatives, reviewed system drawings, procedures, and sample results to establish the adequacy of the response.

The re-examination of the response scheduled by the licensee to be complete by November 10, 1980 had not been satisfactorily completed according to the assigned individual. Specifically the yard drain system needs to be included in the response, Procedure S-VII 1.15; "Liquid Radioactive Waste Releases" is being revised to address turbine cycle vents and drains, and action levels to initiate safety evaluations of contaminated systems need to be identified.

Implementation of the licensee's response to IE Bulletin 80-10 is considered incomplete at this time and will be reviewed in a subsequent inspection.

4. Radiation Protection Associated with Steam Generator Repair

The inspectors toured the containment building and steam generator work area on December 16, 1980. Independent measurements were made by the inspectors, survey data reviewed, and discussions held with licensee and contractor representatives. The inspector observed utilization of the steam generator mockup and reviewed plans and procedures associated with the repair activity.

Since the last radiation protection inspection several functional changes in the radiation protection organization have been made. The Chemistry and Radiation Protection Supervisor has been relieved of chemistry responsibilities. The Radiation Protection Consultant to SCE has been assigned functional responsibility for day to day implementation of the licensee's radiation protection program associated with the repair activity. The Chemistry and Radiation Protection Foreman responsible in the radioactive waste management area has retired and a Chemistry Radiation Protection Technician has been promoted to Acting Foreman to fill the vacancy. Three other Chemistry Radiation Protection Technicians have been upgraded to Acting Foremen in order to assist the Chemistry and Radiation Protection Foreman in supervising the cadre of contractor supplied radiation protection technicians. At the time of the inspection approximately 70 radiation protection technicians supplied by three contractors were onsite assisting the licensee.

Special Procedure SPRP-008, "Health Physics Program for the Steam Generator Repair Project" has been established and implemented to facilitate utilization of the large numbers of individuals associated with the steam generator repair.

Based on review of the procedure and observation of its implementation the inspector concluded that although it is broad in scope, the procedure provides enough specific guidance to be effective.

Review of selected radiation survey records, and evaluations performed in the period since October 17, 1980 indicate sufficient data is available to implement appropriate precautionary measures.

As of December 16, 1980, 558 of a projected 1783 person-rem of exposure associated with the steam generator repair has been incurred since September 8, 1980.

In a letter dated November 26, 1980 to the Director, Office of Nuclear Reactor Regulation the licensee stated that the occupationally limiting dose rate inside the steam generator channel head was 2 r/hr, that an estimated 1,000 workers are expected to participate in the repair effort and an estimated 1,783 person-rem will be incurred. The licensee also stated that the following measures had been implemented to maintain the exposure to As Low As is Reasonably Achievable (ALARA) levels:

- " . Use of a steam generator mock-up and actual tooling for training under protective clothing situations.
- . Remote CCTV monitoring of certain process instrumentation, platform and channel head process areas.
- . Staging and final suit-up of steam generator entrants in low background areas prior to containment entry.
- . Decontamination of channel heads with a remote device.
- . Application of a lead curtain on steam generator divider plates.
- . Application of lead shielding to hot leg nozzle covers.
- . Design, fabrication and planned use of a sectioned tubesheet shield.
- . Extensive sheilding of occupied areas, walkways and platforms.
- . Use of a remote TV monitoring system dedicated for Health Physics use to provide coverage of platforms and steam generator entries from a low background area.
- . Application of shielding to the cold leg manway opening.
- . Erection of "containment" tent enclosures to control contamination during process equipment maintenance.
- . Filtered exhaust of the opposite manway to control airborne concentrations during channel head work.
- . Shift coverage for decontamination of walkway, railings and equipment.
- . Computerized dose assignment by work function and location.
- . Maintenance is minimized on platform by use of an in-containment decon tent and a separate maintenance test.
- . Daily exposure updates by work group and major task to upper level management.
- . Multiple step-off pads to closely confine contmination to the steam generator work areas.
- . Use of remote gamma detectors in steam generator platform areas.
- . Extensive use of long-reach survey instruments.
- . Routine air sampling, contamination and radiation surveys.
- . Process specific training for H. P. Technicians.
- . Use wherever practicable of remote or semi-remote tooling."

The inspector verified by direct observation and review of survey data the status of each item noted above.

Review of individual's dosimetric data for channel head entries made from December 12 thru 14, 1980 indicated dose rates in the range of 4.6 to 15 r/hr. Since these radiation intensities are significantly greater than the 2 r/hr reported in the November 26, 1980 letter the inspector pursued an explanation.

The sectioned tube sheet shield mentioned above had been designed and fabricated but not yet installed. Review of the design evaluation indicates that installation of the shield should be effective in reducing the occupational dose. Licensee representatives stated that the sectionalized tube sheet shield will be installed prior to start of production sleeving.

Several of the actions noted above have been tracked by contractor's ALARA engineering staff. Summarized below is an accounting of major exposure savings realized thru December 17, 1980 and projected additional savings expected during the remainder of the sleeving project.

<u>ALARA Improvement</u>	<u>Person-rem Saved 9-8-80 to 12-17-80</u>	<u>Projected Additional Savings</u>
Extensive area shielding in containment	78	74
Remote television monitoring	19	42
Channel head shielding	71	663
Administrative control of personnel	71	--

During tours of the containment building the inspector observed several individuals stationed in radiation areas but who did not appear to be actively involved in production oriented work. These individuals function as security escorts for the transient workers assigned to work on the steam generators. The inspector requested an accounting of exposure incurred in the performance of this function. As of December 17, 1980, 25 person-rem had accumulated and an estimated 60 person-rem could be expected during the remainder of the project. The inspector discussed with the ALARA Engineering Staff and the Radiation Protection Supervisor what actions could be taken to reduce this exposure. The licensee was aware of the problem and was considering various methods to reduce the dose.

One of the actions agreed to by the licensee at the September 5, 1980 management meeting and documented in the Immediate Action Letter of that date stated in Paragraph 4.b. that licensee would "Assign an individual qualified in radiation protection procedures and knowledgeable of regulatory requirements to audit the effectiveness of the radiation protection program and to initiate immediate corrective action for all deficiencies observed during the performance of all work associated with the current steam generator repair."

The inspector discussed the audit program with the individual assigned and reviewed the following surveillance reports:

<u>Surveillance Report No.</u>	<u>Date</u>
H-236-80	10-16-80
H-253-80	10-23-80
G-277-80	11-5-80
G-362-80	12-16-80

The inspector also reviewed Audit Report S01-59-80, AC30-QLQ, "Respiratory Protection" dated November 19, 1980.

Findings of the above audits are meaningful and actions are being taken to correct the identified deficiencies.

In addition to the above audits, the Radiation Protection Consultant to SCE instituted a radiation protection audit program on November 3, 1980. A qualified contractor Radiation Protection Technician has been assigned to each shift. The technician's sole function is to observe, report and initiate action to correct observed deficiencies.

The inspector reviewed the nonconformance log book maintained by these auditors. The log contained a description of the deficiency, cause, and disposition or corrective action. Since inception of this program, 59 deficiencies have been recorded. Corrective action has been recorded for each identified item. Generally, the deficiencies involved failure to follow procedures, improper posting and control, and ALARA observations.

No item of noncompliance was observed in this area.

5. Other Observation

During a tour of the restricted area the inspector observed the removal of sand and concrete from an excavation near the containment structure. Review of release survey data indicated that direct, and removable contamination surveys had been performed. Sand had been evaluated by washing a ten gram sample with demineralized water and determining the residual activity. The sample result indicated 1 E-5 uCi/ml of cesium 137 in the wash water.

The licensee representative stated the release criterion being applied in this case was the definition of radioactive material as stated in 49CFR173.389(e). The inspector informed the licensee that the requirements of 10 CFR Parts 20 and 30 also apply and will be the subject of additional inspector review during a subsequent inspection (50-206/80-33-01).

6. Exit Interview

The inspector met with the licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on December 18, 1980. The inspector summarized the scope and findings of the inspection.

The inspector discussed with the licensee representatives the need to assure that the ALARA criterion is fully applied with respect to control and utilization of transient workers assigned to containment in addition to maintaining compliance with the security requirements.

The inspector also suggested that the licensee carefully review their actions regarding disposal of excavated materials from the restricted area.