

U. S. NUCLEAR REGULATORY COMMISSION
REGION V

Report Nos.: 50-206/90-41, 50-361/90-41, 50-362/90-41

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

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

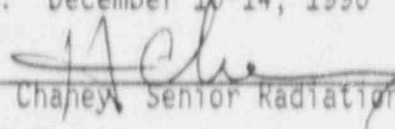
Licensee: Southern California Edison Company (SCE)
Irvine, California 92718

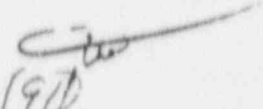
Facility Name: San Onofre Nuclear Generating Station (SONGS) Units 1,
2, and 3

Inspection at: SONGS Site San Diego County California

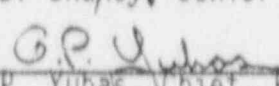
Inspection Conducted: December 10-14, 1990

Inspector:


H. D. Chaney, Senior Radiation Specialist


1/10/91
Date Signed

Approved by:


G. P. Yuhas, Chief, Reactor Radiological
Protection Branch

1/10/91
Date Signed

Inspection Summary

Inspection December 10-14, 1990, (Report Nos.: 50-206/90-41, 50-361/90-41,
50-362/90-41)

Areas Inspected: Routine unannounced inspection of the licensee's radiation protection (RP) program including: Health Physics organization staff training and qualifications, radiological worker and general employee training programs, internal dosimetry and bioassay programs, and followup on previous inspection findings, and observations of radiological work activities. Inspection procedures 83750, 83726, 92701, and 30703 were used.

Results: No violations or deviations were identified during this inspection. The licensee's program appears to be well implemented with the licensee ensuring that staff members are provided adequate cross training and experience.

DETAILS

1. Persons Contacted

SCE Personnel

- *P. Knapp, Manager Health Physics
- *T. Adler, HP Supervisor, Units 1 & 2
- *S. Allen, Dosimetry Supervisor
- *T. Austin, Quality Assurance Engineer
- *M. Barbantini, Dosimetry Supervisor, Form 4 Group
- K. Belford, Access Control Group, Supervisor
- *E. Bennett, Quality Assurance Engineer
- *C. Bostrom, HP/Chemistry Training Administrator
- *L. Brevig, Supervisor Onsite Nuclear Licensing
- T. Cooper, HP Engineer
- J. Coots, Respiratory Protection Equipment Use Instructor
- S. Corey, General Training Administrator
- *J. Fee, Assistant HP Manager
- *J. Jamerson, Senior Onsite Nuclear Licensing Engineer
- *S. Jones, Quality Assurance Engineer
- *J. Madigan, HP Supervisor, Radioactive Material Control
- *S. Morris, Onsite Nuclear Licensing Engineer
- *R. Plappert, Compliance Manager
- R. Morrision, HP/Chemistry Instructor
- *D. Warnock, Assistant HP Manager

Others

- *D. Halasi, Quality Assurance Consultant

The individuals denoted (*) above attended the exit interview on December 14, 1990. The inspector contacted other members of the licensee's staff during the inspection.

2. Follow-up on Previous Inspection Findings (92701)

(Closed) Follow-up Item (50-206/90-26-01): "Airborne Tritium Uptakes" - This item was previously discussed in NRC Inspection Reports Nos. 50-206/90-26 and 50-206/90-38, and involved the licensee's evaluation of internal exposures incurred by three workers during an entry into the Unit-1 reactor containment during power on May 1 and 2, 1990. All three worker were initially assigned uptake values (based on work area air samples) for exposure to a combination of mixed fission products (radioiodines and cesiums) and tritium (in the form of tritiated water - HTO) greater than the licensee's administrative control limit of 30 Maximum Permissible Concentration-hours (MPC-hrs) and the control limit of 40 MPC-hrs referenced in 10 CFR Part 20.103. The HTO exposures were the controlling isotope. The licensee subsequently lowered the workers uptake values (microcuries of HTO and mixed fission products) based on refined estimates of total exposure time (access and stay times) and results of urinary bioassay data for the HTO exposures. The licensee's

post exposure calculations were reviewed and found to have been calculated in accordance with licensee procedures (SO123-VII-4.2, "Internal Dosimetry Program," Revision 12 and SO123-VII-4.2.2, "Tritium Analysis of Urine Samples," Revision 5), and in agreement with the guidance contained in NRC Regulatory Guide (RG) 8.26, "Applications of Bioassay for Fission and Activation Products" and NUREG--0938, "Information for Establishing Bioassay Measurements and Evaluations of Tritium Exposure." The licensee evaluations determined that the workers had not received an uptake of radioactivity (tritium or other fission products) above the licensee's or NRC's administrative exposure limits as referenced above. The uptakes were substantially below the administrative limits. The licensee had initiated actions following the May 1990 exposures to better control personnel exposure to high levels of tritium during Unit-1 at power containment entries. This was accomplished by providing for an improved air sampling regime, refined MPC-hr tracking and personnel accountability. Dosimetry and HP Technicians were provided training on the changes and new techniques to be used in MPC-hr tracking and tritium air sampling. The NRC had no additional questions regarding this item.

(Closed) Follow-up Item (50-362/90-31-01): "Add Strontium (Sr) 89 to Gamma Library" - This item was previously discussed in NRC Inspection Report No. 50-362/90-31 and involved the absence of Sr-89 in the chemistry analyses and the counting system isotope library. The licensee had evaluated the NRC's concern in detail and developed a program for inclusion of the Sr-89 isotope into the nuclide library while still allowing for discrimination between the similar energy photons of iodine radioisotopes I-132/I-133. The NRC had no further questions regarding this item.

(Closed) NRC Information Notice (IN) 90-31: "Update on Waste Form & HIC Topical Report Review Status, Identification of Problems with Cement Solidification, and Reporting of Waste Mishaps" - The licensee's Independent Safety Engineering Group (ISEG) evaluated the concerns referenced in the IN and determined that the licensee's procedures and current method of dewatering wastes addressed the concerns referenced in the IN and no further action was required. The NRC inspector agreed with ISEG's findings.

(Closed) NRC Information Notice 90-35: "Transportation of Type A Quantities of Non-Fissile Radioactive Materials" - The licensee's ISEG evaluated the concerns of the IN very thoroughly and determined that the licensee's extensive set of procedures for transportation of radioactive materials adequately covers all of the concerns and recommendations referenced in the subject IN. The licensee in house training program adequately supplements the procedural controls that are in place. The NRC had no further questions regarding this IN.

(Closed) NRC Information Notice 90-44: "Dose-Rate Instruments Underresponding to the True Radiation Fields" - The licensee had received this IN and had evaluated both onsite and offsite uses of the referenced dose rate measurement instruments. Due to the in-depth review and persistence by the licensee's Nuclear Oversight Division and ISEG (documented in Problem Review Report No. SO-140-90, dated August 8, 1990

and ISEG Memorandum 90-44, dated November 5, 1990) it was discovered that the licensee's offsite radiography group (State of California licensee) was not conducting a pre-use response check of their dose rate instruments in a manner that would ensure that the underresponse problems referenced in the IN would be detected. The significance of this finding is that this group routinely performs radiography at SONGS. The licensee's onsite RF instrument pre-use response check of instruments adequately satisfies the IN recommendations for the specified instrument and industry standards. The NRC had no further questions concerning this IN.

(Closed) NRC Information Notice 90-48: "NRC Enforcement Policy for Hot Particle Exposures" - The licensee had received this IN and it was under review by the Health Physics Manager. The NRC had no further questions regarding this IN.

3. Occupational Radiation Exposure (83750)

a. Training and Qualification of Personnel

The licensee programs for the training and qualification of HP organization personnel and radiation workers were reviewed to determine compliance with the requirements of SONGS Units 1, 2, and 3 Technical Specifications (TS) 6.3 and 6.4, respectively, and 10 CFR Part 19.12; and agreement with the commitments contained in Section 12 and 13 of the Updated Final Safety Analysis Report (UFSAR) for Units 1, 2, and 3; and the response to NRC Inspection and Enforcement Bulletin 79-19; and the recommendations of NRC Regulatory Guides (RGs) 8.10, 8.13, 8.15, 8.27, and 8.29.

The inspector examined the licensee's training programs, training organization/staff, training facilities, instructor training outlines, training records, and selected tests for completed courses, for HP Technicians, HP supervisors, HP professionals, contract HP technicians, and radiation workers.

The licensee's technical training staff for HP and Chemistry personnel is staffed by approximately 17 instructors (includes 8 contract instructors). The licensee's training facilities were found to be modern and exceptionally well outfitted in all areas. The licensee's radiological work mockups are quite extensive and are actively used. The instructor staff appeared to be highly motivated and well qualified to present the training assigned them. Training program descriptions and requirements are well documented, maintained and controlled. Lesson plans are well written and kept current. Licensee controls testing materials by development of a new test for each presentation of a course. The licensee had initiated a type of quality control over certain training programs (HPT, Radwaste, and dosimetry) by assigning the maintenance and control of program elements to specific lead instructors under a "Stewardship Program." Station management involvement in HP group staff training is very evident. HP professionals and other HP staff members are provided quarterly lectures by contracted industry professionals on current events in nuclear power plant HP, technical

specialty areas (internal and external dosimetry, respiratory protection, transportation of RAM, and etc.) and allied areas (HP ligations and states radwaste compacts).

The licensee non-licensed employee training programs were initially accredited by Institute of Nuclear Power Operations in 1985 and reaccredited in 1989. The licensee's radiation worker training, retraining (biennial retraining is via computer interface) satisfies the requirements of 10 CFR Part 19.12 and the recommendations of RGs 8.13, 8.27, and 8.29.

The inspector examined representative qualification journals for the positions of dosimetry specialist, HPT, and radioactive material handlers. The licensee has a qualification program that will provide appropriate training and qualifications for a person hiring in with little or no HP background and within approximately three years have the person ready for certification as a HPT. HPT training and qualifications include detailed plant systems training for all units. Contract HPT's qualifications (resume) are evaluated prior to employment. The education, qualifications and training of selected HP group personnel (HPTs and HP Supervisors) was previously examined in depth and discussed in NRC Inspection Report Nos. 50-206/90-35, 50-361/90-35, and 50-362/90-35.

Knowledge screening tests and site specific training are administered as required by program requirements. Contract HPTs must also complete a special qualification journal before they can independently cover work operations.

Discussions were held with instructors that presented the most recent training courses for respiratory protection equipment use and Senior Radioactive Material Handlers. Lesson plans and tests were examined. Instructor knowledge of their respective disciplines was very high.

b. Internal Exposure Control

The NRC inspector examined the licensee programs for protecting personnel from airborne radioactivity and evaluating personnel uptakes of radioactivity to determine compliance with the requirements of 10 CFR Parts 19.13, 20.103, and 20.405 through 409; and agreement with the recommendations contained in RGs 8.15, 8.20, 8.26, and 8.32; NUREG-0041 and NUREG-0938, and industry standards ANSI Z88.2-1980 and N343-1978.

The licensee's respiratory protection and internal dosimetry programs are implemented by procedures S0123-VII-2.0 and S0123-VI-4.2, respectively. Many subgroup procedures, such as S0123-VI-2.5, "Selection of Respiratory Protective Devices" and S0123-VI-4.2.2, "Tritium Analysis of Urine Samples," implement the various program elements and regulatory requirements. In accordance with the requirements of 10 CFR Part 20.103 and the recommendations of RG 8.15 the licensee had assigned a person (Dosimetry Supervisor) responsibility for implementation of the SONGS respiratory

protection program and developed upper management directives and policies concerning respiratory protection equipment (RPE) use. The licensee's initial and retraining programs for radiological RPE are implemented by Nuclear Training Division procedure TPD CAD-2, "Radiological Respiratory Protection Training and Retraining Program." Nonradiological RPE use training is controlled by training procedure TPD SAF-2. The licensee's Fire Department also conducts it's own training for unique self contained breathing apparatus (SCBA) they possess. The NRC inspector discussed radiological RPE training programs with Training Division instructors and a Fire Department firefighter. Lesson plans and student handouts clearly address the exiting of respiratory protection areas and/or the removal of RPE if the wear comes under any kind of duress.

During tours of radiological work areas the inspector noted the use of engineered ventilation systems to minimize personnel exposure to airborne radioactivity. The licensee's Radiation Exposure Permit Program (S0123-VII-9.9) and ALARA review procedures (S0123-VII-3) requires that the use of engineered ventilation systems be considered for minimizing airborne radioactivity exposures or that the reason why ventilation is not used is documented by the reviewer. The licensee's maintenance and use of RPE was previously discussed in detail in NRC Inspection Reports Nos. 50-206/89-28, 50-206/90-12, and 50-206/90-35 during this SALP period.

The licensee's internal dosimetry and assessment program involves radiobioassays via the direct (whole body counting-WBC) and indirect (biological samples) methods. The licensee maintains an adequate technical staff and state of the art computerized WBC systems and analysis programs. Procedures are adequate for the most part and adequately address the recommendations of NRC RGs and industry standards concerning internal dose assessment methods. The licensee utilizes an offsite vendor for performing radiobioassays of biological materials (fecal and urine samples). Training of WBC operators was verified and selected bioassays results were reviewed for accuracy. Administrative controls are utilized to prevent personnel exceeding regulatory limits involving airborne radioactivity. Actual verification of the ability of the computerized access system to track MPC-hrs of exposure and control entry of personnel with out-of-date bioassay results was accomplished.

The licensee's personnel dosimetry staff is comprised of several groups. Official exposure history records are maintained at the Mesa training and personnel processing facilities several miles away from the dosimetry technical staff offices located adjacent to the reactor units. During a examination of selected computerized displayed exposure records and hard printed files at the Mesa offices it was noted that at least one person's dosimetry records were incomplete in that urinary bioassay results obtained in May of this year had not been placed into the individuals files or into the computerized dose tracking system which updates the licensee's computerized exposure records system. While the licensee did have

proper control over tracking of the person's MPC-hrs of exposure the licensee could not produce computerized data during a mock run of an official termination report specifying all measurements that had been made on the individual for radioactive materials located in body. The computer indicated contrary to evidence in the technical correspondence files at the dosimetry technical staff offices and the information provided to the NRC for resolution of the "Followup Item" Discussed in Section 2.0 of this report. During discussions with licensee representatives it was determined that procedure SO123-VII-4.2.2, did not specifically require the inclusion of non-whole body counting type bioassay results into the computerized exposure records system. WBC results from the licensee's WB counters are automatically entered into the exposure record computerized data base (record system) and are printed out on termination reports when needed. Termination reports, when required to be submitted to the NRC per 10 CFR Parts 19.13 and 20.408, must be accurate (10 CFR Part 50.9(a)). This problem will be considered an "Unresolved Item" pending further review by the NRC of the licensee's program for issuance of radiation/radioactive material exposure reports i.e., "termination reports" and/or 10 CFR Part 19.13 employee requested exposure reports.

An unresolved item is a matter about which more information is required to ascertain whether it is an acceptable item, a deviation, or a violation.

4. Surveys, Contamination Controls, and Control of Radioactive Material (83726)

The NRC inspector walked down plant systems and observed radiological work operations in Unit 1 & 2's auxiliary building, spent fuel storage areas, and turbine building areas. Independent radiation exposure and dose rate surveys were conducted using an NRC digital geiger-muller type survey instrument and a licensee provided Eberline RO-2 ion chamber survey instrument. Both instruments were within current calibration and were response checked prior to use. The inspector made the following observations:

- a. High sensitivity whole body friskers, walk through portal monitors, and self frisking equipment were operational, in good supply, and were being properly used. Controls over materials being released from radiologically controlled areas (Red Badge Zones) and the protected area are rigidly enforced. Control point HP Technicians are alert and observant, questioning workers on their jobs and controls. Primary radiologically controlled area access points had current survey results and REPS for all work areas.
- b. The inspector noted that on more than one occasion radiological control signs and barriers (posting) that were attached to a wall with tape had come loose and fallen down. Area supervisors quickly had the deficient posting rehung. The NRC inspector was informed that there were special attachment devices (high-tackiness adhesive) available to HPTs for hanging posting on walls.

- c. Several areas in the Unit 2 & 3 piping penetration areas had unbagged used and new protective clothing laying about inside of posted contaminated areas. A plastic catch to contain leakage from an overhead valve in Room 207-3 was being used as waste receptacle and another catch in a near by area had been reorientated so that it would not function as a catch for valve leakage. Also, used and unbagged protective clothing was noted outside of charging pump room 106C and 107B. On December 12, 1990, an unused fullface respirator that was checked out on December 9, 1990, was observed in a hallway under a fire extinguisher adjacent to Radwaste Level 9 room 106F. For the most part general housekeeping was very good. Work areas and step-off pads were well kept, with receptacle for waste and used clothing being properly used and maintained.
- d. During the observation of ongoing contaminated protective clothing sorting operations within a specially constructed enclosure within the Unit 2 & 3 Radwaste Building the NRC inspector noted that personnel were inadvertently using work practices that negated the licensee ability to accurately perform routine air sampling of the area expected to possess the highest airborne radioactivity hazard. With the enclosure workers were performing potential airborne causing work (turning rubber gloves from inside-out to rightside-out) away from the permanently installed breathing zone sampler that is located over the clothing sorting table. It was also pointed out that the exhaust ventilation system attached to the sorting table has its flow smothered when bags of clothing are pour out over the sorting table in a manner that completely blocks off the flow creating a positive pressure condition within the enclosure. It was also noted the relationship between the portable air-conditioning unit's intake/exhaust registers may be affecting the representativeness of the air sampler intake nearby. The Unit 2/3 HP supervisor agreed with the findings and initiated actions to have the REP controls reevaluated. The NRC inspector noted that the workers and the enclosure were routinely monitored for contamination to assess the radiological status of the controls and to help prevent an uncontrolled spread of radioactivity within the radwaste-building. These concerns will be considered an "Inspector Followup Item" and reviewed during future inspections (50-361/90-41-02 & 50-362/90-41-02).
- e. Radiation and high radiation area posting were found consistent with access area survey maps, surveys, and REPs.
- f. Examination of the spent fuel pools reracking operations for Unit 2 & 3 indicated a high level of attention to detail is being maintained and procedures being followed rigorously. Safety restraints for workers working around the unrailed pools were in evidence as was the use of safety restraints being used by workers working over the spent fuel pool on guardrailed platforms.

5. Exit Meeting

The inspector met with the licensee representatives denoted in Section 1, at the conclusion of the inspection on December 14, 1990. The Scope and

findings of the inspection were summarized. The Section 3.b "Unresolved Item" was not identified until after the exit meeting during further onsite review of the subject with licensee representatives.

An unresolved item is a matter about which more information is required to ascertain whether it is an acceptable item, a deviation, or a violation.