U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-206/87-12, 50-361/87-11 and 50-362/87-12

Docket Nos. 50-206, 50-361 and 50-362

License Nos. DPR-13, NPF-10 and NPF-15

Licensee: Southern California Edison Company
2244 Walnut Grove Avenue
Rosemead, California 91770

Facility Name: San Onofre Nuclear Generating Station - Units 1, 2 and 3

Inspection at: San Onofre Nuclear Generating Station

Inspection Conducted: April 27 - May 7, 1987

Inspector: _____ 6-17-87
J. E. Russell, Radiation Specialist — Date Signed

Approved by: _____ 6-18-87
G. R. Yuhas, Chief — Date Signed
Facilities Radiological Protection Section

Summary:

Inspection on April 27 - May 7, 1987 (Report Nos. 50-206/87-12, 50-361/87-11 and 50-362/87-12)

Areas Inspected: Routine, unannounced inspection of licensee action on inspector identified problems and unresolved items; Unit 1 - gaseous waste systems; Units 2 and 3 - external occupational exposure control and internal exposure control; Units 1, 2 and 3 - control of radioactive materials and maintaining occupational exposures ALARA; and including tours of the licensee's facility. Inspection procedures 30703, 83724, 83725, 83726, 83728, 84724 and 92701 were addressed.

Results: In the seven areas inspected, two violations were identified in two areas, involving failure to label sealed sources, 10 CFR 20.203(f), Caution signs, labels, signals and controls (paragraph 7); and failure to maintain records of sealed source leak tests, Technical Specification 6.10, Record Retention, (paragraph 5).

## DETAILS

1. Persons Contacted

   a. Licensee

      H. Morgan, Station Manager
      M. Wharton, Deputy Station Manager
      W. Zintl, Compliance Manager
      P. Knapp, Health Physics (HP) Manager
      R. Rosenblum, Quality Assurance Manager

   b. U. S. Nuclear Regulatory Commission (NRC)

      R. Huey, Senior Resident Inspector

   All the above noted individuals were present at the exit interview on May 7, 1987. In addition to the individuals identified above, the inspector met and held discussions with other members of the licensee's staff.

2. Licensee Action on Inspector Identified Problems and Unresolved Items

   (Closed) Item 50-206/82-26-01. Low flow indication on Operational Radiation Monitors RE-1211 and RE-1212 was noted and traced to a procedural problem involving set point determination. Procedure SO1-2.2.1 appeared to be adequately revised to accommodate the necessary change. Additionally, the current calibrations of RE-1211 and RE-1212 were reviewed and appeared to be complete and adequate (see paragraph 3).

   This matter is closed.

   (Closed) Item 50-206/85-08-R1. Revision 1 to generic letter No. 85-08, regarding NRC Form 439, was issued to all licensees to specify a preferred reporting format for submittal of licensee exposure reports. Licensee representatives stated that they are complying with the recommended format and are participating in the pilot electronic data transmission program with NRC.

   This matter is closed.

   (Open) Item 50-206/85-29-01. The licensee has four 55 gallon drums of waste contaminated with transuranic material in excess of disposal site limits. Licensee representatives stated that they are continuing efforts to obtain approval for disposal of the waste.

   This matter remains open.

   (Closed) Item 50-206/87-03-Y0. The licensee provided a timely report to the NRC by telephone on 28 February 1987 and follow-up Licensee Event

Report (LER) No. 87-002, dated 30 March 1987, that the Turbine Building Yard Sump Effluent Monitor, RIT-2101, had been found to be isolated and that compensatory 12 hour samples required by Technical Specifications (TS) Table 3.5.8.1 had not been obtained between 0830 26 February 1987 and 0430 28 February 1987. The compensatory samples were not taken because the monitor had been declared operational without the monitors sampling isolation valve being opened. The valve was not opened because a Control Operator had not noted its closure in the Control Room Log. The responsible operator was counseled regarding documentation of valve manipulations and all other Operations personnel were briefed on the matter. The licensee's staff stated that there were no releases via this pathway during the period that samples were not taken and that the monitor has been returned to service and is operating properly.

This item would be considered a Severity Level V violation. However, as it was identified by the licensee, reported properly and in a timely manner, appeared to be adequately corrected with actions taken to prevent recurrence and as it appeared that it could not reasonably be expected to have been prevented by the licensee's corrective action for previous violations; a Notice of Violation will not be issued in this instance in accordance with the guidance provided in 10 CFR 2, Appendix C, Part V.A.

This matter is closed.

(Closed) Item 50-206/85-05-XO. Wide range stack monitor, RE-1254, failed on 2 October 1985 and was returned to service 10 October 1985 after repair of circuitry. Alternate sampling appeared not to be required due to operation of other effluent monitors in accordance with TS.

This matter is closed.

(Closed) Item 50-206/86-42-02. Two drums were found during a previous inspection which did not bear labels as required 10 CFR 20.203. The inspector confirmed that a procedure change had been made to Health Physics Procedure S0123-VII-7.4, Posting and Access Control, which appeared to provide adequate instruction to preclude recurrence of the problem.

This matter is closed.

(Closed) Item 50-361/84-29-01. At times a mismatch exists between some of the alarm set points of the Radiation Monitoring System (RMS) monitors and the record of the set point maintained in the control log computer due to a lag between setpoint revision and computer reprogramming. The inspector's review of RMS instrument calibrations confirmed that the alarm points appeared to be accurately calculated and set and that the discrepancy between the actual set point and the computer record appeared to have no impact on the TS limitations for these monitors.

This matter is closed.

(Closed) Item 50-361/01-16-87. A 50 microcurie sealed source was lost while soldering the source to a drive mechanism. The source was discovered by technicians frisking clean trash before disposal. The source appeared to have never left the licensee's controlled area but positive control of the source was lost for two days as it appeared that radioactive material control technicians failed to follow required procedures and performed surveys using a non-conforming survey instrument. The licensee took action to insure required procedures were followed at all times. The inspector confirmed that actions taken appeared to be adequate to prevent recurrence.

This matter is closed.

(Closed) Item 50-361/08-15-83. The licensee determined that a change in the land use within a 5 mile radius of the site required a revision of the Land Use Census and an increase in the calculated dose commitment within the applicable sectors. The inspector confirmed that the change appeared to be appropriately incorporated and that no exposure in excess of the applicable limits appeared to have resulted.

This matter is closed.

(Closed) Item 50-361/83-12-8L. Containment airborne radioactivity monitor 2RT-7804 was found to be in alarm defeat which would have prevented purge isolation had a release occurred. The inspector confirmed that records appeared to indicate that no release occurred, that the licensee took action to prevent inadvertent actuation of the alarm defeat push button and that procedure S023-3.3.21 was revised to assure the safety function of the monitor was not defeated.

This matter is closed.

(Closed) Item 50-361/82-48-L0. Containment airborne monitor 2RT-7807 was isolated due to inadvertent deenergization of isolation valve 2RV-7801 due to use of an improperly numbered fuse. The inspector confirmed that records appeared to indicate that appropriate alternate sampling had been implemented and that procedure S023-3.3.8 had been revised to specify the appropriate fuse.

This matter is closed.

(Closed) Item 50-361/83-13-L1. Containment airborne monitor 2RT-7807 failed due to a burned out diode. The inspector confirmed that records appeared to indicate that the monitor was expeditiously repaired, that alternate sampling was not required and that the licensee performed a review of the reliability of all gaseous monitoring instrumentation to prevent recurrence.

This matter is closed.

(Closed) Item 50-362/85-01-29. A previous inspector concern addressed the operation and calibration of the Eberline SAM-2 instruments in use at the site. The inspector reviewed the operation and calibration of the instrument and Health Physics Procedure S0123-VII-5.1.5, SAM-2 Eberline - Operation and Calibration. The inspector found nothing which appeared to be deficient.

This matter is closed.

(Closed) Item 50-362/85-02-29. A previous inspector concern addressed the quality control charts for alpha and beta laboratory instruments. The inspector reviewed the quality control procedures for the alpha and beta lab instruments and Health Physics Procedure S0123-VII-6.2, Operation and Calibration of Baird (Alpha/Beta) Counting System. The inspector found nothing which appeared to be deficient.

This matter is closed.

3. External Occupational Exposure Control and Personnel Dosimetry Units 2 and 3

The inspector reviewed the results of SCE Qualtiy Assurance (QA) Audit Report SCES-020-86 relative to the Dosimetry Program, various Field Surveillance Reports and the July 1986 National Voluntary Laboratory Accreditation Program assessment report. The inspector noted the deficiencies identified and confirmed that corrective actions taken appeared to be appropriate. The inspector interviewed the responsible members of the licensee QA staff and confirmed that their qualifications for conducting health physics and dosimetry audits appeared to be adequate.

The inspector was informed by the licensee staff that there had been no significant changes in the exposure control and personnel dosimetry program since the last inspection with the exception of the institution of the fuel fragment control program.

The inspector interviewed the Dosimetry Supervisor and the dosimetry staff. The inspector reviewed the current exposure status of site personnel, station exposure totals for 1986, and the Unit 3 second refueling outage exposure totals. The inspector reviewed selected dosimetry files to confirm the appropriate completion and retention of NRC Form 4s, Form 5s and termination letters. The inspector reviewed External Dosimetry Investigation records.

The inspector reviewed the following dosimetry procedures:

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|---|---|
| S0123-VII-4.1 | Personnel Monitoring Records |
| S0123-VII-4.3.4 | Operation of the Panasonic Model UD-710A Automatic TLD System |

SO123-VII-4.3.9 Analysis of Panasonic Model UD-710A TLD Reader Glow Curves

SO123-VII-4.3.13 TLD Field Badge Processing

The inspector visited the dosimetry laboratory and reviewed system operations.

The inspector reviewed the documentation of vendor supplied TLD system programs. The inspector was informed by the licensee staff that no validation or verification (v&v) of the vendor supplied software, with the exception of the program TLDOSE, had been conducted by SCE and that no record of v&v by the vendor was available. The inspector brought to the attention of the licensee staff that appropriate v&v of software is important to the quality of program implementation as illustrated by current events both at SCE and at other facilities.

The inspector also brought to the attention of the licensee staff that, of the five programs involved in the overexposure event to a worker's hand (see report 50-362/86-37), all have now received v&v but four of the five still lack documentation.

No violations or deviations were identified.

4. Internal Exposure Control and Assessment Units 2 and 3

The inspector reviewed the QA audit report noted in paragraph 3 above, which covered areas within the SCE internal exposure control program. The inspector interviewed the responsible members of the licensee QA staff and confirmed that their qualifications appeared to be adequate.

The inspector was informed by the licensee staff that no significant changes had occurred in the program since the last inspection. However, the licensee had instituted plans for a program of respirator filter reuse and had obtained a compressor to begin self-contained-breathing-apparatus tank refilling on site.

The inspector reviewed the Internal Dose Assessment Log and selected several internal dose assessments performed in 1986 for review. The inspector was informed by the licensee staff that there had been no exposures to airborne radioactivity in excess of the 40 MPC·hr investigation level in 1986 or so far in 1987.

The inspector reviewed Health Physics Procedures SO123-VII-4.2, Internal Dosimetry Program, SO123-VII-4.2.1, Operation of the Analytical Whole Body Counting System, and SO123-VII-4.2.1.2, Operation of Quicky Model III Whole Body Counter.

The inspector reviewed select whole body counting records. The inspector reviewed the placement of airborne radioactivity sampling equipment during plant tours. The inspector reviewed calibration records for the three whole body counters in use at the site, one Helgeson "Analytic" counter and two Helgeson "Quicky" counters.

The inspector noted that none of the whole body counting systems were calibrated to provide a specific readout for either Ru-106 or Ce-144, the isotopes of primary concern in older fuel fragments and frequently the only isotopes distinguished in many particles. (See Inspection Reports 50-362/86-02 and 86-37 for further details on the fuel fragment problem). The inspector noted that American National Standard for Internal Dosimetry for Mixed Fission and Activation Products, ANSI N343-1978, specifically indicates these isotopes are more likely to represent sources of internal exposure and San Onofre Health Physics Procedure S0123-VII-4.2 specifically sights these isotopes in regard to consideration of the 40 MPC·hr investigation level specified in 10 CFR 20.103.

A member of the HP engineering staff stated, when asked, that no specific calculation was available which demonstrated the minimum particle activity, of Ru-106 or Ce-144, which could be detected by the licensee's whole body counting system. The inspector requested and the licensee staff agreed to perform such a calculation to demonstrate their ability to comply with the 20.103 investigation level. This item requires more information to ascertain whether it is an acceptable item, deviation, or a violation and is therefore considered an unresolved item at this time (50-362/87-12-01).

Additionally, the inspector inquired of the HP Manager whether, due to the unique properties of irradiated fuel fragments and recognizing that the SCE internal dosimetry program is geared to protecting personnel from internally deposited radioactive material which is essentially uniformly distributed throughout the lungs, SCE had evaluated whether or not a hazard might exist from deposition of such a hot particle in the lung of a worker which could produce a localized and highly non-uniform dose. The HP Manager responded that he felt it appropriate that such a question should be considered and stated that he would look into the matter. This question requires further evaluation and is considered an open item (50-362/87-12-02).

No violations or deviations were identified.

5. Control of Radioactive Materials Units 1, 2 and 3

The inspector reviewed the results of the SCE QA Audit Report SCES-039-86 and select Field Surveillance Reports all of which covered some areas of Radioactive Material Control. The inspector noted the deficiencies identified and examined the status of the current program. The inspector interviewed the responsible members of the licensee QA staff and confirmed that their qualifications for conducting radioactive material control audits appeared to be adequate.

The inspector was informed by the licensee staff that there had been no significant changes in equipment or procedures in the radioactive material control program other than the institution of the fuel fragment control program. There were changes in personnel noted to the inspector, particularly a new Health Physics Instrumentation (HPI) Supervisor had been appointed.

The inspector interviewed the HPI Supervisor, an Instrumentation Control (I&C) Supervisor, the Unit 2/3 Radioactive Material Control (RMC) General Foreman, a Unit 2/3 RMC Supervisor and various other RMC and I&C personnel. The inspector reviewed the HPI Logbook, the HPI Manual, select instrument calibration records, the Source Inventory and Leak Test log, the Source Type and Location Report, and the Instrument Issue log. The inspector toured the Unit 2/3 radwaste building, Unit 1 controlled areas and reviewed area postings and contamination controls.

The inspector reviewed current RMC efforts to reduce the number of contaminated areas on site and consequent radioactive waste production.

The inspector's review of the Instrument Issue Log disclosed that the return of instruments was not always noted in the log. The inspector's review of instrument Daily Performance Tests disclosed that these were not always recorded each day for every instrument. The inspector's review of hard copy instrument calibration records maintained in the Unit 1 HPI office disclosed that these records were incomplete and did not provide a trackable history of instrument calibration and repair. The inspector informed the HPI Supervisor of these omissions. The Supervisor stated that, occasionally, technicians forget to log-in returned instruments, that some instruments are not always returned to the HPI office for the daily performance test but are not used unless tested and that complete records of instrument calibrations are maintained in the site document archival system. Further review of portable survey instrumentation in use revealed no instruments which were out of calibration or had not received a performance test.

Unit 1 Technical Specification (TS) 4.12 requires that byproduct material sealed sources containing greater than 100 microcuries of beta and/or gamma emitting material shall be leak tested at intervals not to exceed six months. The test shall be capable of detecting the presence of 0.005 microcuries of radioactive material and shall be taken from the sealed source or from surfaces of the device in which the sealed source is permanently mounted or stored on which one might expect contamination to accumulate.

TS 6.10 requires that records of sealed source leak tests performed pursuant to TS 4.12 be maintained in units of microcuries for at least five years and that records of an annual physical inventory of all sealed source material be retained for five years.

The inspector noted during a review of licensee records that three sealed sources; SNs 92-0152 white, 348 µCi, Cs-137, 9 September 1982; 92-0152 gold, 435 µCi, Cs-137, 9 September 1982; and 92-0152 green, 2.13 mCi, Cs-137, 9 September 1982; had a single record of leak test on 17 November 1986 which provided a "wipe activity" of "inaccessible" and a "location of storage" of "installed." The inspector also noted that there were three other sealed sources of less than 100 microcuries catalogued under this serial number.

The inspector asked the licensee's staff the specific location of each of these sources and was informed they were installed in the Unit 1 effluent monitors but that it was not known positively which source was installed

in which monitor. The licensee provided a signed statement from the responsible technician that he had performed the required leak test on each of the monitors but had recorded the test improperly. The inspector noted to licensee management representatives that the apparent lack of specificity in source inventory records is not consistent with good radioactive material control practices. The licensee representative stated that they are aware of the need to improve their source control program and had recently completed an upgrade of it at Units 2 and 3.

QA Audit Report SCES-039-86 which covered the areas of sealed source inventory and leak testing did not detect the deficiencies which the inspectors limited reviews disclosed.

Failure to maintain leak test records in the required units represents an apparent violation of the requirements of Technical Specification 6.10 (50-206/87-12-01).

6. Maintaining Occupational Exposure ALARA Units 1, 2 and 3

The inspector reviewed the results of the SCE QA Audit Report SCES-020-86 and select Field Surveillance Reports all of which covered some areas of the ALARA program. The inspector interviewed the responsible members of the licensee QA staff and confirmed that their qualifications for conducting ALARA program audits appeared to be adequate. No deficiencies were identified in the ALARA program in the audits reviewed.

The inspector interviewed the Lead ALARA Engineer. The inspector was informed that there had been no significant changes in the ALARA program since the last inspection. The inspector discussed the ALARA program with workers and HP technicians. The inspector reviewed the Station Exposure Totals for 1986 and associated ALARA goals. The inspector reviewed the Unit 3 second refueling outage exposure totals and associated ALARA goals. The inspector reviewed Health Physics Procedure SO123-VII-3.0, ALARA Job Review, and SO123-VII-3.3, Methods for Establishing ALARA Goals. The inspector reviewed selected ALARA Pre-Job Reviews, attendant surveys, Radiation Exposure Permits (REP), shielding requests and Post-Job Evaluations.

No violations or deviations were identified.

7. Gaseous Waste Systems - Unit 1

The inspector reviewed the results of SCE QA Audit Reports SCES-014-86 and SCES-004-87 and various Field Surveillance Reports. The inspector interviewed the responsible members of the licensee QA staff and confirmed that their qualifications for conducting audits of gaseous waste systems appeared to be adequate. No significant deficiencies were identified relative to the Unit 1 gaseous waste systems in the audits reviewed.

The inspector interviewed the site Effluent Engineer and was informed of two significant changes in equipment in Unit 1 gaseous waste systems. Both TS operational radiation monitor (ORMS) R-1214, stack gas monitor, and R-1215, main condenser air ejector gas monitor, had been permanently

removed from service. The effluent engineer stated that their operation was no longer considered necessary due to redundant TS monitors fulfilling their function.

The inspector reviewed select batch and purge Release Permits, plant vent stack continuous Release Reports and monthly Effluent Reports. The inspector reviewed Unit 1 ORMS setpoint calculations and the software package, U1GAS, used to calculate the setpoints. The inspector reviewed the documentation, validation and verification of that program. The inspector reviewed with the Effluent Engineer the problems being experienced with Unit 1 stack sampling non-uniformity and efforts by the licensee to resolve this problem. The inspector confirmed that TS Table 3.5.9.1 stack flow was apparently being estimated every 8 hours in accordance with the Action Statement. The inspector confirmed that offsite doses appeared to be calculated using the approved Offsite Dose Calculation Manual (ODCM) methodology and that these doses were within the TS limitations. The inspector also reviewed calibration and maintenance for both the ORMS and plant process monitors.

The inspector interviewed a control room supervisor, shift technical advisor and control room shift supervisor relative to their understanding of various effluent and process monitor alarms and set points. The inspector reviewed select process and effluent monitor channel check records.

The inspector interviewed the engineer responsible for the control room Heating, Ventilation and Air Conditioning (HVAC) system and Emergency Air Treatment System (CREATS). The inspector reviewed records of in-place High Efficiency Particulate Air (HEPA) and charcoal filter testing and laboratory tests of activated carbon filter samples for 1986 and thus far in 1987. The inspector also reviewed records of flow and pressure tests for these systems for the specified period.

The inspector toured plant areas and observed accessible process and effluent monitors. During the tour the inspector noted that monitors R-1212, R-1215, R-1216, R-1217 and R-1254 were not labeled to indicate they contained radioactive material. 10 CFR 20.203(f) requires that each container of licensed material bear a durable, clearly visible label identifying the radioactive contents and that the label bear the radiation caution symbol and the words "Caution, Radioactive Material" or "Danger, Radioactive Material." The label shall also provide sufficient information (as appropriate, the information will include radiation levels, date for which activity is estimated, etc.) to permit individuals handling or using the containers or working in the vicinity thereof, to take precautions to avoid or minimize exposure. A review of licensee records confirmed that, although there was some uncertainty by the licensee staff as to which sources were installed in which monitors (see paragraph 5), they were certain each of the above listed monitors contained Cs-137 sources of activities in excess of the 10 CFR 20 Appendix C limit, the largest being 435 microcuries on 9 September 1982.

This problem was brought to the attention of the HPI supervisor. The supervisor took action to install the required labels prior to the inspectors departure from the site.

During subsequent telephone conversations, licensee representatives stated to the inspector that removal from service and partial disassembly of monitors R-1212, R-1215, R-1216 and R-1217 had revealed appropriate radioactive material labels on each with the exception that incorrect activities were specified. The representatives stated that activities were incorrect because the sealed sources had been replaced in 1982 with sources different from those originally installed and the attached label had not been altered to reflect that change. The representatives also stated that removal from service and partial disassembly of R-1254 revealed no labels.

Failure to appropriately label devices containing radioactive material in quantities in excess of the 10 CFR 20 Appendix C limit is an apparent violation of 10 CFR 20.203(f) (50-206/87-12-02).

8. Exit Interview

The inspector met with the licensee representatives, denoted in paragraph 1, at the conclusion of the inspection on May 7, 1987. The scope and findings of the inspection were summarized. The licensee was informed that apparent violations of 10 CFR 20.203(f) and TS 6.10 were identified in that sealed sources in a Unit 1 radiation monitor were not appropriately labeled and that records of inventory and leak testing were inadequate. The licensee promptly corrected the labeling deficiencies when identified by the inspector and noted that a program to update the inventory, leak testing and labeling of exempt and non-exempt sealed sources had been recently instituted.