U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-206/85-22, 50-361/85-21 and 50-362/85-20

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: June 24-26, July 8-12 and a telephone discussion on July 18, 1985

Inspector: _____ 8/28/85
H. S. North, Senior Radiation Specialist — Date Signed

Approved By: _____ 8/28/85
G. P. Yuhas, Chief — Date Signed
Facilities Radiation Protection Section

Summary:

Inspection on June 24-26, July 8-12 and telephone discussion on July 18, 1985 (Report Nos. 50-206/85-22, 50-361/85-21 and 50-362/85-20)

Areas Inspected: Routine, unannounced inspection of licensee actions on previous inspection findings, follow-up on a licensee identified event, follow-up on allegation RV-85-A-0037, health physics and chemistry training and qualification, internal exposure, solid waste, surveys and monitoring, review of licensee reports, facility tours and follow-up of Information Notices. Inspection procedures 83723, 83725, 83726, 84722 and 92700 were covered.

The inspection involved 86 hours onsite by one inspector.

Results: Of the areas inspected, no violations or deviations were identified.

DETAILS

1. Persons Contacted

#H. Morgan, Station Manager
*#P. Croy, Acting Deputy Station Manager
*#E. Bennett, QA Engineer
*C. Bostrom, Health Physics/Chemistry Training Administrator
#D. Brevig, Chemistry Supervisor
#G. Gibson, Supervisor, Compliance
#R. Gray, Engineer I
J. Harmon, QA Engineer - Administrator Nuclear Safety Concerns Program
#K. Helm, Effluent Engineer
D. Herbst, Independent Safety Engineering Group (ISEG) Supervisor
*R. Jervey, Operations QA Engineer
*#C. Kergis, Lead Compliance Engineer
*#P. Knapp, Manager, Health Physics
M. Lewis, Health Physics Engineer
*G. Noel, Supervisor, Technical Training
G. Peckham, Supervisor, Dosimetry
#D. Schone, Site QA Manager
M. Scully, General Training Administrator
#P. Shaffer, Coordination Supervisor Radwaste
#D. Stickney, NSSS Engineer
*#R. Warnock, Health Physics Engineering Supervisor
S. Wylie, Administrator, Computer Training

*Denotes those present at the exit interview on June 28, 1985.

#Denotes those present at the exit interview on July 12, 1985.

In addition to the individuals identified above, the inspector met and held discussions with other members of the licensee's and contractor's staff.

2. Corrections - Inspection Report Nos. 50-206/85-10, 50-361/85-10 and 50-361/85-09

Section 3, page 4 of the identified report should be corrected as follows:

a. Item 85-09-LO, should be identified with Docket No. 50-361 rather than 50-362.

b. Item 85-15-LO, identified with Docket No. 50-361 should have read 85-16-LO.

3. Licensee Action on Previous Inspection Findings

(Closed) Followup (50-361 and 50-362/83-08-03)

Inspector identified item involving effluent monitor sample line testing. The proprietary report "SAIC-84/1736" titled, "Airborne Monitor Verification Measurement Program at San Onofre Nuclear Generating Station Units 2 and 3", dated September 1984, prepared by Science Applications International Corporation, was reviewed. The study was conducted to evaluate particulate line losses. Measurements included duct and vent flows, determination of isokineticity of sampling heads, particle size determinations and line losses. The report provided the following correction factors based on the measurements.

Monitor	Estimated Correction Factor	Conservative Correction Factor
2RE-7804	4.0	10
2RE-7807	2.5	10
3RE-7804	4.0	10
3RE-7807	2.5	10
2/3RT-7808	1.6	3.2
2/3RT-7809	1.8	2.3
2RT-7822	4.8	5.0
2RT-7823	2.3	2.5
3RT-7822	2.5	3.2
3RT-7823	1.9	2.5
2RT-7865	4.0	6.7
3RT-7865	4.0	6.7
2RT-7891	100	(a)
3RT-7891	33	(a)

(a) Too high to estimate upper limit.

The iodine plate out correction factor was calculated and not measured. The report stated that for the Plant Vent Stack Monitor the gaseous elemental iodine plate out was estimated at 4% at a flow of 3.6 cfm and 2% at a flow of 5.5 cfm. The report noted that gaseous elemental iodine had the highest deposition rate of any of the iodine species. The report conclusions with respect to iodine deposition were discussed with the licensee in the light of other reported data. The licensee indicated that the iodine plateout correction would be examined.

Procedure S0123-III-5.1.23 Units 2/3 Effluent Sampling and Analysis, TCN-2-3 dated March 26, 1985, listed the estimated correction factor for particulates (not the conservative correction factor) and incorporated the correction factor in calculations. Since the iodine correction factor was so low no correction factor was applied. This matter is considered closed.

(Closed) Followup (50-206, 50-361 and 50-362/84-02-01)

Inspector identified item involving the results of the TLD large scale comparison and NVLAP tests. Comparison tests of film vs TLD dosimetry

were conducted with a population of 1000 persons during the period January through May 1984. No significant problems were identified. NVLAP testing during 1984 resulted in successful performance in categories 2 through 7 during the first quarter. A problem with category 1 was resolved during the third quarter. NVLAP certification of the TLD program was received in October 1984. An onsite audit in July 1984 identified one deficiency related to a failure to provide sufficient guidance in the event of an unusual occurrence (TLD reader failure). A trouble shooting procedure for the reader was prepared. The licensee received favorable comments with respect to the QA program and training. This matter is considered closed.

(Closed) Followup (50-206 and 50-361/82-33-01)

Inspector identified item involving an inconsistency between TS 6.4 and Station Orders S-A-126 and S0123-A-126; definition of the retraining program; and radiation protection training for supervisors and professionals was identified and documented in the identified report on an inspection in October 1982.

Station Order S-A-126 was cancelled and superseded by S0123-A-126 Rev. 0 issued March 19, 1982. Subsequently S0123-A-126 was cancelled and superseded by S0123-TN-1, Nuclear Training Division - Objectives and Responsibilities, issued November 12, 1984.

S0123-TN-1 is consistent with TS 6.4 with respect to the Nuclear Training Division organization and responsibilities. Radiation protection training programs have been developed and defined for technicians, foremen and supervisors consistent with ANSI 18.1-1971 Section 5.5 and advanced and professional radiation protection training programs have been established and implemented (see report section 6). This matter is considered closed.

(Open) Followup (50-361, 50-362/84-12-01)

Inspector identified item, previously addressed in Inspection Report Nos. 50-361, 50-362/84-12 and 85-02, related to licensee efforts to reduce the quantity of radioactive materials discharged in liquid effluents from Units 2 and 3. The matter was discussed with the cognizant engineer and two licensee status reports (April 25 and June 17, 1985) were reviewed.

The licensee reduced by a factor of 4.7, the calculated dose to the GI/LLI organ through the use of a revised bioaccumulation factor. This reduction in the bioaccumulation factor, for Nb-95 by a factor of 300 was based on work by B. G. Blaylock, Environmental Sciences Division, ORNL. The licensee discussed the proposed change to the ODCM with NRC/HQ Radiological Assessment Branch and Meteorology and Effluent Treatment Branchs. The revised bioaccumulation factor was to be incorporated in the ODCM effective June 15, 1985.

In addition, the licensee's Effluent Group was discussing the incorporation of a factor of 10 near field dilution with NRC/HQ. Although the changes to date have resulted in a reduction in the

calculated doses due to liquid effluents, the reductions do not represent a real reduction in effluent activity. The licensee found through discussions with other facilities (Oconee, Turkey Point, Zion and Arkansas Nuclear 1, Unit 2) that San Onofres' Nb-95 releases are more than 10 times the levels observed at the other facilities. The report (April 25, 1985) concluded that fission product contribution to offsite doses was small compared to that due to activation and corrosion product contributions and that successful refueling of Unit 3 cannot be expected to result in large changes in calculated offsite doses.

The plant design utilizes back flushable filters in the clean waste system that are effective in removing particulate materials. Back flushings from these filters discharge to the miscellaneous waste system which also collects floor drains. The miscellaneous waste system stream also receives chemical waste. The miscellaneous waste treatment system, filters and ion exchangers, have not been effective in removing radioactive material due to the heavy loading of oil, dirt and possible biological fouling.

The licensee is continuing characterization of particle sizes and evaluating various filters. The ability to evaluate progress is limited by the existing steady state operation of Units 2 and 3. It is expected that data collected during periods of radwaste system stress (e.g., outages and startups and shutdowns) will better evaluate the filters undergoing tests. This matter will be reviewed during a subsequent inspection.

(Open) Unresolved Item - Indicated 17 rem Beta Exposure (50-361/85-02-02)

The subject matter was discussed in Inspection Report No. 50-361/85-02. The TLD element contained in the gonad badge used by Individual "B" on December 2 and 3, 1984, was examined by the manufacturer. The manufacturer concurred with the San Onofre Health Physics staff that the TLD element was undamaged and functioned properly.

The licensee retained the services of Messrs. P. Plato and J. Miklos, School of Public Health, University of Michigan as consultants. The consultants reviewed:

a) The Chronology of Events;
b) The Response of the Dosimeter in Question;
c) The Major Possibilities for High Reading; and

Analyzed the possibilities of:

a) Dose Received While the Dosimeter was Worn;
b) Dose Received while the Dosimeter was Stored;
c) The Dosimeter Malfunctioned;
d) The TLD Reader Malfunctioned;
e) Response Induced by a Source Other Than Radiation.

In the course of the evaluation a total of fifteen potential causes were examined. The summary and conclusions section stated that the most

likely cause of the large dosimeter response was a contaminated area on the workers' clothing.

In a telephone discussion on July 18, 1985, the licensee stated that it had been decided that Individual "B" had not received the beta exposure indicated by the TLD. This conclusion was based on recently obtained information relating to a possible explanation for the high beta to gamma ratio observed on the TLD. This matter remains unresolved and will be examined during a subsequent inspection.

Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, open items, deviations or violations.

(Closed) Followup (50-361/85-12-02 and 50-362/85-12-01)

Inspector identified item related to comparison of effluent monitor response to sample analytical data. The comparison is addressed by procedure S0123-III 5.40 Effluent Quality Assurance Program which provides for quarterly comparisons of systems monitoring waste gas decay tank releases, containment purges and liquid waste releases. The initial acceptance criteria for comparisons had been established as a range of 0.5 to 2.0 for the ratio of the monitor indicated concentration (uCi/cc) to the sample activity. Most results fell within the acceptance range. The licensee noted that some problems had been identified in making the comparisons. The licensee indicated that the principal problem had been determination of the monitor background count rate. The planned installation of strip chart recorders for the monitors in place of the multipoint recorders presently in use is expected to resolve this problem. The licensee commented that technician skill had been a factor in the comparisons. The licensee has been conducting comparison studies since August 1984. This matter is considered closed.

4. Followup on a Licensee Identified Event

On May 22, 1985, the NRC Operations Center was notified by telephone of an event pursuant to 10 CFR 50.72(b)(2)(vi). The event, an alarm received by the State of California Office of Emergency Services at 1242 PDT on May 22, 1985, was reported to NRC at 1552 PDT on the same day. The alarm originated with the Unit 1 Plant Vent Stack Detector RE1214 and was coincident with an attempted release of a waste gas decay tank (WGDT) pursuant to release permit No. 59-0057-1. The release was terminated within five minutes. The licensee reported that the cause of the monitor alarm setpoint being exceeded was under investigation.

Documents associated with the licensee's investigation were examined and the event was discussed with licensee personnel.

On May 22, 1985, the Assistant Control Operator (ACO) touring the Radwaste Building observed WGDT pressures to be South-88 psig, Center-98 psig and North-0 psig. In the control room the ACO was asked which WGDT was in service. The response was the south tank, based on the

assumption that the lower pressure tank was the in service tank. There were no indications in either the control room or the radwaste building which identified the inservice tank. The control log for May 21, 1985 at 2400 indicated that the center tank was in service.

Subsequently the chemistry technician in response to an operations request, sampled, analyzed and prepared a release permit (No. 59-0057-1) for the center WGDT. The chemistry technician calculated ODCM setpoints for monitors R-1214 (1.67E4 cpm) and R-1219 (1.31E4 cpm). In addition, setpoints for 30 percent of ODCM setpoint count rates and calculated monitor indicated count rates and monitor setpoints for both monitors were calculated (R-1219, 4.13E3 cpm) and (R-1214, 5.28E3 cpm).

The monitor normally used for releases, R-1219, was out of service for calibration. The technician entered the R-1219 ODCM set point and monitor set point values rather than the R-1214 set points on the release permit form in error. The setpoints entered on the form and used for the release were the more conservative of the set points for two monitors. The release began at 1230 PDT at a rate of 2 scfm with a monitor R-1214 setpoint of 4.13E3 cpm (ODCM maximum 1.31E4 cpm). A high alarm (8.3E3 cpm) on monitor R-1214 was received promptly and the release was manually terminated at 1232 PDT. At 1233 PDT, the release was restarted at a rate of 0.5 scfm. A high alarm on R-1214 was received and the release was manually terminated at 1235 PDT. The maximum monitor reading during the event was 1.1E4 cpm which was less than the ODCM sepoint for R-1214 of 1.67E4 cpm.

The licensee's investigation identified two personnel errors, improper identification of the inservice WGDT and entry of the incorrect monitor setpoint on the waste release permit, and one failure to follow procedures. Operating Instruction S01-5-1 TCN 3-9, October 26, 1985, Radwaste Gas System Operation, states in section 4.15, "If a high radiation alarm is received on any radiation monitor...during a release, immediately terminate the release and notify chemistry to sample. Resume the release only after evaluation by chemistry." The operator restarted the release at a reduced flow rate without an evaluation by chemistry. As a result of this occurrence no release in excess of any limit occurred.

Licensee initiated corrective actions were documented in a June 13, 1985 memorandum to the Station Manager. The corrective actions included:

"1. All operators will review this incident as part of the Acknowledgement of Information Program, to stress the importance of accurate input to the Control Room.

2. The Operations "On-Shift Trainer" will stress "attention to detail" during all training evolutions.

3. The Operating Instruction, Radwaste Gas System Operations (S01-5-1) will be revised to require verification of the inlet valve position prior to releasing a WGDT.

4. The ACO Turnover Sheets will be modified to include a block for Holdup Tank and WGDT status.

5. Signs will be manufactured and appropriate procedures changed to require signs to be hung indicating the in service Holdup and Waste Gas Decay Tanks.

6. Chemistry will review this event with all technicians to stress the importance of accuracy and attention to details."

In addition, the memorandum noted that, "In line with the policy of tough, critical self-appraisal, other actions should be considered." These other actions related to possible disciplinary actions and an extension of a review of Release Permit Procedures to Units 2 and 3.

Based on the inspectors review of this licensee identified and reported event it was found that the licensee had taken prompt action to prevent recurrence and that it represented a severity level IV or V event not reasonably prevented by licensee corrective action for a previous violation. The inspector had no further questions regarding this matter (05-22-85, Closed).

5. Allegation Followup

(Closed) Allegation Number RV-85-A-0037

On May 23, 1985, Region V received an allegation which specified in part that Southern California Edison Company Health Physics Foremen were providing incorrect directions to Health Physics Technicians with respect to implementing "constant coverage" for workers involved in activities associated with radioactive materials. The allegers concern was examined during the inspection through interviews and reviews of licensee documents.

The allegation stemmed from an occurrence in Unit 3 containment, on March 5, 1985, when the alleger, a contract health physics technician, was assigned to provide continuous HP coverage for carpenters removing scaffolding from the regenerative heat exchanger cubicle and inside the bioshield. The Radiation Exposure Permit (REP) No. 70271, on which three out of four of the carpenters signed in, clearly specified continuous HP coverage. The four carpenters were assigned to the same task but had different duties. The lead containment health physics technician assigned the alleger to accompany the carpenters and participated in a pre job briefing. The alleger accompanied the carpenters to the cubicle on the 17 foot elevation and, after they began work, returned to the 63 foot elevation. When two additional carpenters arrived, the alleger directed them to the 17 foot elevation work site but did not accompany them.

At a later time, the alleger joined the carpenters and remained with them at a work location on the 45 foot elevation. On frisking out following work three of the carpenters were found to have been contaminated by airborne activity. After decontamination all three were whole body counted and indicated positive results.

The licensee's Health Physics staff initially investigated the carpenters contamination, in response to concerns raised by their employer, a contractor to SCE. The report of the investigation, dated May 14, 1985, was detailed, including the result of interviews with 21 persons including the alleger, the allegers foreman and the carpenters. The report documented that the alleger left the carpenters at the work site contrary to the conditions of the REP. At the time of the licensee's investigation the alleger had not raised the issue which was presented to NRC. During the licensee's investigation the alleger was interviewed by a member of the licensee's staff. At that time, the alleger voluntarily provided a nine page hand written and signed statement describing the events of March 5, 1985. The allegers written statement made no reference to having been provided with incorrect instructions concerning the implementation of constant or continuous coverage of radiation workers. The alleger was not employed at San Onofre at the time the written statement was tendered having been routinely terminated during post outage destaffing. The statement confirmed that the alleger left the carpenters on "best behavior" contrary to the requirements of the REP.

On May 23, 1985, during the allegers telephone conversation with an NRC employee, the alleger was advised to submit a Nuclear Safety Concern to the licensee. The alleger submitted such a concern on May 23, 1985, and independent review of the allegers Nuclear Safety Concern was performed by the licensee's Nuclear Safety Concern group. The findings were documented in a report which was evaluated by the Site QA Manager. The report and evaluation did not support the allegers concern.

During the inspection the inspector interviewed persons at all levels of the licensee's health physics organization. No indication that instructions concerning a requirement for constant or continuous coverage would have permitted a technician to be out of possible visual or communication range of the workers for whom coverage was being provided was identified. In addition, the licensee implements a policy of verbatim compliance with procedures and REPs. Knowledge of this policy is widely disseminated throughout the licensee's and contractor's staffs. Most commonly this policy is voiced by a statement similar to; if a task cannot be accomplished without deviating from the specified procedure, stop work until the problems are resolved, including revision of the procedure if required. REP's are considered to be the equivalent of procedures with respect to the implementation of this policy. In the subject case, the three carpenters, knowledgeable of the conditions of the REP and the policy, failed to adhere to this policy by continuing work after the technician terminated continuous coverage.

As a result of the licensee's investigation of this event, a number of various corrective actions were implemented, including the transmittal of a letter of complaint to the allegers employer. The topic of continuous coverage was not addressed in the corrective actions since the issue of conflicting instructions regarding this issue was never raised by any member of the licensee's staff or the alleger. The inspectors inquiry into this matter found no evidence of a lack of understanding of the term continuous coverage or of conflicting instructions with respect to continuous coverage.

The maximum exposures received by the three carpenters on March 5, 1985 were: 20 mrem whole body external based on pocket ionization chamber readings, 0.072 mrem internal due to uptakes as established from whole body counting and 45 mrem to the skin as a result of skin contamination. The inspector found that the licensee had taken prompt action to prevent recurrence of this failure to follow procedures. The inspector had no further questions with respect to this matter.

6. Radiation Protection, Plant Chemistry, Radwaste and Transportation Training and Qualifications

A. Responsibilities

The licensee's training program in these areas was administered and conducted under the Manager, Nuclear Training Division and the Supervisor Technical Training. Specific training responsibilities were divided between the General Training Administrator with a staff of 10 instructors and the Health Physics/Chemistry Training Administrator with a staff 10 instructors. "Red Badge" training was required for unescorted access to the protected area, vital areas and "Red Badge" or access controlled areas. The two day "Red Badge" training addresses basic radiation protection as well as security, emergency response, site specific and station housekeeping topics. In addition, the General Training staff provides training in basic plant systems at various levels of technical skill, management and supervisory development training, technical writing and written communications training. In some cases instructors from nearby educational institutions were used to supplement the licensee's staff.

"Red Badge" training requires a passing (70%) score on a multiple choice, 50 question exam. "Red Badge" retraining was required annually. Exam challenges require a score of 80% to bypass the regular two day course. Exams were computer generated from a bank of INPO questions. Adequate controls existed to protect the question bank and exams which were changed every three weeks. The licensee was using the PLATO, computer based, instruction system for "Red Badge" retraining.

The Health Physics/Chemistry Training organization provided specialized training beginning with entry level technicians and extending to advanced technical training for professional staff members. The Health Physics Technicians Training program, which requires six months academic training for entry level, qualifies the trainee for 30 quarter hours of credit and a Certificate in Health Physics Technology, from California State University at Los Angeles on successful performance on two University exams. To fully qualify as an entry level technician 2½ years of on the job training was required including completion of the qualification manual.

Retraining of health physics technicians was based on a two year schedule, requiring from 12 to 20 days per year. All technicians, including contractors, were required to attend.

Professional level health physics training consisting of guest speakers have been arranged at approximately quarterly intervals. Attendance at these talks was open to foreman level and above. The inspector attended a talk during the inspection presented by K. W. Skrable, University of Lowell on internal dosimetry, 10 CFR 20, ICRP and annual vs. committed dose limits. Similar presentations in the past have included, fetal exposure, HP related litigation, noble gas exposures and TLD and instrument response and whole body counting. The licensee attempts to obtain continuing education credits from the American Board of Health Physics for such training. The licensee attempts to arrange for attendance at training courses or professional meetings for professional staff members on an annual basis.

B. Training Records

The Nuclear Training Division maintains records of training in a computer based system, Training Records Information Management System (TRIMS). TRIMS provides individual name, SSN, course attended, date, pass/fail and grade. Training records for 10 individuals, selected to provide a cross section of various job categories were examined. The specialties included, chemistry, HP and I&C technicians, radwaste, utility man, maintenance, shift technical advisor, operator and control operator.

C. Audits and Appraisals

Results of two audit reports which addressed training were examined.

Audit report SCES-019-84, conducted March 6 - April 6, 1984 Training and Personnel Certification, addressed verification that persons who perform safety-related activities were trained and qualified in principles and technology of the activity performed. The audit included chemistry and health physics technicians. No matters requiring issuance of corrective action requests (CAR) were identified.

Audit report SCES-085-84, conducted November 28 - December 31, 1984, addressed in part the establishment of training for managers, supervisor, professionals, operators, technicians and repairmen to properly prepare them for their tasks. The "Management and Supervisory Development" program addressed:

1. Corporate and Site policies/requirements;
2. Skills in managing and supervising people; and
3. Achieving Excellence in nuclear management.

In addition, the audit addressed radiological health and safety, control of access, use of protective clothing and equipment. No matters requiring issuance of a CAR was identified.

No violations or deviations were identified.

7. Internal Exposure

A. Changes

Selected licensee procedures were examined:

S0123-VII-2	Respiratory Protection Program;
S0123-VII-2.5	Selection and Issue of Respiratory Protection Devices;
S0123-VII-2.6	Inventory and Control of Respiratory Protection Equipment;
S0123-VII-4.2	Internal Dosimetry Program;
S0123-VII-4.2.1.2	Operation of the Quicky Model III Whole Body Counter;
S0123-VII-4.2.5	MPC Tracking;
S0123-VII-5.6.1	Portable Low Volume Air Sampler Operation and Calibration;
S0123-VII-7.1	Airborne Radoactivity Surveys; and
S0123-VII-8.4.1	Portable Ventilation Program

Since the inspection conducted January 15-20, 1984 (Inspection Report Nos. 50-206, 361, 362/84-02), the licensee has instituted the following program changes:

- A computer based respirator tracking system had been implemented.
- Respirator fit retesting frequency had been extended from one to two years. The need for earlier retesting is established by use of a questionnaire at the time of annual respirator retraining.
- Additional respirators had been added to the inventory.
- Use of a 4 cylinder, air supply cart to support extended use of SCBAs.

B. Planning and Preparation for Outages

Coordination between the ALARA and Planning and Control groups provide the customary interface for radiation protection outage planning. During outages the primary short-term planning information is received from the operational health physics staff.

The licensee reported that for the last 3-4 years there has been adequate planning lead time to prepare for outages. The licensees

external-internal dosimetry staff, had been reduced from 90 to 34 persons. Automation of the access control process, performed by dosimetry clerks, will be accomplished through the use of bar codes on badges and TLDs. Implementation of the automated system is planned by September 1985.

C. Assessing Individual Intakes of Radioactive Materials

The licensee evaluated individual exposures to airborne radioactive materials, maintaining a running seven day MPC hours total. This addressed the 2 and 10 MPC hour exposures. This record was maintained by computer using Radiation Exposure Permit, air sample, and respirator issue data. In addition to general area air sample data, the licensee used Job Location Codes (JLC) to identify areas where air sampling was performed for specific work activities with the potential for increased airborne activity. Airborne activities for iodine, particulates, tritium and noble gases were time base plotted and entered in the computer. MPC hour exposures were computer calculated based on JLCs, air sample data and entry and exit times. The licensee noted that the principal problem with this system was the inherent over conservatism. When work assignments require individuals to move between various locations or from one JLC area to another Individual MPC Tracking Cards (IMTC) were used. On major tasks secondary control points maybe established to more clearly identify work locations.

Procedure S0123-VII-4.2, Internal Dosemetry Program provides for reviews of exposures greater than 30 MPC hours in seven days as a control measure. The review includes cause identification, air sampling data reviews for representatives sampling, need for bioassay and identification of any corrective action required. The procedure also addressed exposures of 40 MPC hours or more. In addition to the above matters included in the review were determination of others possibly exposed, bioassay, internal dose commitment and an examination of the air sample data. The procedure contained a method to back calculate from bioassay data if air sample data was not available or was questionable. For exposures greater than 30 MPC hours, dose assessment including whole body counting was performed and the internal dose to the individual is calculated but not assigned to the individual. As a control measure, 30 MPC hour exposures were used to evaluate possible breakdown of controls and to evaluate the need for corrective or preventive actions.

The licensee planned to move the analytical whole body bed counter from the Mesa location to the 70 foot elevation access control area of Units 2/3. Surveys (uR/hr) of the proposed location had established that the background will not degrade the sensitivity or accuracy of the system. In response to questions concerning possible noble gas intrusion into the area the licensee reported that early problems of this type had been resolved and had not recurred. In addition, two Quicky III counters were available onsite which provided the same analytical capabilities as the bed counter when eight minute counts were performed. The counters were

all SCE owned and operated. A continuing contract with a whole body counting contractor was maintained for possible analytical support and annual bed counter phantom calibrations. The Quicky counters were calibrated by SCE using built-in calibration and diagnostic programs.

The licensee had no occasion to have fecal analyses performed. The licensee had used an offsite contractor for urinanalysis for tritium for some Unit 1 workers.

The licensees Internal Dose Assessment Log 1985 was examined. The only entries (172) were made in February 1985. The assessments were performed as a result of tritium exposures in the Unit 1 containment. The initial evaluation indicated that the 30 MPC hour control measure had been exceeded. Subsequent evaluations of the procedure and calculational method identified a number of errors:

- A factor of 10 error, in a conservation direction, was identified in converting liquid scintillation counting data to MPCs;
- Erroneous constants and a failure to measure temperature and relative humidity were identified in the use of a dehumidifier to collect samples; and
- Improper use of JLC, individuals exposure based on assignment to areas of higher airborne concentrations than those in which they actually worked.

Documents reviewed in connection with this occurrence included:

Memorandum to: All Health Physics Technicians Assigned to Unit 1 During Hot SI Test Outage, dated March 4, 1985, Subject: Airborne Tritium Measurements; and Memorandum: dated March 26, 1985, Subject: Actions Taken or Planned to Prevent Recurrence of Exposures to Greater than 40 MPC-Hours/7 Consevutive Days (D85-009). The second reference noted that although conservative calculations indicated that 19 individuals had exceeded the 40 MPC-Hour/7 day control measure, bioassay did not indicate any intakes greater than the control measure. In response to the requirement contained in 10 CFR 20.103(b)(2), the licensee took certain actions which included, issuance of the first memorandum noted above to All Technicians, completed a review of the tritium monitoring program and published in an in-house publication an article to inform the staff concerning the event. In addition, the following actions were planned:

Revision of Procedures S0123-VII-7.1, Airborne Radioactivity Surveys, S0123-VII-4.2 Internal Dosimetry Program and S0123-VII-4.2.2 Tritium Analysis of Urine Samples; and inclusion of the procedure changes and elements of the tritium monitoring program in the health physics technician training program.

D. Engineering and Administrative Controls

The use of engineering controls to limit airborne exposures were included in all ALARA reviews. In the case of REP's which required use of respiratory protective devices review by the ALARA group was required.

Engineering controls may be required by either operational health physics or the ALARA group. The licensee emergency procedures, EPIP S0123-VIII-10 Emergency Coordinator Duties, provides that if the potential for severe airborne radiological hazards exists the Health Physics Leader is to determine if nonrespirator qualified individuals should be sent home.

E. Respiratory Protection Equipment

Procedure S0123-VII-2.5 Selection and Issue of Respiratory Protection Devices, identified the available types of respirators, use mode and protection factors afforded for iodine, particulates, tritium and noble gas. Respirators provided for emergency use are inventoried monthly, including verification of supplied air cylinder pressure, by representatives of the Dosimetry staff.

F. Records, Reports and Notifications

Pursuant to procedure S0123-VII-4.2 Internal Dosimetry Program, all bioassay reports were filed in the employee personnel exposure file, copies were retained by health physics for review and inclusion in the Radiological Incident Report Monthly Summary. A log of internal dose assessments performed was maintained by Dosimetry for trending purposes. Based on discussions with licensee personnel and the review of records it appeared that internal exposures were documented and reported as required.

No violations or deviations were identified.

8. Solid Wastes

The inspector observed the Units 2/3 pre job tail board meeting and, spent resin filling and dewatering of a Nuclear Packaging (NuPac) High Integrity Container (HIC). A June 11, 1985, Division of Licensing letter to the licensee, "Subject: Interim Approval of Dewatering of Spent Resin", granted interim authorization to proceed with dewatering of resin. The filling and dewatering were performed by NuPac personnel in concert with licensee personnel in accordance with Procedure S0123-VII-8.5.5 Rev. 0 and TCN No. 0-1, Operation of the SONGS Dewatering System. It was noted that a current, approved copy of the procedure was used by the operators. A health physics technician provided continuous coverage during the filling operation. The initial ALARA evaluation projected an estimated exposure of 1.6 manrem. A preliminary evaluation of the exposure resulting from first HIC loading and dewatering was 0.34 manrem.

No violations or deviations were identified.

9. Control of Radioactive Materials and Contamination, Surveys and Monitoring

Surveys and Monitoring

The Units 2/3 survey and monitoring program was discussed with licensee personnel. Applicable procedures:

S0123-VII-7.2, Rev. 2, Radiation Surveys;
S0123-VII-7.6, Rev. 2, Schedule of Routine Surveys;
S0123-VII-7.1, Airborne Radioactivity Surveys; and
S0123-VII-7.3, Contamination Surveys

were examined. A health physics foreman was responsible for survey scheduling, task assignment and completed survey results review. Survey results were reviewed on a timely basis. A standardized notation convention was used in documenting survey results (e.g., contact, 18 inch, general area surveys, "Massilin" smear and Teletector measurements or samples). Survey maps were available for essentially all plant areas and were used to document results. Results of routine and special surveys required to support Radiation Exposure Permits were available on a timely basis. Record of surveys were maintained in the Health Physics office for a period of three to four months before being transferred for long-term storage to Document Control. The inspector observed personnel frisking and portal monitor use and surveys performed in support of a resin transfer and dewatering evolution and the exit of an inspection group from a containment at power entry. No concerns were identified. Adequate supplies of calibrated survey instruments were available.

Dose rate and contamination survey records for the period July 1-10, 1985 were examined. The number of individual survey record sheets prepared per day during this period ranged from 0 (Sunday) to 71. Airborne survey records identify a survey number, job location code (JLC) used in associating employee work locations with airborne monitoring data for exposure calculation purposes, descriptive location, sampling technician, sampler start-stop times, cfm or lfm, sample volume, counting instrument, counting and calculation including MPC data and counting technician. The number of airborne samples collected and analyzed per day during a non-outage period, July 1-10, 1985, ranged from 1 (Sunday and July 4) to 24. Survey records, with essentially no exceptions, were legible and in all cases written in ink, and identified the technician, instrument(s) used and instrument serial numbers and were dated.

No violations or deviations were identified.

10. Review of Licensee Reports

The inspector discussed selected Unit 2 Licensee Event Reports (LERs) with licensee staff members.

LER-84-027 Gas release due to waste gas compressor check valve and rupture disc failure, and,

LER-84-028 Gas release-waste gas system pressure control valve failure-valve failed mechanically-replaced.

The above events occurred on May 2 and 5, 1985 respectively. With respect to the first item the rupture disc was replaced with a safety valve which relieves to the compressor suction and surge tank. An isolation valve was installed downstream from the check valve to support check valve and system maintenance. With respect to the second item, the release resulted from the failure of a pressure regulator in the online waste gas tank sampling system. The sampling system relief valve relieved to the plant vent and stuck open. Within three days a needle valve had been installed to control and limit flow to the regulator. Subsequently, additional regulators were installed such that in the event of failure of the sampling system regulator the system relieves to the waste gas surge tank (compressor suction). The setting of the relief valve to the plant vent was increased to a pressure greater than that at which the system will relieve to the surge tank. Since these modifications have been completed no further releases have occurred. The above identified LER's are considered closed.

11. Facility Tours

The inspector observed the exit of an inspection team from the Unit 2 containment following an at power entry. At the time of the entry the containment noble gas concentration was approximately 80 MPCs. The entry was made to evaluate a possible pressurizer vapor space sample line valve leak. The entry team included a health physics technician with appropriate survey instruments. The team wore SCBAs and appropriate protective clothing.

During the inspection portions of the Units 2/3 auxiliary building were toured. Confirmatory measurements of radiation levels were made with an ion chamber survey instrument, NRC-009040, due for calibration on August 28, 1985.

No violations or deviations were identified.

12. Followup on IE Information Notices

The inspector verified receipt, review for applicability and initiation or completion of corrective action, if required, with respect to IE Information Notice Nos. 85-34 and 84-55 Supplement 1.

No violations or deviations were identified.

13. Exit Interview

The inspector met with those individuals denoted in report section 1 on June 28 and July 12, 1985. The scope and findings of the inspection was summarized. The licensee was informed that no violations or deviations had been identified.