U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-254; 50-265
License Nos:	DPR-29; DPR-30
Report Nos:	50-254/98022(DRS); 50-265/98022(DRS)
Licensee:	Commonwealth Edison Company
Facility:	Quad Cities Nuclear Power Station Units 1 and 2
Location:	22710 206th Avenue North Cordova, IL 61242
Dates:	November 30 - December 4, 1998
Inspectors:	K. Lambert, Radiation Specialist
Approved by:	Gary L. Shear, Chief, Plant Support Branch 2 Division of Reactor Safety

EXECUTIVE SUMMARY

Quad Cities Nuclear Power Station, Units 1 & 2
NRC Inspection Reports 50-254/98022; 50-265/98022

This routine inspection focused on the radiation protection staff's preparations for the Q1R15 refueling outage and included a review of as-low-as-is-reasonably-achievable (ALARA) planning and work plan integration, the radiation work permit process, and the contractor health physics technologist qualification and training programs. The inspection also included observations of outage activities.

- The radiation protection staff improperly removed the postings for two high radiation areas in the Unit 1 Reactor Building basement which resulted in a Non-Cited Violation. Specifically, the staff failed to barricade and post the basement entrances to the residual heat removal rooms as high radiation areas in accordance with Technical Specifications (Section R2.1).

- A Non-Cited Violation was identified for an individual exceeding the accumulated daily dose limit of the reactor head disassembly/assembly radiation work permit. The failure of radiation protection technicians to provide effective oversight of work activities and ineffective communications between involved parties contributed to this incident (Section R4.1).

- The radiation protection staff effectively evaluated planned work activities, successfully integrated past performance to prepare dose estimates and goals for the Unit 1 refueling outage, and effectively monitored outage dose. ALARA plans were detailed and included lessons learned from previous evolutions (Section R1.1).

- The license had appropriately evaluated personnel contamination events and instituted corrective actions. The radiation protection superintendent indicated that the contamination events would be further reviewed to determine if additional actions could be implemented to reduce their occurrence (Section R1.2).

- The inspector concluded that the station was effectively planning and coordinating work to reduce the source term and overall station dose (Section R1.3).

- Radiation protection staff provided effective oversight and control of the drywell insulation activities. Radiation worker practices were good (Section R4.2).

- The qualifications of the new health physics superintendent exceeded the requirements of Technical Specification 6.3 for education and work experience (Section R5.1).

- The training program for contract personnel was sufficiently detailed to provide workers with a level of knowledge needed to work safely and to understand sound radiological practices. Workers demonstrated an understanding of those practices (Section R5.2).

Report Details

IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 Q1R15 Refueling Outage Planning and Preparation

a. Inspection Scope (IP 83729)

The inspector reviewed the radiation protection (RP) staff's advance planning and preparations for the Unit 1 refueling outage (Q1R15). Specifically the inspector reviewed radiological work planning, as-low-as-is-reasonably-achievable (ALARA) planning, the radiation work permit process, and the total outage dose estimate.

b. Observations and Findings

On November 7, 1998, the licensee began a refueling outage, which was completed on December 5, 1998. The refueling outage included the following scheduled work:

- Turbine Overhaul (14.5 person-rem);
- Emergency Core Cooling System Modification: Asbestos Abatement (21.5 person-rem);
- In-Service Inspection (ISI) Activities (39.6 person-rem); and
- Reactor Head Disassembly/Assembly and Cavity Work (12.3 person-rem).

The RP staff had an individual assigned full-time to work with the planning staff. This individual attended outage planning meetings to ensure RP interests were addressed. For example, the RP representative reviewed work packages and ensured the planning staff was aware of RP department requirements, including radiological surveys and shielding. The RP representative also provided the planning staff time estimates for completing those activities; therefore, time was built into the outage schedule for RP activities.

The ALARA staff performed ALARA reviews on those jobs where the estimated total dose was greater than one person-rem. The inspector reviewed several ALARA plans and noted that they appropriately considered the work to be performed, job location, lessons learned, exposures from previous evolutions, and contingency plans. In addition, the ALARA staff designated certain initiatives and comments, which were to be incorporated into the radiation work permits (RWPs) as special instructions. The inspector reviewed several RWPs written for the outage and noted that they were detailed and included appropriate special instructions, protective clothing requirements, shielding requirements, dose and dose rate limits, and contingency plans for unexpected dose rates or contamination levels.

In progress reviews of work activities were performed by the ALARA staff to evaluate whether the ALARA plan was effective in reducing doses to the workers. For example, the staff compared the accumulated dose to the percent of the job completed (i.e. 50 percent of the dose accumulated and 50 percent of the job completed). When the in progress reviews concluded that the actual dose was going to exceed the estimated dose, additional dose reduction initiatives were implemented or the job dose estimate was revised. Post-job briefings were performed for all jobs requiring an ALARA plan and included input from the RP staff and the workers involved in the evolutions. The inspector observed a post-job briefing and reviewed notes from several additional briefings. Based on these activities, the inspector concluded that the post-job briefings were self-critical and detailed. The briefings effectively addressed RP issues; work issues such as availability of tools, special tools needed, adequate job planning and communication; adequacy of procedures and work packages; and suggestions to improve job performance for future evolutions.

The RP staff developed a collective outage dose goal of 300 person-rem, based on the original scope of work. The licensee's outage performance was consistent with dose estimates, and a dose of 299.5 person-rem was accumulated for the original work scope. Licensee management indicated that little rework had been performed during the outage, with minimal impact on dose goals. However, due to emergent work, the total outage dose was about 416 person-rem. The emergent work resulted from ISI inspections that identified a growth of previously identified weld flaws (cracks) on recirculation piping. Based on the pipe crack growth indications, additional welds were added to the ISI inspections. Due to the expanded ISI inspections, four welds were determined to require weld overlays. The total dose was 116.8 person-rem for the weld overlays and ISI activities including inspections, scaffolding, and insulation. Of this dose, 69.4 person-rem was attributed to performing the weld overlays. The inspector reviewed the ALARA plans for the expanded work and determined that the plans were detailed and provided dose reduction methods.

c. Conclusions

The licensee effectively evaluated planned work activities, successfully integrated past performance to prepare dose estimates and goals for the Q1R15 refueling outage, and effectively monitored outage dose. ALARA plans were detailed and included lessons learned form previous evolutions.

R1.2 Personnel Contamination Events

a. Inspection Scope (IP 83729)

The inspector reviewed the personnel contamination events (PCEs) that occurred during the outage, including planned PCEs and hot particle events. Specifically, the inspector reviewed procedures and evaluations and discussed the incidents with the RP staff.

b. Observations and Findings

Personnel contamination events greater than 1000 disintegrations per minute (dpm) but less than 5000 dpm were tracked for trending purposes. Within the documentation of these events, the RP staff included the cause of the contamination, such as clean area contamination, protective equipment failure, or poor worker practice. Contamination events greater than 5000 dpm were evaluated and documented in a Problem Identification Form (PIF). Radiation protection staff had documented 41 PCEs greater than 5000 dpm during the outage. This was a reduction from the previous Unit 1 outage (similar scope, but longer duration) where 59 PCEs were identified. During the outage, the licensee revised their PCE process to include evaluations for all PCEs greater than 1000 dpm.

The licensee developed an outage goal of less than 100 PCEs (greater than 1000 dpm). As of the inspection, the licensee had recorded 148 PCEs greater than 1000 dpm. Due to the number of PCEs exceeding the outage goal, the RP superintendent instituted the following actions to reduce the number of contamination events:

- Increased protective clothing requirements to include a second pair of modesty garments for drywell and refueling floor activities;
- Changed class 1 personnel contamination clothing to modesty garments instead of street clothes;
- Coached technicians on proper protective clothing donning;
- Assigned technicians to coach workers on proper personnel clothing removal sequence;
- Increased floor mopping and increased usage of automated floor scrubbers;
- Increased use of vacuums versus wet mopping; and
- Decontaminated step-off pads when 10,000 dpm of removal activity was identified.

The RP superintendent indicated that after the outage, the station planned to evaluate the contamination events to determine the root cause and to develop a long-term plan to reduce the number of contaminations.

The licensee documented 22 PCEs due to hot particles during the outage. This was higher than the 18 hot particle PCEs identified during the previous Unit 1 outage (Q1R14). The RP staff indicated that hot particles were defined as greater than 25,000 dpm. The RP staff indicated that dose was assigned to three individuals as the result of PCE and hot particle contamination events. The inspector selectively reviewed PCE evaluations and noted they were appropriately completed and evaluations were technically sound. Doses were appropriately assigned to individuals based on the result of the evaluations. Based on the evaluations, the maximum dose assigned was 873 millirem shallow dose equivalent.

c. Conclusions

The license had appropriately evaluated personnel contamination events and instituted corrective actions. The radiation protection superintendent indicated that the cause of the contamination events would be further reviewed to determine if additional actions could be implemented.

R1.3 Source Term Reduction Efforts

a. Inspection Scope (IP 83750)

The inspector reviewed the source term reduction program and discussed the progress of reduction efforts, including completed efforts and planned work, with radiation protection ALARA personnel.

b. Observations and Findings

ALARA personnel indicated that source term reduction efforts in 1998 included replacement of 17 Unit 1 control rod blade pins and rollers, hydrolasing hot spots and elevated dose rate piping in the plant, submitting 10 permanent shielding packages to reduce hot spots, and performing a chemical decontamination of the reactor recirculation system during the outage, which reduced drywell dose rates by about 20 percent. Twelve hot spots were removed during 1998; however, nine previously decontaminated hot spots returned and three new hot spots were identified by the RP staff. Chemistry efforts, to reduce source term, included zinc injection, and changing the type of filters used in the condensate demineralizer system to increase iron removal.

Based on the licensee's plans, source term reduction efforts for 1999 were to include the following:

- Increase the availability and reduce cycling of hydrogen addition;
- Implement zinc injection for Unit 1 (zinc injection on Unit 2 has been in operation since Q2R14);
- Increase the usage of lead shielding and install permanent lead shielding where possible;
- Hydrolase or shield twenty hot spots;
- Increase the hydrolasing for elevated dose rate piping; and
- Continue to replace control rod blade pins and rollers (about 40 remaining per unit).

However, the ALARA staff indicated that items on the above list can be deleted or added dependent on priorities, manpower, and budgeted resources.

c. Conclusions

The inspector concluded that the station was effectively planning and coordinating work to reduce the source term. For example, the staff had made progress in reducing the

number of historical hot spots and the amount of stellite containing components in the core area.

R2 Status of RP&C Facilities and Equipment

R2.1 Posting, Labeling, and Radiological Housekeeping

a. Inspection Scope (IP 83750)

The inspector reviewed the radiological postings and labeling of containers in the Reactor, Turbine, and Laundry-Tool-Decon (LTD) Buildings and in the Unit 1 drywell. In addition, material condition of radiological equipment and housekeeping practices were reviewed. The inspector also reviewed an incident concerning the inadequate posting of the basement entrances to the residual heat removal (RHR) rooms.

b. Observation and Findings

Radiological housekeeping and container labeling in the Reactor and Turbine Buildings and the Unit 1 drywell were generally good. The inspector identified a few minor housekeeping inconsistencies, which were appropriately corrected by radiation protection staff. The LTD Building housekeeping was good, considering the extent of outage activities and the amount of radwaste being processed. Labeling of containers and bags was in accordance with procedures and regulatory requirements. Overall, radiological postings were well maintained. The inspector determined, through independent measurements, that selected radiological postings reflected the actual area radiological conditions.

During the inspection, the RP staff informed the inspector that on December 2, 1998, an operator had noted a problem regarding high radiation area (HRA) access controls in the Unit 1 Reactor Building basement. Subsequently, the RP staff identified that the basement entrances to the 1A and 1B RHR corner rooms were not barricaded and posted as HRAs. According to survey data, dose rates in several areas of the rooms were greater than 100 millirem at 30 centimeters from the radiation source. The inspector toured the RHR corner rooms and determined that posted HRAs were not in the general walkways through the room. The HRAs were within posted contaminated areas, and access to those areas were authorized through a specific RWP, which stated the radiological conditions in the room. Therefore, no unplanned dose to workers resulted from the lack of barricades and postings. However, Technical Specification 6.12.A requires, in part, that each HRA be barricaded and conspicuously posted as an HRA. The failure to barricade and post the basement entrances to the 1A and 1B RHR corner rooms is a violation of Technical Specification 6.12.A (NCV 50-254/98022-01(DRS); 50-265/98022-01(DRS)). This non-repetative, licensee-identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.

The RP staff investigated the incident and determined that on November 24, 1998, a radiation protection technician (RPT) was assigned to perform monthly surveys of the

Unit 1 Reactor Building basement. The technician was requested to remove all HRA postings and boundaries that were no longer required by the present radiological conditions. Radiological conditions had changed due to the cleaning of the taurus and ring header, and dose rates were reduced such that two areas could be de-posted. The RPT removed the barricades and postings from these areas but did not identify that these areas also controlled the entrances to the RHR rooms.

The immediate corrective actions were to properly barricade and post the basement entrances to the RHR rooms and to perform the weekly HRA/Locked HRA surveillance to ensure that no other areas were improperly posted. Radiologically posted area access was also denied to the technician and the supervisor, who had reviewed the survey data, until they were counseled by the RP superintendent on the importance of reviewing the impact that changing radiological postings could have on adjacent areas. In addition, the long term corrective action was to revise procedure QCRP 5010-01, "Posting and Labeling," to include a checklist to be used when changing radiological postings. The licensee indicated that the checklist was to include items such as ensuring that affected areas were not impacted, that stairs and ladders were properly posted, and that surveys were completed.

c. Conclusions

The RP staff improperly removed the postings for two high radiation areas in the Unit 1 Reactor Building basement which resulted in a Non-Cited Violation. Specifically, the staff failed to barricade and post the basement entrances to the residual heat removal corner rooms as high radiation areas in accordance with Technical Specifications.

R4 Staff Knowledge and Performance in RP&C

R4.1 Reactor and Drywell Head Assemblies

a. Inspection Scope (IP 83729)

The inspector reviewed the radiological planning for the reactor and drywell head assemblies, including the ALARA plan and the RWP, and observed the conduct of the evolution. The inspector also reviewed the circumstances surrounding an individual who received a dose of 231 millirem, which was 31 millirem greater than the RWP daily dose limit.

b. Observations and Findings

The licensee estimated a total dose of 12 person-rem for the reactor head disassembly/assembly. The inspector reviewed the ALARA plan and RWP 983081, "Unit 1 RX Disassembly/Assembly, Cavity Work and Wall Cleaning," and determined that the plan and RWP were detailed, appropriate for the work to be performed, and included dose reduction techniques. Specific dose reduction techniques included mock-up training, use of long handled tools, and the use of cameras and radio head sets. The inspector observed good control of work activities by the RPTs and noted that access

was limited to the refuel floor during head installation activities. In addition, good communication was observed between workers and RPTs during the setting of the reactor head.

During the inspection, the RP staff indicated that an individual involved with the installation of the drywell head received a daily dose of 231 millirem. This dose was greater than the administrative limit of 200 millirem per day for RWP 983081, "Reactor Head Disassembly/Assembly Cavity Work and Wall Cleaning." RP staff indicated that on December 2, 1998, the ALARA engineer determined that the daily dose limit needed to be extended to 400 millirem for the "B" crew that was tensioning the bolts on the drywell head. Four individuals on the crew (i.e., a supervisor and three workers) reported to the RP desk to have their limit extended. The RP staff questioned whether any other workers needed an extension and were told that no other workers needed extensions.

On December 2, 1998, the work crew reported to the refuel floor and were briefed on the radiological conditions by the RPTs supporting the evolution. At this time the RPTs became aware that the daily dose limit had not been extended for a fifth member of the crew. Consequently, this individual was informed that he could not stay in the reactor cavity as long as the other members of the crew. The dosimetry was placed on the individual's knee and, due to contamination concerns, placed in a plastic bag. The plan was for the individual to work until his electronic dosimeter (ED) alarmed. The alarm set point was at 160 millirem cumulative dose and would have allowed the individual adequate time to leave the work area before the RWP limit was reached. The RPTs also estimated that the individual could work for about 45 minutes, based on the dose rates in the area and the remaining dose available for the day.

When the RPTs anticipated that the individual was near his exposure limit, they asked the work crew supervisor to check the crew's EDs. The supervisor could not read the EDs due to the yellow plastic bags, used for foreign material exclusion concerns, and he could not hear if the EDs were alarming due to the noise from the impact guns used to tension the drywell head bolts. This was reported to the RPTs. Nonetheless, the work was allowed to continue for another 45 minutes, after which all the workers exited the area. At this time the RPTs could hear the individual's ED alarming. Data obtained from the individual's ED history indicated that the individual was in a radiation dose field with the ED alarming for approximately 30 minutes and that his total dose for the day was 231 millirem. The doses to the other members of the work crew were 208, 267, and 329 millirem

The licensee's immediate corrective actions were to initiate a prompt investigation into the incident and a Problem Identification Form (PIF) (number Q1998-05426). In addition, the RPTs involved, the work group supervisor, the crew members, and the individual were restricted from the radiologically posted area until the investigation was completed. The investigation concluded that the apparent cause was due to ineffective oversight of the work evolution by the RPTs. This included the decision to put the EDs into yellow plastic bags, where they could not be read, and the failure of the RPTs to verify doses or stop the job after the supervisor indicated that he could not read the EDs. The

inspector's review of the incident and subsequent evaluation concluded that the licensee promptly and correctly identified the cause. However, the inspector concluded that a lack of effective communication among involved parties also contributed to the incident. Specifically, the failure to provide the RP staff with the correct number of individuals requiring dose extensions and the failure to communicate actions to be taken when dosimetry could not be read contributed to the incident. Based on the inspector's observations, the licensee planned to define clear expectations for RPTs when dosimetry cannot be read and to incorporate those expectations into the dosimetry usage procedure, QCRP 5200-05. The licensee planned to complete these actions by December 31, 1998.

Technical Specification 6.8 requires, in part, that applicable procedures recommended in Appendix A, of Regulatory Guide 1.33, Revision 2, February 1978, be established, implemented, and maintained. Appendix A of Regulatory Guide 1.33, states, in part, that radiation procedures include access control to radiation areas including a radiation work permit system. Quad Cities Administrative Procedure QCAP 0600-06, "Radiation Work Permit Program," required, in part, that individual workers signing onto an RWP shall be responsible for complying with the requirements of the RWP including the dose limits. The failure to comply with the RWP dose approval limit of 200 millirem per day was a violation of procedure QCAP 0600-06 (NCV 50-254/98022-02(DRS); 50-265/98022-02(DRS)). This non-repetative, licensee-identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.

c. Conclusions

A Non-Cited Violation was identified for an individual exceeding the accumulated daily dose limit of the reactor head disassembly/assembly radiation work permit. The failure of radiation protection technicians to provide effective oversight of work activities and ineffective communications between involved parties contributed to this incident.

R4.2 Drywell Insulation Activities

a. Inspection Scope (IP 83729)

The inspector reviewed the radiological planning for drywell insulation activities including the ALARA plan and RWP, and observed the conduct of the evolution.

b. Observations and Findings

The inspector reviewed the ALARA plan and RWP 981043, "ISI: Drywell Insulation Support," and determined that the plan and RWP were detailed, appropriate for the work to be performed, and included appropriate dose reduction techniques. For example, the ALARA plan included provisions for decontaminating pipe surfaces being welded, using lead shielding when possible, coordinating insulation removal with other work to reduce interferences and hydrolasing the drywell basement drain line to reduce dose rates. The licensee estimated a total dose for the drywell insulation activities of 15.6 person-rem.

However, due to expanded ISI activities, insulation activities were also increased. The ALARA group evaluated the added activities, updated the ALARA plan, and estimated the dose to be 35.9 person-rem. The actual dose for insulation activities was 40.4 person-rem.

During insulation installation activities, the inspector observed good oversight and control of work activities by RPTs. The inspector also noted good radiation worker practices and good communication between RPTs and the insulators.

c. Conclusions

The radiation protection staff provided effective planning, oversight and control of the drywell insulation activities. Radiation worker practices were good.

R5 Staff Training and Qualification in RP&C

R5.1 Health Physics Superintendent Qualifications

The qualifications of the new health physics superintendent, who started in November 1998, were reviewed for conformance with Technical Specifications. Technical Specification 6.3 required that the health physics superintendent meet the qualifications of the radiation protection manager (RPM) specified in Regulatory Guide 1.8, "Personnel Selection and Training," September 1975. The regulatory guide stated that the RPM should have a bachelors degree or equivalent in science or engineering, including formal training in radiation protection; and have at least five years of professional experience in applied radiation protection, with at least three years at a nuclear facility with similar radiological problems as nuclear power plants. The individual's resume was reviewed which indicated that she had attained a masters degree in management, a bachelors degree in Biology (with a minor in Health Physics), and had greater than five years of experience in applied radiation protection at a nuclear power facility. Therefore, the inspector concluded that the qualifications of the new health physics superintendent exceeded the requirements of Technical Specification 6.3 for education and work experience.

R5.2 Training and Qualifications of Contract Personnel

a. Inspection Scope (IP 83729)

The inspector reviewed the training programs for contract radiation protection technicians (CRPTs) and contract outage workers. This included a review of procedures and discussions with the radiation protection and training staffs.

b. Observations and Findings

Radiation protection management indicated that 47 CRPTs were needed to augment the station technicians during the outage. Forty-two senior CRPTS provided job coverage for outage activities, and five junior technicians performed contamination surveys,

unconditionally released tools and equipment, issued respiratory protection equipment, and provided coverage at radiologically poste area access points. In addition, four chemistry technicians were selected to perform the same tasks as the junior CRPTs. All contract technicians reported to station technicians and management who monitored work activities and performance.

Radiation protection management reviewed the CRPTs resumes and selected individuals based on their experience and whether they had taken the Commonwealth Edison core training program for contract technicians. RP management then selected the tasks to be performed by the contract technicians and determined whether these tasks were included in the core training program. The training department developed and administered the training for those tasks that were outside of the core training program. Since none of the junior CRPTs had received the core training program, a program was developed based on the tasks to be performed. This program included classroom sessions (1 day) on procedures, task checklists, and RP memos regarding the tasks and on the job training (2-3 days). Chemistry technicians were provided classroom and on the job training for the tasks assigned to them during the outage. The inspector reviewed the training program, lesson plans, and tests, with no problems identified.

Contract radiation workers who had received nuclear general employee training (NGET) at the station or another nuclear facility within the last five years could challenge the NGET test. Otherwise, they had to attend a two day training session. The training program was sufficiently detailed to provide attendees with the necessary level of knowledge to work safely in the plant and to use sound radiological practice to reduce exposure and to understand the risks of working in radiation and contaminated areas. Contract personnel also completed training before being granted unescorted access to the station.

The inspector observed radiation workers during the outage and noted, with a few minor exceptions, that good radiation worker practices were employed.

c. Conclusions

The training program for contract personnel was sufficiently detailed to provide workers with the knowledge to work safely and understand sound radiological practices, and observed workers demonstrated an understanding of those radiological practices.

X1 Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on December 4, 1998.

The licensee did not identify any items discussed as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

W. Beck, Regulatory Assurance Manater
P. Behrens, Superintendent Chemistry
K. Bethard, Regulatory Assurance
R. Chrzanowski, Nuclear Oversight Manager
J. Dimmette, Site Vice President, Quad Cities
E. Karpe, Radiation Protection Manager
L. Pearce, Station Manager
G. Powell, Lead Health Physicist, Operations
W. Schmidt, ALARA Coordinator
J. White, Training Manager

NRC

L. Collins, Resident Inspector
C. Miller, Senior Resident Inspector
K. Walton, Resident Inspector

INSPECTION PROCEDURES USED

IP 83729	Occupational Exposure During Extended Outages
IP 83750	Occupational Radiation Exposure
IP 84750	Radioactive Waste Treatment, and Effluent and Environmental Monitoring

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-254(265)/98022-01	NCV	The basement entrances to the 1A and 1B RHR corner rooms were not barricaded and posted as a high radiation area.
50-254(265)/98022-02	NCV	An individual installing the drywell head received a daily dose greater than the RWP daily limit.

Closed

50-254(265)/98022-01	NCV	The basement entrances to the 1A and 1B RHR corner rooms were not barricaded and posted as a high radiation area.
50-254(265)/98022-02	NCV	An individual installing the drywell head received a daily dose greater than the RWP daily limit.

Discussed

None

LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
CRPT	Contract Radiation Protection Technician
dpm	disintegrations per minute
DRS	Division of Reactor Safety
ED	Electronic Dosimeter
IP	Inspection Procedure
ISI	In-Service-Inspection
LTD	Laundry-Tool Decon
mR/hr	milliroentgens per hour
NCV	Non-Cited Violation
NGET	Nuclear General Employee Training
NRC	Nuclear Regulatory Commission
PCEs	Personnel Contamination Events
PIF	Problem Identification Form
RP	Radiation Protection
RP&C	Radiological Protection and Chemistry
RPA	Radiologically Posted Area
RPM	Radiation Protection Manager
RPT	Radiation Protection Technician
RWPs	Radiation Work Permit
VIO	Violation

LIST OF DOCUMENTS REVIEWED

Contractor Radiation Protection Technician Core Training, Administration and Course Management Information

Contractor Radiation Protection Technician Core Training, Task -to-Training Matrix

Personnel Contamination Event Logs

Planned Personnel Contamination Event Evaluations for RWPs 981079 and 981090

Radiological surveys of Unit 1 drywell, reactor buildings and turbine building

Technical Specification 6.3 and 6.12

ALARA Action Review for the Following RWPs

983081, 981043, 981044, 981045, 981079, 981077, 980199, 981082, 981067, and 983093

Problem Identification Forms (PIF)

Q1998-05426
Q1998-05431

Procedures

QCAP 0600-06, Rev. 6, "Radiation Work Permit Program"
QCAP 0610-05, Rev. 3, "Radiation Protection Contractor Program"
QCAP 0650-06, Rev. 1, "Unescorted Access & Conduct in Radiologically Posted Areas"
QCRP 5210-04, Rev. 1, "PCE Dose Equivalent Calculations"
QCRP 5300-01, Rev. 6, "ALARA Action Review"
QCRP 5720-04, Rev. 5, "Personnel Decontamination"
QCRP 6200-05, Rev. 8, "Writing Radiation Work Permits"

Radiation Work Permits

983081, Unit 1 RX Disassembly/Assembly, Cavity Work, & Wall Cleaning (Q1R15)
981043, ISI: Drywell Insulation Support (Q1R15)
981044, ISI: Drywell Scaffolding Support (Q1R15)
981045, ISI: Drywell Inspections (Q1R15)
981079, ECCS Mod.: U-1 DW Asbestos Insulation Abatement (Q1R15)
981077, Chem Decon Setup/Flange Connections/Operations/Demob) Q1R15)
980199, Unit 1 IRM/SRM: Troubleshoot/Repair/Replace (Q1R15)
983093, Unit 1 Main Turbine: Overhaul (Q1R15)
981082, Unit 1 Drywell: Weld Overlays (Contingency) (Q1R15)
81067, Unit 1 Drywell: Snubber Inspection/Replacement (Q1R15)