

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Dockets No: 50-254; 50-265  
Licenses No: DPR-29; DPR-30

Reports No: 50-254/97009(DRS); 50-265/97009(DRS)

Licensee: Commonwealth Edison Company

Facility: Quad Cities Nuclear Power Station  
Units 1 and 2

Location: 22710 206th Avenue North  
Cordova, IL 61242

Dates: June 9-13, 1997

Inspectors: R. Paul, Senior Radiation Specialist  
N. Shah, Radiation Specialist

Approved by: Gary L. Shear, Chief, Plant Support Branch 2  
Division of Reactor Safety

9707080045 970701  
PDR ADOCK 05000254  
G PDR

## EXECUTIVE SUMMARY

Quad Cities Nuclear Power Plant, Units 1 and 2  
NRC Inspection Reports 50-254/97009; 50-265/97009

This inspection included a review of the solid radioactive waste (radwaste) processing and shipping program, and the liquid radwaste and effluent monitoring program. Additionally, an event where a worker was locked inside the drywell (a locked high radiation area (LHRA)) and emergent work on the Unit 2 "B" recirculation (RR) pump seal were also reviewed.

- The licensee's investigation and immediate corrective actions following an event where a worker was locked in the drywell LHRA was good. The failure of the RP technician to verify that all personnel had exited prior to locking the drywell was considered a violation of 10 CFR 20.1601(d) (Section R1.1).
- Although the Unit 2 "B" RR seal replacement occurred without mishap, the inspectors identified a weakness in the ALARA planning. Specifically, the licensee did not develop contingency plans, for respiratory and protective clothing evaluations, should radiological conditions change from those analyzed (Section R1.2).
- The licensee's solid radwaste transportation program was technically sound and implemented consistent with regulatory requirements. However, one weakness was identified in the licensee's tracking and documentation for the amount of time high integrity containers (HICs) were exposed to sunlight (Section R1.3).
- The liquid monitoring program was effectively implemented and effluent monitor operability was good. Some concerns were identified with outstanding work requests on the liquid radwaste control panel, but these concerns were being addressed by the licensee (Section R1.4).
- The licensee was effectively implementing the inspection program for infrequently entered tank rooms and was addressing deficiencies found during these inspections (Section R2.1).
- The licensee was effectively maintaining records of spills and other abnormal events, where radioactive material was released outside the radiological posted area (RPA), as required by 10 CFR 20.75(g). However, the inspectors were concerned that areas contaminated during normal reactor operation, such as the waste water and sewage treatment outdoor sludge drying areas, were not included in these records (Section R2.2).
- The inspectors observed good procedural adherence and management oversight during resin transfer and routine Dry Active Waste processing. The overall exposure for these activities was low and consistent with the increase in shipping activities since 1995. One weakness was identified with the licensee's radiological controls of the radwaste storage and processing areas. Additionally, some concerns were identified with the radioactive material control and accountability in the Dry Active Waste material building and radwaste mausoleum and with the

control of exposure and radioactive material during resin transfers. One concern was identified regarding the requirements for the review of vendor procedures as stated in the Process Control Program and in station procedures (Section R4.1).

- The licensee's audit of the radwaste transportation program was technically sound and did not identify any significant shipping events (Section 7.1).

## Report Details

### **IV PLANT SUPPORT**

#### **R1 Radiological Protection and Chemistry (RP&C) Controls**

##### **R1.1 Workers Locked Inside Locked High Radiation Area**

###### **a. Inspection Scope (83750)**

The inspectors reviewed the circumstances associated with a self-revealing event where a reactor operator was prevented from exiting a posted and controlled Locked High Radiation Area (LHRA). The inspection included a review of the licensee's investigation and a review of applicable procedures and documentation.

###### **b. Observations and Findings**

On May 15, 1997, a reactor operator entered the Unit 2 drywell (a posted and controlled LHRA) to perform work. The operator entered through the drywell personnel hatch (the normal access) and, prior to entry, had logged into a computer tracking system. Because of the extent of ongoing work, three RP technicians were assigned to the drywell. All three technicians were responsible for ensuring LHRA controls were maintained with one technician assigned sole responsibility to perform personnel tracking and timekeeping.

About two hours after the operator entered, all of the other workers in the drywell had exited and had been logged out of the computer. This was recorded in the drywell logbook by the timekeeping technician, who also noted that the operator was still in the drywell. Shortly afterward, the lead radiation protection technician on shift, who believed everyone had exited the drywell, received permission from the radiation protection shift supervisor (RPSS) to secure drywell access. The RPSS then contacted the senior drywell technician (not the one performing the timekeeping) and informed him to lock the drywell if everyone had exited. The senior technician then locked the drywell gate, which was subsequently verified secure by the timekeeping technician. However, prior to locking the gate, the timekeeping technician had not reviewed the computer log or entered the drywell to verify that all personnel had exited. Approximately three minutes later, the operator called the RPSS and informed him he was locked in the drywell. Subsequently, the operator was released and logged out of the drywell. The dose rates where the operator was waiting were less than 2 millirem per hour (mrem/hr) and his total exposure for the day was about 19 mrem.

The root cause of the event was the failure of the timekeeping technician to verify that all personnel had exited the drywell prior to securing the drywell gate and, consequently, locking the operator in the LHRA. The failure to provide an individual an exit from the drywell LHRA is considered a violation of 10 CFR 20.1601(d) which required that the licensee establish controls over HRA access that do not prohibit individuals from leaving an HRA (VIO 50-254/265-97009-01).

Immediate corrective actions taken to prevent recurrence included ensuring that no other persons were in the drywell before it was locked down and personnel disciplinary action. Long term corrective actions were still being developed by the licensee.

c. Conclusions

The licensee's investigation and immediate corrective action following an event where a worker was locked in the drywell LHRA was good. The failure of the licensee to verify that all personnel had exited prior to locking the drywell, was considered a violation of 10 CFR 1601(d).

**R1.2 Emergent Work on Unit 2 "B" Reactor Recirculation Pump Seal**

a. Inspection Scope

The inspectors observed the licensee's as-low-as-reasonably-achievable (ALARA) planning and controls for emergent work on the Unit 2 "B" reactor recirculation pump seal. The seal, which had been replaced approximately one month earlier during the Unit 2 refueling outage, was identified to be leaking during the early stages of reactor vessel hydrostatic pressure testing. The inspection included a review of the radiation work permit (RWP) and related documentation and interviews with the ALARA and work planners.

b. Observations and Findings

The personnel dose for this work was estimated to be about 850 mrem, consistent with the earlier seal replacement. The inspectors noted that the licensee had implemented effective controls for the entry, including continuous radiation protection coverage, the use of a high efficiency particulate air filter system, and the inclusion of lessons learned from the earlier seal replacement (primarily consisting of scaffolding location). The job was completed without mishap and for a total exposure of about 710 mrem.

One weakness was identified, by the inspectors, with the licensee's ALARA planning. Specifically, the licensee had performed an evaluation to determine whether respiratory protection was required and the type of protective clothing (i.e. rubber gear) needed. Based on these evaluations, the work was performed without respirators and without rubber gear. However, the inspectors identified that the licensee had not developed contingency plans if actual radiological conditions differed from those evaluated. The inspectors were concerned that the lack of contingency planning may result in an unplanned contamination or exposure event if radiological conditions changed. This matter was discussed with radiation protection management who verified radiological conditions remained within the analysis during the work and who planned to include contingency planning in similar future evaluations.

c. Conclusions

Although the Unit 2 "B" reactor recirculation seal replacement occurred without mishap, the inspectors identified a weakness in the ALARA planning. Specifically, the licensee did not develop contingency plans, for respiratory and protective clothing evaluations, should radiological conditions change from those analyzed.

**R1.3 Solid Radioactive Waste (Radwaste) and Transportation Programs**

a. Inspection Scope

The inspectors reviewed the licensee's solid radwaste and transportation programs as described in the Final Safety Analysis report (FSAR) and Process Control Program. The review included records of past shipments (denoted below), interviews with applicable plant personnel, and a review of training records and NRC guidance documents concerning radwaste shipping and transportation. The licensee's implementation of the following station procedures was also reviewed:

- QCRP No. 5620-09 (Revision (Rev. 4)) "Administrative Package Process for Radioactive Material Shipments;"
- QCRP No. 5630-02 (Rev. 4) "Controls for Packaging Radioactive Material for Shipment;"
- QCRP No. 5620-06 (Rev. 0) "10 CFR 61 Waste Stream Sampling and Analysis;"
- QCAP No. 0610-02 (Rev. 3) "Radioactive Material Shipments;" and
- QCRP No. 5630-01 (Rev. 4) "Survey of Radioactive Material Shipments"

Additionally, the inspectors reviewed radwaste shipment Nos. 96-031 (Dewatered Condensate POWDEX Resin), 96-038 (Irradiated Material from Spent Fuel Pool), 97-009 (Torus Filters) and 97-001 (Dewatered Condensate POWDEX resin)

b. Observations and Findings

There were no significant changes in the solid radioactive waste processing program as described in the process control program and FSAR. Since 1995, the licensee has taken several steps to reduce waste generation including the use of recyclable (i.e. launderable) materials and increased worker training. However, continued station efforts to reduce the amount of radioactive material stored onsite has resulted in an increase in the volume and number of radwaste shipments. For example, as of June 1997, the licensee had made 145 shipments (about 37,000 ft<sup>3</sup>) compared to 287 shipments (about 88,247 ft<sup>3</sup>) total for 1996. The licensee expected these numbers to decline as the backlog of stored material was reduced.

The inspectors verified that the licensee maintained current copies of NRC, Department of Transportation (DOT) and applicable burial site regulations. Licensee personnel responsible for the transfer, packaging and transport of radwaste were delineated in writing, were trained (within the last two years) and were knowledgeable of the new DOT rules. These DOT requirements were also appropriately referenced in the aforementioned procedures. In particular, the inspectors noted that Procedure Nos. QCRP 5630-02 and QCRP 5620-09 correctly



stated the requirements for classifying shipments as Low Specific Activity (LSA) Types I and II and Surface Contaminated Objects (SCO) Types I and II, and for the use of system international (SI) units after April 1, 1997. The licensee did not plan to make waste shipments classified as either LSA Type III or fissile material.

The licensee used a vendor computer program (i.e. RADMAN) to classify waste, determine if any reportable quantity (RQ) limits were exceeded and to generate shipping papers. The inspectors verified that the program database contained the correct RQ and radwaste activity limits for waste classification and, through independent calculation, that Shipment No. 96-031, had been appropriately characterized. For the other mentioned shipments, the inspectors verified that the shipping papers were consistent with the regulations, that SI units were used (if applicable), and that the shipments were appropriately tracked and logged. Additionally, the inspectors verified that valid licenses and certificates of compliance were used for shipping casks and high integrity containers (HICs). During this review, the inspectors identified that the licensee had been incorrectly recording the time that HICs were exposed to sunlight. This time was tracked to determine if a HIC had suffered potential degradation due to exposure to ultraviolet radiation, but was not a regulatory requirement. The licensee determined that no HIC had received a significant amount of exposure and counseled radwaste personnel on the tracking expectations.

Scaling factors for 10 CFR Part 61 waste characterization analyses were generated as described in Procedure No. QCRP 5620-06. This procedure contained provisions for licensee review of scaling factor results from routine sampling and/or after significant changes in reactor water chemistry. The inspectors' review determined that the scaling factors were determined consistent with the guidance contained in the NRC Branch Technical Position on waste classification and waste form and that the scaling factors being used as of June 1997, agreed with past results.

c. Conclusions

The licensee's solid radwaste transportation program was technically sound and implemented consistent with regulatory requirements. One weakness was identified in the licensee's tracking and documentation for the amount of time HICs were exposed to sunlight.

**R1.4 Liquid Effluent Program**

a. Inspection Scope (84750)

The inspectors reviewed selected portions of the licensee's liquid effluent control program including effluent results, effluent control instruments, monitor calibrations and alarm set points, monitor operability, and several effluent discharge releases.

b. Observations and Findings

There were no significant changes in the licensee's liquid effluent systems as described in the Off-Site Dose Calculation Manual (ODCM) and the FSAR. Quantification of liquid discharges was completed in accordance with the

appropriate procedures, and the inspector verified that offsite doses and effluent release monitor setpoints were calculated using ODCM methodology. As described in the FSAR, plant liquids, including chemical waste liquids, were primarily processed and reclaimed by the use of filters and resin beds. Liquid releases consisted primarily of batch releases of laundry and floor drain water.

The inspectors observed work request tags on various components on the liquid radwaste control panel, some of which were over a year old. Although none of the components needing repair were associated with safety related systems, in some cases the operators had to work around the equipment to complete their work. In two cases the repairs were required for systems that were important in preventing radwaste tank overflows, a condition that could cause unnecessary personnel radiation exposure during cleanup. The licensee indicated they were aware of the work requests and were in the process of addressing the problems.

Records of radwaste monitoring equipment availability indicated that with the exception of the Units 1 and 2 service water monitors, all other process monitors had few operability problems and good availability. The service water monitor availability was affected by problems with the loss of domestic water (needed for the operability of the monitors) and recent station construction modifications in the area of the monitors. However, the inspectors verified that the licensee had implemented the appropriate compensatory measures when these monitors were inoperable.

c. Conclusions

The liquid monitoring program was effectively implemented and effluent monitor operability was good. Some concerns were identified with outstanding work requests on the liquid radwaste control panel, but these concerns were being addressed by the licensee.

R2 **Status of RP&C Facilities and Equipment**

R2.1 **Condition of Radwaste Tank Rooms**

a. Inspection Scope

The inspectors reviewed the results of the licensee's annual inspection of the radwaste tank rooms, as required by station Procedure No. QCRP 6020-03 (Rev. 4) "Radiological Surveys." As listed in Attachment E to this procedure, the rooms inspected included the Units 1 and 2 reactor water cleanup (RWCU) phase separator pump and tank rooms, and the waste sludge tank, condensate phase separator tank and waste collector tank rooms (which included the floor drain collector and chemical waste tanks). These tanks were all controlled as locked high radiation areas.

b. Observations and Findings

This inspection program was started in 1996 in response to several industry findings regarding the degradation of radwaste tanks. As of June 1997, the



licensee had made three entries into these rooms (in February 1996, September 1996 and April 1997) and had planned another entry in late 1997. The tank room condition was initially verified by personnel entries, but later a remote robot (with a camera attachment) was used to reduce worker exposure. The total exposure for the above three entries was about 160 mrem.

The inspectors observed videotapes and photographs documenting the results of these walkdowns. Most of the rooms were in good condition, although there were some examples of poor housekeeping primarily from past jobs. However, there were signs of corrosion and leakage in the floor drain collector tank and the chemical waste tanks. Specifically, a small 6-8" stalactite was observed near the bottom of the floor drain collector tank and significant through-wall corrosion was observed on a Y-junction with the chemical waste tanks overflow and unknown system piping (this line was not documented in plant drawings). The licensee identified the problems during the 1996 inspections and verified, in 1997, that the tanks' condition had not deteriorated. The licensee was developing a plan to address the identified deficiencies.

c. Conclusions

The licensee was effectively implementing the inspection program for infrequently entered tank rooms and was addressing deficiencies found during these inspections.

**R2.2 Documentation of Past Radiological Events Per 10 CFR Part 50.75(g)**

a. Inspection Scope

The inspector reviewed the licensee's documentation of spills or unusual occurrences involving the spread of contamination in or around the facility as required by 10 CFR Part 50.75(g). The licensee's program was administered under station Procedure No. QCRP 6100-01 (Rev. 0) "10 CFR 50.75(g) Documentation."

b. Observations and Findings

The licensee's radiation protection group maintained an index of events (including those addressed under the former 10 CFR 20.302) that required documentation under 10 CFR 50.75(g). This index summarized the date of the occurrence, the associated system, the event synopsis, the contamination location and the resolution (i.e. if decontaminated). The supporting data for each event (such as disposal records and isotopic sampling and analysis results) were maintained in a separate file in the radiation protection office. As of June 1997, a total of 32 events was documented with the first instance occurring in April 1974. The inspectors selectively verified these entries through interviews with several employees having a long-term association with the site and by reviewing past NRC inspection reports.

However, the inspectors identified that documentation for the waste water and sewage treatment outdoor sludge drying areas was not included in the 10 CFR 50.75(g) decommissioning file. These areas had uniform, low levels of contamination and were being controlled as satellite radiation protection areas.

Although these areas were contaminated through normal reactor operations and not from spills or other abnormal events, they would still be considered for cleanup during site decommissioning. The licensee planned to evaluate these items for inclusion into the decommissioning files.

c. Conclusions

The licensee was effectively maintaining records of spills and other unusual occurrences involving the spread of radioactive contamination, as required by 10 CFR 50.75(g). The licensee was considering for inclusion in the decommissioning files areas contaminated during normal reactor operation, such as the waste water and sewage treatment outdoor sludge drying areas.

**R4 Staff Knowledge and Performance in Radiation Protection and Chemistry**

**R4.1 Solid Radwaste Processing Activities**

a. Inspection Scope

The inspectors observed the condition of the solid radwaste processing and radioactive material storage areas including the Radwaste Mausoleum, Interim Radwaste Storage Facility and the Radwaste, Laundry-Tool-Decon (LTD) and Dry Active Waste buildings. During the walkdown the inspectors observed the transfer and subsequent dewatering of resin from the max-recycle spent resin tank and routine DAW sorting and handling activities. There were no licensee shipments occurring during this inspection. Additionally, the inspectors interviewed workers regarding procedural and RWP requirements, and reviewed the routine exposures from radwaste activities since 1995 and the licensee's records of HAZMAT training (including the lesson plans) required by 49 CFR Part 173, Subpart H.

Specific documents reviewed during this inspection included:

- RWP Nos. 974002 (Rev. 0) "Radwaste and Radioactive Material Shipping Activities" and 973003 (Rev. 1) "DAW Reduction: Sort/Compact High Radiation/Contaminated Material;" and
- Station Procedures No. QCOP 2099-6 (Rev. 11) "Transfer and Dewatering of Max-Recycle Spent Resin Tank via "B" Transfer Header," QCAP 100-15 (rev 1) "Review and Acceptance of Contractors' and Subcontractors' Procedures," CNSI FO-OP-033-44506 (Rev. 1) "Set-Up and Operating Procedure for the RDS-1000 Unit at Quad Cities," and CNSI FO-AD-002 (rev 24) "Operating Guidelines for Use of Polyethylene High Integrity Containers."

The CNSI procedures were vendor procedures developed by the radwaste contractor.

b. Observations and Findings

During the walkdowns, the inspectors identified continuing problems with the posting and labeling of radiological areas and radioactive materials, respectively,

and with radiological housekeeping of work areas. Specifically, the following was observed:

- In the Radwaste Mausoleum the inspectors observed a contaminated area boundary (i.e. rope and posting) which did not clearly delineate the affected area. Although the RP group subsequently determined the area was not contaminated, they were not aware of this posting until notified by the inspectors;
- In the Radwaste Mausoleum and DAW and LTD buildings, the inspectors observed carts (having fixed contamination) and drums (containing radioactive material) where older radioactive material labels had not been removed, which could confuse workers regarding the actual contents or radiological conditions of the package; and
- In the LTD building, the inspectors observed poor radiological housekeeping of the mechanical and electrical maintenance work areas. Although this problem was partially attributed to outage recovery activities, these areas have been of recurring concern in previous NRC inspections.

The inspectors also questioned the adequacy of the licensee's controls over radioactive material stored in the mausoleum and DAW building. Poor control of stored radioactive material was one of the contributing causes identified by the licensee for several events where such material was found outside the RPA. Although no regulatory violations were identified, these observations were considered a weakness in the licensee's radiological controls of these areas. The licensee planned to evaluate these observations and develop corrective actions.

Based on the work observations and personnel interviews, the inspectors concluded that the resin transfer/dewatering and the DAW sorting/handling activities were well conducted and that personnel were knowledgeable of procedural and RWP requirements. In particular, the inspectors observed good licensee oversight of contractor activities and communication between the radwaste and main control rooms during the resin transfer. However, the inspectors did identify some concerns regarding exposure and contamination control. Specifically:

- Step D.3 of Procedure No. QCOP 2099-66 warned operators of possible increased dose rates in the max-recycle rooms during the resin transfer. However, there were no formal controls over personnel access to this area nor was radiation protection aware of this procedural step.
- The resin transfer line was located near the control panel for the resin dewatering system. Normal dose rates in this area were between 1-2 mrem/hr and the transfer process required that an operator be near the panel for several hours a day for 1-3 days. The licensee had established compensatory actions for the transfer of RWCU resin, which raised dose rates near the operator to 30-50 mrem/hr, but had not considered other resin transfers which could also raise dose rates. These elevated dose rates could result in high aggregate dose to the operator, given the time spent in the area.

- During interviews, licensee personnel stated that the most likely problem during resin dewatering was plugging of the transfer hoses, and described the corrective actions that would be taken. However, the inspectors observed that this problem and the associated corrective actions were not addressed in the resin dewatering procedure (No. CNSI FO-OP-032-44506). A similar problem had resulted in a worker receiving a significant contamination, during resin transfer activities at another industry site.

Additionally, the inspectors identified a discrepancy in the licensee's process for reviewing vendor procedures. Specifically, the process control program required that vendor procedures be submitted to an onsite review prior to use. Based on discussions with radiation protection and radwaste operations management, this requirement meant a formal review by the station onsite review committee (ORC). However, the station's procedure for reviewing vendor documents (No. QCAP 1100-15) did not require ORC review. The inspectors noted that the aforementioned vendor procedures (Nos. CNSI FO-OP-032-44506 and FO-AD-002) were reviewed by the ORC. The licensee planned to evaluate the discrepancy and to determine whether vendor procedures had been appropriately reviewed for technical concerns.

Radiation exposure for radwaste activities was low and was consistent with the increase in processing and shipping activities as discussed in Section R1.3. Specifically, the exposure totals were (as of June 1997):

	<u>1995</u>	<u>1996</u>	<u>1997</u>
DAW Sorting/Compacting:	2.00 rem	2.17 rem	0.78 rem
Radioactive material shipping:	4.37 rem	6.08 rem	1.36 rem

For the 1997 data, the individual dose totals ranged from 52-460 mrem and were distributed among workers having average lifetime dose totals (about 2-5 rem) in the station laborer group. Through discussions with the workers and a review of station records and lesson plans, the inspectors verified that personnel involved in radwaste shipping and transportation activities (i.e. radwaste shipment coordinators, station laborers and radiation protection technicians) had received required DOT HAZMAT training consistent with their assigned responsibilities.

#### c. Conclusions

The inspectors observed good procedural adherence and management oversight during resin transfer and routine DAW processing. The overall exposure for these activities was low and consistent with the increase in shipping activities since 1995. One weakness was identified with the licensee's radiological controls of the radwaste storage and processing areas. Additionally, some concerns were identified with the radioactive material control and accountability in the DAW building and radwaste mausoleum and with the control of exposure and radioactive material during resin transfers. One discrepancy was identified regarding the requirements for the review of vendor procedures as stated in the process control program and in station procedures.



**R7 Quality Assurance in RP&C Activities**

**R7.1 Solid Radwaste and Transportation Audits**

**a. Inspection Scope**

The inspectors reviewed licensee actions following several violations identified by the NRC during a January 1997 inspection of the radwaste transportation and shipping program (Inspection Report No. 50-295/304-96021) at the Zion nuclear station. In response to these issues, the licensee initiated PIF No. 97-1258 (dated March 31, 1997) and conducted a corporate audit (concluding on April 11, 1997) of this program.

**b. Observations and Findings**

The licensee's self-assessments concluded that the shipping and transportation program was technically sound and had not resulted in any significant shipping events. However, there were several concerns identified regarding the accuracy of shipping procedures, the adequacy of HAZMAT training, the implementation of the 10 CFR part 61 program, the use of the interim radwaste storage facility and DAW storage buildings and the description of the shipping program pertaining to job positions and responsibilities. For example, the auditors identified that the licensee's use of the interim radwaste storage facility and DAW buildings was inconsistent with the associated 10 CFR 50.59 safety evaluations. These evaluations were performed with the intent to use these buildings for the extended storage of radwaste following the 1994 closure of the burial sites. When the burial site access was reinstated in 1995, the licensee shipped all previously stored material and began using the buildings as radioactive material storage areas. However, the subsequent stored material was not packaged in a form ready for shipment nor free of surface contamination as stated in the safety evaluation. The auditors were concerned that this practice resulted in a regulatory violation.

The inspectors independent review concluded that the audit was thorough and effectively addressed those areas found deficient during the above Zion inspection. The identified findings were not of a significant regulatory nature and, based on discussions with the licensee, were being effectively resolved. For the above example, NRC guidance has been that a safety evaluation was not required for the above buildings nor for the storage of radioactive material in satellite radiation protection areas. Although the licensee's failure to meet the safety evaluation requirements was not considered a violation, the inspectors agreed with the auditors' conclusion that the failure to revise the safety evaluation was a weakness in the management oversight of these buildings. The licensee planned to revise the safety evaluations for the above buildings and to develop corrective actions for the other findings.

**c. Conclusions**

The licensee's audit of the radwaste transportation program was technically sound and did not identify any significant shipping events.



**R8      Miscellaneous RP&C Issues**

The following items identified in previous inspection reports were reviewed by the inspectors:

(Closed) VIO 50-254/265-97003-01: Violation for failure to follow RP procedures. The licensee reposted the Unit 2 "A" residual heat removal drainage trough and relabeled the check sources on the service and radioactive waste effluent monitors. Other, similar controls were also verified in the remaining Units 1 and 2 corner rooms and radiological monitors, respectively. The applicable station Procedure, No. QCRP 5010-1 "Radiological Posting and Labeling" was also revised to clarify posting and labeling requirements for radioactive material. Based on these actions, this item is closed.

**X1      Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on June 13, 1997. The licensee acknowledged the findings presented and did not identify any of the documents listed as proprietary. A partial listing of those attending the exit included:

P. Bherins, Chemistry Supervisor  
D. Cook, Operations Manager  
E. Kraft, Station Vice-President  
W. Lipscomb, Work Control Superintendent  
L. W. Pierce, Station Manager  
G. Powell, Radiation Protection Manager  
W. Schmidt, ALARA Supervisor  
R. G. Svaeson, RP/Chemistry Superintendent  
M. B. Wayland, Maintenance Manager  
A. Williams, Radwaste shipment coordinator

### INSPECTION PROCEDURE USED

IP 83750	OCCUPATIONAL RADIATION EXPOSURE
IP 84750	REACTOR WATER CHEMISTRY AND GASEOUS AND LIQUID EFFLUENT RELEASE PROGRAM
IP 86750	SOLID RADIOACTIVE WASTE AND TRANSPORTATION PROGRAM

### ITEMS OPENED, CLOSED or DISCUSSED

#### Open

VIO 50-254/265-97009-01	Individual locked inside an LHRA (Section R1.1)
-------------------------	---

#### Closed

VIO 50-254/265-97003-01	Failure to follow RP procedures (Section R8)
-------------------------	--

#### Discussed

None

## LIST OF ACRONYMS USED

ALARA	As-Low-As-Reasonably-Achievable
RWP	Radiation Work Permit
ODCM	Offsite Dose Calculation Manual
FSAR	Final Safety Analysis Report
Rev.	Revision
DAW	Dry Active Waste
DOT	U. S. Department of Transportation
LSA	Low Specific Activity
SCO	Surface Contaminated Object
SI	System International
RQ	Reportable Quantity
HIC	High Integrity Container
RWCU	Reactor Water Cleanup
LTD	Laundry-Tool-Decon
mrem/hr	Millirem per hour
RP&C	Radiation Protection and Chemistry

## LIST OF DOCUMENTS REVIEWED

NRC Waste Technical Position, Revision 1 (dated January 24, 1991)  
 NRC Final Waste Classification and Waste Form Technical Position Papers (dated May 11, 1983)  
 NRC Final Branch Technical Position on Concentration Averaging and Encapsulation (dated April 12, 1994)  
 NRC Supplemental Guidance on the Implementation of 10 CFR part 61 (dated January 30, 1994)  
 NRC IE Bulletin No. 79-19 "Packaging of Low-Level Radioactive Waste for Transportation and Burial" (dated August 10, 1979)  
 NRC Generic Letter No. 95-09 (and supplements) "Monitoring and Training of Shippers and Carriers of Radioactive Materials" (dated November 3, 1995).

### Station Procedure Nos:

QCRP 5620-09 (Rev. 4)	Administrative Package Process for Radioactive Material Shipments
QCRP 5630-02 (Rev. 4)	Controls for Packaging Radioactive Material for Shipment
QCRP 5620-06 (Rev. 0)	10 CFR 61 Waste Stream Sampling and Analysis
QCAP 0610-02 (Rev. 3)	Radioactive Material Shipments
QCRP 5630-01 (Rev. 4)	Survey of Radioactive Material Shipments
QCOP 2099-6 (Rev. 11)	Transfer and Dewatering of Max-Recycle Spent Resin Tank via "B" Transfer Header
QCAP 100-15 (Rev. 1)	Review and Acceptance of Contractors' and Subcontractors' Procedures
QCRP 6100-01 (Rev. 0)	10 CFR 50.75(g) Documentation
QCRP 5010-01 (Rev. 6)	Radiological Posting and Labeling
QCRP 6020-03 (Rev. 4)	Radiological Surveys
QCCP 0400-09 (Rev. 2)	Fe-55, Sr-89, Sr-90, and Gaseous Alpha Release
QCCP 0300-02 (Attachment A)	Liquid Waste Worksheet
QCCP 0300-02 (Attachment B)	Calculation of Liquid Waste Activity
QCCP 0300-02 (Attachment C)	Calculation of Liquid Waste Activity
CNSI FO-OP-033-44506 (Rev. 1)	Set-Up and Operating Procedure for the RDS-1000 Unit at Quad Cities
CNSI FO-AD-002 (Rev. 24)	Operating Guidelines for Use of Polyethylene High Integrity Containers

Radiation Work Permits (RWPs) Nos:

974002 (Rev. 0) "Radwaste and Radioactive Material Shipping Activities"  
973003 (Rev. 1) "DAW Reduction: Sort/Compact High Radiation/Contaminated Material"  
972082 (Rev. 0) "2B Recirculation Pump: Remove/Replace/Test Seal"

PIF No. Q1997-02321 (dated 5/15/97) "Worker locked in a Locked High Radiation Area"

PIF No. 97-1258 (dated 3/31/97) Review of Radwaste Shipping Program

Corporate Audit Report No. DG-97-13/QDC (dated April 4, 1997) Radioactive Waste  
Management/Radioactive Material Transport and Quad Cities Station