U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-254/85025(DRSS); 50-265/85028(DRSS)

Docket Nos. 50-254; 50-265 Licenses No. DPR-29; DPR-30

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Facility Name: Quad Cities Nuclear Power Station, Units 1 and 2

Inspection At: Quad Cities Site, Cordova, Illinois

Inspection Conducted: August 26-29, 1985

Inspector: for D. E. Miller 9/18/85
Date

Approved By: L. R. Greger, Chief 9/18/85
Facilities Radiation Protection Section Date

Inspection Summary

Inspection on August 26-29, 1985 (Reports No. 50-254/85025(DRSS); 50-265/85028(DRSS))
Areas Inspected: Routine unannounced inspection of the licensee's solid radwaste management and transportation programs. Also reviewed were open items, licensee actions in response to selected IE Information Notices, a condensate storage tank leak, and followup of allegations. The inspection involved 30 inspector-hours onsite by one NRC inspector.
Results: No violations or deviations were identified.

## DETAILS

1. Persons Contacted

*R. Carson, Lead Health Physicist
J. Forrest, Radwaste Planner
D. Gibson, QA Supervisor
K. Hall, Health Physics Coordinator
S. Horvath, ALARA Health Physicist
*N. Kalivianakis, Station Manager
*C. Norton, QA Engineer
R. Petri, Radwaste Engineer
J. Piercy, ALARA Coordinator
*J. Sirovy, Rad/Chem Supervisor
*B. Strub, Compliance Coordinator
*T. Tamlyn, Services Superintendent
R. Venci, Health Physicist

*A. Madison, NRC Senior Resident Inspector

The inspector also contacted several other licensee personnel including members of the technical staff.

*Denotes those present at the exit meeting.

2. General

This inspection, which began at 9:30 a.m. on August 26, 1985, was conducted to examine the licensee's solid radwaste and transportation programs. Also examined were licensee action on past open items and selected IE Information Notices, a storage tank leak, and an allegation. During the inspection, several tours of radiologically controlled areas were made; posting, access controls, contamination controls, and housekeeping appeared good.

3. Licensee Action on Previous Open Item

(Closed) Open Item (254/85019-02; 265/85021-02)· Need for further review of allegations made by a previous contractor. (See Section 9 for details.)

4. Solid Radioactive Waste

The inspector reviewed the licensee's solid radioactive waste management program, including: determination whether changes to equipment and procedures were in accordance with 10 CFR 50.59; adequacy of implementing procedures to properly classify and characterize waste, prepare manifests, and mark packages; overall performance of the process control and quality assurance programs; adequacy of required records, reports, and notifications; and experience concerning identification and correction of programmatic weaknesses.

The licensee's packaged radwaste consists of:

- Bead resins cement solidified in 55-gallon drums.
- Filter sludges cement solidified onsite in steel liners by a vendor.
- Bailed dry active waste loaded in steel bins.
- Dry active waste (DAW) compacted (or uncompacted) in 55-gallon drums.
- Oil solidified in 55-gallon drums.

As described in Inspection Reports No. 254/84-13; 265/84-11, the licensee had experienced difficulty in solidification of resins and filter sludges with the DOW process because of the presence of organics in the resins; use of the DOW process had been suspended; all resin and filter sludge solidification was currently being performed in the licensee's installed cement solidification system which packages 55-gallon drums. Since September 1984, filter sludges have been cement solidified in steel liners (housed in a shielding cask) onsite by Chem Nuclear Systems, Inc. (CNSI). The CNSI packaging system is located in the radwaste truck bay where DOW system packaging had been performed. The licensee feeds filter sludge to the CNSI fill head instead of the DOW fill head; no major plant systems changes were necessary. One liner is filled at a time; it is left in place until cured, and then transported for burial. No fluids leave enclosed buildings during the packaging process.

Use of the vendor's system for packaging filter sludge, which contains higher specific activity radioactive contents than the licensee's resins, is preferable because much less handling is involved (ALARA), packaging efficiency is slightly greater, and there is slightly less burial volume. The method is both cost effective and dose effective.

During a tour of the CNSI packaging area and equipment, the inspector noted that the truck bay was cluttered because the DOW system feed lines remained installed and the CNSI lines had been added. The licensee stated that the DOW lines will be removed if a decision never to use the DOW process is made; the decision will be made soon. At present, the licensee plans continued use of a vendor for at least another year.

The licensee continues to cement solidify bead resins in 55-gallon drums using the installed equipment. The bead resins normally contain less radioactivity because they are mostly used for water polishing. The dose rate from these packaged drums is low enough to permit truckload shipments; previously solidified filter sludge (55-gallon drums) had to be shipped in shielding casks.

A Muncher compactor compresses DAW into about 1000-pound steel banded bails. The compactor appears adequately ventilated. DAW whose radiation levels exceed 100 mR/hr are not bailed but are packaged in 55-gallon drums. The compacted bails are loaded into steel bins, called Muncher

bins, having a capacity of 8000 pounds. The bins have not been subjected to DOT Specification 7A test requirements because they are used only for packaging of low specific activity wastes. Acceptance of the bins is, however, subject to a quality control procedure.

Waste oil containing small quantities of radioactive contaminants is cement solidified by hand; a portable motor driven mixer is used to mix the hand loaded oil and cement in 55-gallon drums. Solidification of each drum is visually verified.

The licensee has no significant backlog of packaged or unpackaged wastes. Temporary storage in the radwaste areas was orderly and control of radiation and high radiation areas was in accordance with regulations.

No violations or deviations were identified.

5. Transportation of Radioactive Materials

The inspector reviewed the licensee's transportation of radioactive materials program, including: determination whether written implementing procedures are adequate, maintained current, properly approved, and acceptably implemented; determination whether shipments are in compliance with NRC and DOT regulations and the licensee's quality assurance program; determination if there were any transportation incidents involving licensee shipments; adequacy of required records, reports, shipment documentation, and notifications; and experience concerning identification and correction of programmatic weaknesses.

Two radioactive material transportation problems were described in Inspection Reports No. 254/85019; 265/85021. No other incidents occurred during 1984 or 1985 to date. Quality assurance audits are discussed in Section 6.

The inspector selectively reviewed records of radwaste shipments made during 1985 to date; also, changes to previously reviewed procedures were selectively reviewed. The licensee's implementing procedures are well written, maintained current, and are adhered to. Maintenance of records is adequate. No problems were noted.

No violations or deviations were noted.

6. Radwaste Related Audits and Surveillances

The inspector reviewed documentation of radwaste related audits and surveillances performed by onsite quality assurance personnel during 1985.

An audit of selected portions of the radwaste program was conducted in May, and an audit of selected radiation protection surveys and records was conducted in August. The first audit identified one finding concerning lack of a process control procedure for solidification of radioactively contaminated oil. In response to the audit, a temporary

procedure was written and implemented. The audit finding was left open pending permanent procedure development and implementation. The second audit resulted in one observation concerning adequacy of documentation for entrance and exit surveys of vehicles that transport radwaste. Response to this audit finding is due September 16, 1985.

A surveillance check of each radwaste shipment is made by QA representatives. Identified during 1985 was a crack in a trailer tongue, a crack in a trailer main support beam, and an improperly placarded trailer. Corrective measures were completed before shipments left the site.

Extent of audits, qualifications of auditors, and adequacy of corrective actions were reviewed. No problems were noted.

No violations or deviations were identified.

7. Condensate Storage Tank Leak

On July 24, 1985, the licensee found that water seepage was entering the radwaste building through a concrete wall about five feet below grade. Analysis showed that the water was condensate storage water. The water was apparently coming from a rupture in the four-inch pipe used to transfer processed water from the liquid radwaste treatment facility to the condensate storage tank. A portion of this pipe is beneath the maximum recycle building. The licensee isolated the pipe and the seepage stopped. The licensee has since run a new pipe within the maximum recycle building to replace the underground portion of the old pipe. The underground portion was severed where it went underground and emerged from underground in the maximum recycle building. The old pipe remains in place.

Based on gamma isotopic analysis, the radioactivity in the condensate storage tank water was less than the maximum permissible concentration for unrestricted areas when the leak was discovered. Total activity released to the soil cannot be determined because the volume of liquid leaked is unknown. The licensee believes that the leak was not large because no condensate storage tank level changes were noted. The licensee collected water samples from the storm sewer, near the leak location, after the leak was discovered; no activity was detected.

The licensee is discussing with NRR the eventual disposition of the underground pipe and associated contaminated soil. This matter will be reviewed further during future inspections. (Open Item 254/85025-02; 265/85028-01)

No violations or deviations were identified.

8. IE Information Notices

The inspector reviewed licensee action in response to the following selected Information Notices. The actions are considered adequate.

No. 85-42: Loose Phosphor in Panasonic 800 Series Badge Thermoluminescent Dosimeter (TLD) Elements. The licensee has purchased and is using this type of TLD. The program recently began; most TLDs have been read less than five times. In response to this notice, the licensee instituted a procedure change to require examination of selected TLDs after 100 reads. Frequency and extent of reexaminations thereafter will be based on results of previous examinations, suspect badges will be replaced.

No. 85-43: Radiography Events at Power Reactors. Rad/chem personnel were aware of the contents of this notice and stated that most radiography performed at the Station is done in the drywell where personnel accountability is maintained whenever entry is made. During radiography operations in other portions of the Station, rad/chem personnel work with the radiographer to assure that station and radiographer procedures are adhered to.

9. Inquiry from Representative Michel Concerning Former Contractor Employee

An allegation concerning alleged radiation injuries to a former contractor employee was reviewed previously; the findings are documented in Inspection Reports No. 50-254/84-13; No. 50-265/84-11. Subsequent to that review, Representative Michel, Member of Congress, sent a letter dated January 11, 1985, to the NRC Chairman regarding the concerns of the former contractor employee. A letter of response from NRC was sent to Representative Michel on February 5, 1985.

The letter from Representative Michel to the NRC Chairman related two new concerns of the former employee: (1) "The dangers of the working conditions at the power house are not fully explained to workers...," and (2) "...detection devices are not fully calibrated for the large amounts of radiation encountered." On June 19, 1985, the inspector contacted the former contractor employee by telephone. The inspector asked the former employee for specific information regarding his concerns about training and dosimetry at Quad Cities Station. The former employee provided no specific information about his concerns. The inspector informed the former employee that previous inspections of general employee training and dosimetry calibration conducted during 1984, at Quad Cities Station, did not identify noncompliance with NRC regulations. These areas were reviewed during this inspection and are discussed below.

- Allegation: The dangers of the working conditions at the power house are not fully explained to workers.

  Discussion: The outline for the radiation protection portion of the Nuclear General Employee Training (NGET) provided when the alleger was at the Station was reviewed. The training included biological effects of exposure to ionizing radiation, the mechanistic causes of the biological effects, and relative risks. The training met the requirements of 10 CFR 19.12 "Instructions to Workers." Industrial safety is also taught during NGET.

The inspector reviewed the test taken by the alleger at the end of his NGET class. It was a standard test used by the licensee at the completion of NGET. The test included questions concerning biological effects (dangers) of exposure to radiation. At the bottom of the test sheet are two statements; one to acknowledge being informed with respect to the theory and practice of radiation protection, the other to acknowledge the opportunity to review the examination with the instructor to insure the attendee's complete understanding of the potential hazards of working with ionizing radiation; the alleger signed the acknowledgement.

All work done by the alleger in radiologically significant areas of the station were performed under a Radiation Work Permit (RWP), in accordance with licensee procedures. The RWPs relate the radiological conditions at the work site, precautions to be taken, and protective devices/clothing required. The alleger signed the RWPs, acknowledging that he had read them and was informed of the radiological conditions/ requirements.

The licensee's NGET and RWP programs, established to inform workers of radiological hazards and precautions, conform to regulatory requirements and industry standards.

This allegation was not substantiated.

- Allegation: Detection devices are not fully calibrated for the large amounts of radiation encountered.

  Discussion: The inspector reviewed the licensee's procedures for testing and calibration of pocket dosimeters, and for dose spiking of film badges. Also reviewed were the licensee's records of tests and calibrations. The licensee performs the tests and calibrations in accordance with applicable regulatory guides and industrial standards. No problems with the licensee's procedures, methods, or results were identified.

  The allegation was not substantiated.

No violations or deviations were identified during this review.

10. Exit Meeting

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on August 29, 1985. The inspector discussed the scope and findings of the inspection. The inspector also discussed the likely information content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee identified no such documents/processes as proprietary.