U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-275/89-03 and 50-323/89-03

License Nos. DPR-80 and DPR-82

Licensee: Pacific Gas and Electric Company
77 Beale Street
Room 1451
San Francisco, California 94106

Facility Name: Diablo Canyon Power Plants, Units 1 and 2

Inspection at: Diablo Canyon, San Luis Obispo County, California

Inspection conducted: January 17 through 26, 1989

Inspector: _____ 2-8-89
J. E. Russell, Radiation Specialist — Date Signed

Approved by: _____ 2/8/89
H. S. North, Acting Chief — Date Signed
Facilities Radiological Protection Section

Summary:

a. Areas Inspected:

This was a routine, unannounced inspection covering the followup of written reports of non-routine events, the followup of open items, in-office review of written reports of nonroutine events, in-office review of periodic and special reports, shipping of low-level wastes for disposal and transportation, radioactive waste systems and radiological environmental monitoring, radioactive waste management, transportation activities, and the followup of an allegation. The inspection included tours of the licensee's facilities. Inspection procedures 92700, 92701, 90712, 90713, 83750, 84750, 84850, 86740 and 30703 were covered.

b. Results:

In the areas inspected, the licensee's programs appeared generally capable of superior performance in the accomplishment of their safety objectives. However, weaknesses were identified during the investigation of the allegation in the area of maintaining occupational exposures as low as reasonably achievable (ALARA) as detailed in paragraph 10, below.

DETAILS

1. Persons Contacted

Licensee Personnel

J. Townsend, Plant Manager
L. Womack, Assistant Plant Manager - Operations Services
J. Boots, Chemistry Manager
R. Powers, Radiation Protection Manager
C. Eldridge, Quality Control (QC) Manager
G. Heggli, Senior Quality Assurance (QA) Engineer
W. Kelly, Regulatory Compliance

Nuclear Regulatory Commission Personnel

K. Johnston, Resident Inspector

All of the above noted individuals were present at the exit interview on January 26, 1989. In addition to the individuals identified, the inspector met and held discussions with other members of the licensee's staff.

2. Followup of Written Reports of Nonroutine Events (92700)

Item 50-275/88-30-LO (Closed). This event involved the improper bypass of the Containment Air Radiogas Monitor, 1-RM-12. The improper valve alignment was discovered by a technician on November 26, 1988, and appeared to have occurred on October 11, 1988, when last the monitor was returned to service. The inspector verified that the corrective actions identified in the licensee's report had been instituted and appeared appropriate to prevent recurrence. The monitor data recorder trace was also reviewed and; although it was sufficient, a posteriori, to confirm the initiation of the incorrect valve alignment; it did not appear sufficient to provide immediate and conspicuous indication to a vigilant operator during routine review that the monitor was not in a proper operational condition.

Item 50-275/07-08-88 (Closed). This item involved a sealed source which was found to be leaking in excess of the Technical Specification (TS) 3/4.7.8.1 limit, 0.005 microcuries. The event was determined by the licensee not to be reportable but an informational copy of the Nonconformance Report (NCR) generated as a result of the discovery was provided to the Regional Office. The inspector verified that the corrective action indicated in the NCR had been accomplished, that the source had been removed from service, and that it was to be disposed as radioactive waste. The inspector had no further questions in this matter.

3. Followup of Licensee Action on Open Items (92701)

Item 50-275/87-30-04 (Open). This item involved frequent alarms of and effluent release terminations by monitor RM-18. The inspector determined that the piping modifications, previously proposed to correct the problem, had not yet been completed. This item requires further review.

Items 50-275/88-23-02 and 50-323/88-21-02 (Closed). This inspector identified item involved the completion of Inspection Procedures 84723 and 84724, sections 03.04, regarding radioactive liquid and gaseous waste instrumentation.

Instrument isotopic and electronic calibrations and channel functional tests were reviewed for monitors 1 & 2-RM-14A & B and 1 & 2-RM-25 & 26. The calibrations performed during the last refueling of each unit and the subsequent functional tests associated with their return to service were reviewed. All records appeared to be complete and timely. The calibrations appeared to comply with the recommendations of Regulatory Guide (RG) 1.21, Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants, and to be in accordance with the requirements of TS 3/4.3.3.1.

Process and effluent monitor setpoint determination methodology is described in Chemical Analysis Procedures (CAP) A-5, A-6, and A-8; Liquid Radwaste Discharge Management, Gaseous Radwaste Discharge Management, and Off-Site Dose Calculation, respectively. Current copies of these procedures were reviewed. The methodology appeared to conform to that recommended in RG 1.109, Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I, and to comply with the requirements of TS 3/4.11.1, 2 & 4 for the limitation of dose, dose rate and total dose.

More than a dozen monitors in the Units 1 and 2 auxiliary and turbine buildings were examined and their control room readouts observed. Current alarm setpoints, as recorded in the Control Room manual, for the examined monitors were reviewed and appeared to be in compliance with the licensee's procedures. I & C Technicians, interviewed by the inspector, noted that monitors RM-20 and 24 had been out of service for extended periods and that action to evaluate these problems had been initiated.

The licensee seemed to be maintaining their previous level of performance in this area and their program appeared fully adequate to the accomplishment of its safety objectives. No violations or deviations were identified.

4. In-Office Review of Written Reports of Nonroutine Events (90712)

Item 50-275/88-10-L0 (Closed). This event involved a spurious containment ventilation isolation system (CVIS) actuation attributed to electronic noise. The corrective action specified in the report appeared appropriate and the inspector had no further questions in this matter.

Item 50-275/88-11-LO (Closed). This event involved a spurious fuel handling building ventilation shift to iodine removal mode when radiation monitor 1-RM-58 exceeded the high alarm setpoint due to background fluctuations. The corrective action specified in the report appeared appropriate and the inspector had no further questions in this matter.

Item 50-275/88-12-LO (Closed). This event involved the failure to meet the surveillance requirement of TS 4.11.2.1.2, Table 4.11-2, item 4, when an auxiliary sample pump was inappropriately secured during troubleshooting efforts. The corrective action specified in the report appeared appropriate and the inspector had no further questions in this matter.

Item 50-323/87-26-LO (Closed). This event involved the failure to meet the surveillance requirement of TS 3/4.4.7, Table 3.4-2, for reactor coolant chloride and fluoride sampling due to a procedural inadequacy. This event was not discovered until October 1, 1988, during a management audit. The corrective action specified in the report appeared appropriate and the inspector had no further questions in this matter.

Item 50-323/88-05-LO (Closed). This event involved a spurious CVIS actuation attributed to electronic noise. The corrective action specified in the report appeared appropriate and the inspector had no further questions in this matter.

Item 50-323/88-11-LO (Closed). This event involved a spurious fuel handling building ventilation shift to iodine removal mode when radiation monitor 2-RM-58 exceeded the high alarm setpoint due to background fluctuations. The corrective action specified in the report appeared appropriate and the inspector had no further questions in this matter.

5. Semiannual Effluent Release Reports (90713)

The inspector performed an in-office review of the timely January-June 1988 Semiannual Effluent Release Report submitted in accordance with the requirements of TS 6.9.1.6. The report was generally in the format recommended in RG 1.21 and the methodology appeared to comform to that recommended in RG 1.109 as specified in CAP A-8. Radioactive releases and resulting doses for the period appeared to be significantly below the limits of TS 3/4.11.

Two minor unplanned releases were noted, each of less than 0.1 Ci of noble gas. No major changes to the liquid, gaseous or solid radioactive waste treatment systems were noted. A new contract vendor, LN Technologies, was identified as providing Process Control Program (PCP) services. No changes were noted to the Environmental Radiological Monitoring Procedure (ERMP). Changes to the Off-Site Dose Calculation Procedure (ODCP) were outlined and copies of these were provided. No inoperable effluent monitoring instrumentation or holdup or storage tank limit exceptions were noted.

The licensee seemed to be maintaining their previous level of performance in this area and their program appeared adequate to the accomplishment of its safety objectives. No violations or deviations were identified.

6. Shipping of Low-Level Wastes for Disposal and Transportation (83750)

Records of two radioactive waste shipments, RWS-88-001 and 2, which occurred in early 1988 were reviewed. Radiation and contamination surveys; shipping papers; records of package marking and labeling; records of package loading, blocking and bracing; and records of vehicle placarding and driver instruction appeared complete and in compliance with the various NRC and DOT requirements as well as State and burial ground requirements. The implementation of the licensee's quality assurrance program for the use of NRC-certified transport packages is discussed in paragraph 9, below.

Licensee management representatives informed the inspector that there had been no transportation incidents involving licensee shipments and that no violations had been issued by State regulatory authorities for any shipment. A problem was identified by the licensee with the labelling of shipment RWS-88-012 subsequent to its disposal at the Hanford low-level waste site. This shipment of 14 drums, 11 of compacted waste and 3 of cartridge filters, was shipped in a shielded cask. Subsequent to the shipment, it was realized that, as the drums of filters were not low specific activity (LSA) and as the cask was considered the package for the shipment, the cask should have been labelled but was not. The licensee notified the State of Washington of the problem and the State elected not to pursue any enforcement action. The inspector reviewed the event and the licensee's corrective action. The omission did not appear to represent a programatic problem and the actions taken by the licensee appeared complete and appropriate to prevent recurrence. The event did not appear to be reportable and would be considered of Severity Level IV or V. It also did not appear to be reasonably preventable as a result of corrective action for previous violations. Therefor, no Notice of Violation is proposed for this event in accordance with the guidance of 10 CFR 20.2, Appendix C.

Administrative Procedure NPAP D-10, Quality Control Program for Shipment of Radioactive Waste to Land Disposal Facilities, implements the licensee's program for radioactive waste management in accordance with the requirements of 10 CFR 20.311. The inspector reviewed Radioactive Material Management Audit 87248T, dated December 1, 1987, and its Audit Plan. No discrepancies were noted regarding the implementation of the licensee's quality control program to assure compliance with 10 CFR 61.55 & 56 requirements. The audit appeared to comply with the requirements of D-10 and to adequately address the requirements of Parts 61.55 & 56.

The licensee seemed to be maintaining their previous level of performance in this area and their program appeared capable of superior performance in the accomplishment of its safety objectives. No violations or deviations were identified.

7. Radioactive Waste Systems and Environmental Monitoring (84750)

QA Audit 88810T, Offsite Dose Calculation Procedure (ODCP) and Radioactive Effluent Monitoring Program, and Audit 88801T, Radiological Environmental Monitoring Program - Diablo Canyon, were reviewed as well as QC Reviews ERQC-05-88-RN and ERQC-10-88-RN concerning implementation

of the environmental monitoring program. All were performed during 1988 and identified only minor deficiencies for which four Audit Finding Reports (AFRs) were issued. The AFRs appeared to have been appropriately addressed and corrective actions appeared timely and technically correct. Personnel performing the audits were experienced and appeared to be qualified in accordance with the requirements of ANSI/ASME N45.2.23-1978, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants.

Licensee management representatives identified no major changes to the radioactive waste systems or radiological environmental monitoring program during the last year with the exception of obtaining a new PCP vendor, as noted in paragraph 5 above.

Select records of waste stream characterizations were reviewed for 1988. The inspector noted 18 separate waste streams which had been characterized. The characterizations consistently identified not only the primary gamma emitters but also beta and alpha emitters, including transuranics. Significant effort appeared to have been devoted to obtaining complete and comprehensive information.

As noted above, the licensee uses a vendor to provide solidification services. Management representatives noted that there have been no problems with the new vendor during the last year until the most recent solidification effort. A primary resin from Unit 2, which had been used for chemical shock clean-up and was not completely depleted, failed to solidify. The licensee and vendor appeared to have appropriately followed their QC programs, test samples had solidified properly, but the liner failed to solidify. The vendor was still evaluating the problem at the completion of the inspection.

The last available Semiannual Radioactive Effluent Release Report was reviewed as noted in paragraph 5, above. Discharge permits for a gas decay tank release, a containment atmosphere vent, and a liquid radwaste tank release, all from December 1988, were reviewed, including pre- and post-release dose and dose rate calculations, monitor alarm setpoint determinations, and sample analyses. The dose calculation for Xe-133 for the containment atmosphere vent was verified.

The major sources of radioactive solid, liquid and gaseous waste for the year 1988 appeared to be as previously identified. No unmonitored release paths were identified. Process and Effluent monitoring instrumentation were reviewed as noted in paragraph 3, items 50-275/88-23-02 and 50-323/88-21-02, above.

Records of ventilation system Di-Octyl-Phthalate and halide penetration tests performed in 1988 for the Units 1 and 2 Control Room vent system, the Unit 2 Auxiliary Building and the Unit 1 Fuel Handling Building were reviewed. The records appeared complete and timely. No recurrent problems were identified. The test appeared to conform to the recommendations of RG 1.52, Design, Testing, and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants, and to comply with the requirements of TSs 3/4.7.5 and 3/4.7.6.

The licensee's Annual Radiological Environmental Operating Report for 1988 had not yet been submitted at the time of the inspection. Changes to the ODCP were reviewed as noted in paragraph 5, above. The current revision of Technical and Ecological Services (TES) Procedure No. A-7, Environmental Radiological Monitoring Procedure - (Normal Operations), dated November 28, 1988, was reviewed and appeared to be in compliance with the requirements of TS 3/4.12, Radiological Environmental Monitoring.

The inspector discussed the implementation of the ERMP with the site TES supervisor. No problems involving anomalous measurements, omissions, mistakes, or trends in the data were identified with the exception of anomalous readings on a few environmental thermoluminescent dosimeters (TLDs) near a construction site. It was also noted that samples are occassionally missed due to their unavailability. These matters will be addressed in the forthcoming report.

The meteorological monitoring tower was toured and channel calibrations, dated March 17 and October 24, 1988, were reviewed. All observed equipment was operational and the records appeared complete and indicated no anomalies or unsatisfactory trends. The licensee's meteorological instrumentation appeared to be in compliance with the requirements of TSs 3/4.3.3.3.4 and 3/4.4.3.3.4.

The Quality Assurance Program as implemented for the ERMP as reflected in the above noted audit and program procedures appeared adequate and in compliance with the guidance provided in Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Programs.

The licensee seemed to be maintaining their previous level of performance in this area and their program appeared fully adequate to the accomplishment of its safety objectives. No violations or deviations were identified.

8. Radioactive Waste Management (84850)

The inspector reviewed Radiation Control Procedures:

RCP RW-1	Collection, Packaging, Storage, and Accountability of Low-Level Radioactive Waste
RCP RW-3	Radioactive Waste Isotope Fractions and Correlation Factor Determination
RCP RW-4	Solid Radioactive Waste Shipment
RCP RW-5	Receiving, Loading and Releasing of Transport Vehicle for Radioactive Waste Shipment
RCP RW-7	Burial Site Disposal Criteria and Classification of Radwaste
RCP RW-8	Radioactive Waste Curie Content Calculations

These procedures appeared to adequately define and delineate individual and organizational responsibilities and appeared to have been appropriately reviewed and approved.

The licensee's QC program to assure compliance with the waste classification and characterization requirements of 10 CFR 61.55 and 61.56 was reviewed as described in paragraph 6, above.

Select records of waste manifests and shipment labeling were reviewed as noted in paragraph 6, above. Procedures RW-1, 4 and 5 appeared to adequately address the requirements of 10 CFR 20.311 (b), (c), and (d)(2).

Select records of waste classification and characterization were reviewed as noted in paragraph 7, above. Procedures RW-3, 7 and 8 appeared to adequately address the requirements of 10 CFR 20.311 (d)(1).

Select records of the forwarding of waste manifests and the verification of receipt of manifests were reviewed as noted in paragraph 6, above. Procedure RW-4 appeared to adequately address the requirements of 10 CFR 20.311 (d), (e), (f) and (h).

The inspector determined that the licensee appeared to be adequately maintaining disposal site licenses and reviewed the State of Washington license for the Hanford Low-Level Waste site. Procedure RW-4 seemed to adequately address adherence to disposal site criteria.

The licensee seemed to be maintaining their previous level of performance in this area and their program appeared fully adequate to the accomplishment of its safety objectives. No violations or deviations were identified.

9. Transportation Activities (86740)

The licensee's management control system was reviewed as noted in paragraph 8, above.

The inspector discussed the training of personnel involved in transport activities with the cognizant radwaste supervisor, select technicians and a QC inspector. All verified their participation in the training program and appeared knowledgable regarding various transport requirements.

The inspector reviewed Radioactive Material Management Audit 87248T, dated December 1, 1987, and its Audit Plan and Supplier Implementation Audit 88214S which were performed in accordance with the requirements of Quality Assurrance Procedure QAP-2.L, Radioactive Waste Management. A section of QAP-2.L delineates the QA program for transport of greater than type A quantities of radioactive material. QAP-2.L appeared to adequately address the applicable criteria of 10 CFR 71 Subpart H as delineated in RG 7.10, Establighing Quality Assurance Programs for Packaging Used in the Transport of Radioactive Material. Audit 87248T appeared complete and timely and seemed to satisfactorily address the applicable Subpart H criteria. Audit 88214S, dated January 10, 1989, was a vendor audit of Pacific Nuclear Systems and NUPAC Services both of

which supply transport and disposal services to PG&E. It also appeared complete and timely and identified seven AFRs on which action was not yet complete.

A licensee management representative stated that there have been no waste shipments of greater than type A quantities of radioactive material during the last year although several LSA waste shipments have had greater than type A quantities. These are frequently shipped in NRC Certified casks, usually USA/9176/A and USA/9208/B. Current Certificates of Compliance for these packages were available and the inspector verified that DCPP was registered as a user. It was further stated that PG&E has performed no maintenance on certified packaging, such maintenance is performed by their vendor.

The inspector determined through interviews, procedure reviews and document requests that the licensee had a system in place to maintain on file a record of each shipment of licensed material, quality assurance records documenting the adequacy of package components and records which document the activities affecting quality assurance of transport packages. Additionally, the system also appeared to appropriately require the report of excess levels of radiation or contamination, package defects or incidents. The licensee's system of records and reporting appeared to comply with the various applicable NRC and DOT requirements.

The licensee seemed to be maintaining their previous level of performance in this area and their program appeared fully adequate to the accomplishment of its safety objectives. No violations or deviations were identified.

10. Followup of Allegation RV-88-A-0056 (Closed).

An allegation was received by the Region V office that, on November 6, 1988, contaminated scaffolding, being removed from the Unit 2 containment, was not being adequately surveyed for contamination and that laborers, untrained in survey techniques were being asked to perform contamination surveys. The resident inspection staff for DCPP provided prompt onsite followup of the allegation and documented their investigation in Inspection Report 50-323/88-29. Subsequent to the initial report, further events were alleged to have occurred in that a) workers known to the alleger had received hot particle burns which "penetrated to the bone," licensee management was aware of these events and had provided medical care to the victims and b) the RP "controls...were not good" for work performed on the fuel transfer carriage during the first week of November 1988.

In regard to that part of the allegation involving staging removal from the Unit 2 containment, the inspector reviewed Radiation Control Procedures:

RCP D-500	Radiation and Contamination Surveys
RCP D-610	Control and Release of Materials from Radiologically Controlled Areas

RCP G-100	Radiation Work Permits
RCP G-140	Removal of Materials from Radiologically Controlled Areas

Three involved RP technicians, three RP foremen and the RP outage coordinator were interviewed. Select Automated Access Control System entries for the date of concern and the licensee's internal investigation of the matter were reviewed.

The investigation revealed that, on the weekend of November 6, stagging was being removed from the 115' elevation to the 140' elevation of the Unit 2 containment and workers, previously called in to stand-by to close the containment hatch, were tasked to assist in stagging removal. The workers were directed to wipe the stagging rods and knuckles with a Masslinn cloth then carry the rods and knuckles to a holding area adjacent to the hatch. The containment, the path to the holding area and the holding area were posted and controlled as radioactive material and contaminated areas. Interviews revealed that a technician was on duty at the containment hatch during the work to control the radiological aspects of the work. The workers were directed to wipe the rods and knuckles, give the cloth to the technician, and the technician evaluated the cloth to assure contamination levels on the stagging were being maintained below 10,000 dpm. No evidence was found to support the contention that workers were asked to both wipe the materials and evaluate the wipe cloths. Contamination levels on the stagging were recalled as being generally less that detectable with none found to exceed the limit of 10,000 dpm.

The contention was also made that the stagging may have been contaminated with hot particles. No record and no recollection by involved personnel indicated that any hot particles were found on the stagging during this work. Licensee procedures require special control and survey requirements for materials potentially contaminated with hot particles and items being removed from hot particle zones. No evidence or statement provided substantiation that any of the stagging had been removed improperly from a hot particle zone.

Licensee procedures allow technicians to require workers to take in-process wipes of materials in order to determine contamination levels. No particular training is required to perform this function and it, in fact, is considered a good practice. No surveys are required by 10 CFR 20.201 in this regard as the materials were not being released from radiological controls nor was there a potential change in the extent of radiation hazard involved in moving the stagging from the containment hatch area to the holding area versus moving the stagging from the lower levels of containment to the 140' elevation versus disassembling stagging in the lower levels of the containment.

In regard to the part of the allegation that asserted laborers, untrained in survey techniques were being asked to perform contamination surveys, the allegation was not substantiated.

In regard to the part of the allegation that workers had received hot particle burns, that licensee management knew of these events and that the involved individuals had been provided medical care by the licensee, the inspector reviewed hot particle exposure records and the first aid station admittance log. The inspector also interviewed the RP engineer involved in hot particle dose evaluations, select RP technicians, the first aid station physician's assistant, and the only individual identified by the alleger as having experienced a hot particle burn. No record or statement provided substantiation that any hot particle burns had occurred. The first aid station admittance log revealed numerous individuals that had experienced punctures and burns but the physician's assistant could recall no injury which might have been the result of a localized radiation overexposure.

The individual identified by the alleger as having experienced a hot particle burn was interviewed and stated that he had been involved in a hot particle exposure event the previous year but was told there had been no exposure in excess of the limits and recalled no physiological effect from the event. The licensee's records of the event were reviewed and indicated a dose of 259 millirem had been received by the 1 square centimeter of skin directly below the right knee on April 12, 1988, from a 0.052 microcurie particle of mixed fission products which had been found on the workers pant leg and was postulated to have been there for 103 minutes. This exposure is below the the 10 CFR 20.101, 7.5 rem/quarter, skin of the whole body limit and no physiological effect could result from such a dose.

In regard to the part of the allegation that asserted workers had received hot particle burns, the allegation was not substantiated.

However, the inspector's review of the licensee's hot particle dose calculational methodology revealed that they were using the computer code VARSKIN to which an "inverse square" reduction factor was applied if the particle was not found directly on the skin. When questioned, the responsible RP engineer stated that this factor was applied to correct for the decrease in dose with distance when the particle was found on clothing and that it was developed after consultation with the author of the VARSKIN program. The factor resulted in dose reductions on the order of a factor of 20 when the particle was as little as 330 microns from the basal layer of cells. The inspector pointed out that such a correction might only be valid when the particle was at a distance such that the diameter of the area of concern, 1 square centimeter, was small in comparison. After consideration of the inspector's comment and consultation with the VARSKIN author, the licensee agreed and took expeditious action to review all previous hot particle exposure events in which the correction was applied. At the conclusion of the inspection, the RP Manager informed the inspector that all previous dose evaluations had been reviewed and corrected and that the reevaluation had revealed no exposures in excess of the limits. It was also stated that expeditious action was being taken to correct personnel exposure records, Form NRC-5 equivalents, and previous termination reports, required by 10 CFR 20.408, for all doses evaluated to be in excess of 100 mrem to 1 square centimeter.

As no NRC exposure limits appeared to have been exceeded, as the licensee's previous method appeared to have been implemented in good faith after appropriate consultation with industry authorities, and as the problem was expeditiously addressed when brought to their attention; no further action appears necessary in this matter.

In regard to the part of the allegation which asserted that the RP "controls...were not good" for work performed on the fuel transfer carriage during the first week of November 1988, records of both the cavity decontamination and the fuel transfer system modification were reviewed. These records included the associated Radiation Work Permits, surveys, Automated Access Control System entries and associated whole body doses, pre-job ALARA reviews, job history comments, temporary shielding requests, and licensee procedures. Involved RP technicians, RP supervisors, and corporate and site RP engineers were interviewed.

Investigation revealed that:

- Few RP technicians, that were to be involved in job coverage, were included in the pre-job ALARA meetings although many of the involved mechanics were included in the meeting for the fuel transfer system modifications.

- Neither job had had a post-job ALARA review although the cavity decontamination expended approximately 5 manrem and the fuel transfer system modification expended approximately 21 manrem and both jobs are scheduled to be performed during the next extended outage at Unit 1.

- There was a lack of sufficient documentation to justify the ALARA decisions made with regard to the various methods of decontamination employed during the Unit 2 outage, i.e. pre- and post-decontamination surveys which provided specific decontamination factors for the application of strippable coating vice hydrolazing vice low pressure water spray and "Kelly vacuuming" methods in the specific areas of use were not available.

- The decision to leave the strippable paint on the upper and lower cavity walls and floors until much of the work in the cavity area was complete appeared questionable in that there was a significant reduction in general area dose rates after its removal, e.g. dose rates in the lower cavity averaged approximately 70 mrem/hr with a maximum general area dose rate of 200 mrem/hr on November 2, at the beginning of fuel transfer system modifications, and were reduced to an average of approximately 10 mrem/hr with a maximum general area dose rate of 50 mrem/hr on November 9 after paint removal and further washdown of the fuel transfer canal. Both RP technicians and an RP engineer stated that the strippable coating was left on the cavity walls and floor because it would have required too much critical path time to remove it before completion of other work in the cavity. Other RP engineers and the RP Manager stated that this was a misconception and that the paint was left on in order to control the potential for hot particle exposures from the walls and floor. The inspector noted that removing the strippable coating not

only reduces the general area dose rates but also removes a significant portion of the contamination and hot particles and that there was a large source of hot particles which were not fixed by application of the strippable coating, i.e. the fuel transfer canal in which work was being performed, which was very highly contaminated and which was a known source of hot particles.

Excerpts from the job history notes illustrate the problems found during the fuel transfer system modifications:

November 2 - "...Problems - wrong size tools, not enough lighting. Lighting is so poor as to make it difficult ... to read wrench sizes ... area was a general mess with tools spread all over ...an area next to where bolts needed to be removed ... was reading about 5 R/hr contact and (approximately) 2 R/hr GA. Work was done using 10 minute stay times (to re-check for hot particles and check dosimetry.)..."

November 3 - "...There is a definite safety hazard due to total disregard of good housekeeping practices by work group in the area."

November 14 - "The following are areas of concern in regard to future similar work: a) Conduct extensive decon of area as time permits and availability of Kelly vac. or hydrolazer. b) If Alara paint used, remove after cure time, to reduce dose rates in area, do not leave on. c) Decon areas frequently as non-work windows are available. If necessary, secure work to decon area if decon effort will reduce contamination and dose rates considerably.... f) Ensure sufficient lead is approved for usage on cart assembly and for hot spots...."

The inspector discussed these observation with the RP Manager and at the exit meeting in the context of an area where significant improvements could have been made with regard to maintaining exposures as low as reasonably achievable. The RP Manager stated that his organization had previously identified the need to conduct more post-job ALARA reviews and that he appreciated the further identification of areas which could be improved as it was his intention that the DCPP RP program continuously improve. He also noted that the need to balance the potential for hot particle overexposures against whole body exposures can be a difficult problem to address when planning outage tasks and that these balancing considerations were integral to the decision to leave the strippable paint on the walls and floors for an extended period.

In regard to the part of the allegation which asserted that the RP "controls...were not good" for work performed on the fuel transfer carriage during the first week of November 1988, the allegation was substantiated, in as much as an ex post facto review of available documentation and personnel interviews indicated areas where apparently significant improvements could have been made in job ALARA implementation. However, due to the subjective nature of the ALARA program, in the absence of any specific regulatory requirement, and in light of the licensee's committment to review the areas of concern

identified by the inspector; no further action appears necessary in excess of the routine review of this area during subsequent inspections.

11. Exit Interview (30703)

The inspector met with the licensee representatives, denoted in paragraph 1, at the conclusion of the inspection on January 26, 1989. The scope and findings of the inspection were summarized.