

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-254/82-15(DETP); 50-265/82-17(DETP)

Docket Nos. 50-254; 50-265

Licenses No. DPR-29; DPR-30

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

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

Inspection At: Quad-Cities Site, Cordova, IL

Inspection Conducted: August 30 through September 2, 1982

Inspectors: *L. J. Hueter*
L. J. Hueter

10-8-82

W. B. Grant
W. B. Grant

10/12/82

Approved By: *L. R. Greger*
L. R. Greger, Chief
Facilities Radiation
Protection Section

10/12/82

Inspection Summary

Inspection on August 30 through September 2, 1982 (Reports
No. 50-254/82-15(DETP); 50-265/82-17(DETP))

Areas Inspected: Routine, unannounced inspection of operational radiation protection activities including: licensee audits; training; radiation protection procedures; surveys; instruments and equipment; and facilities. It also included review of certain transportation activities; testing of neutron attenuation of high density spent fuel racks; Hot Laboratory ventilation; contamination in the mechanical maintenance shop; person-remS associated with drywell hanger installation; response to certain Health Physics Appraisal significant findings; and status of certain NUREG-0737 Items. The inspection involved 76 inspector-hours onsite by two NRC inspectors.

Results: Of the thirteen areas inspected, no items of noncompliance were found in twelve areas. One item of noncompliance was found in one area (failure to use strong, tight packages for transportation of LSA radioactive waste - Section 9).

DETAILS

1. Persons Contacted

- R. Bax, Assistant Superintendent, Maintenance
- *R. Carson, Lead Health Physicist
- J. Forrest, Radwaste Planner
- *G. Gary, Lead Chemist
- *L. Gerner, Assistant Superintendent for Administrative Support Services
- *J. Heilman, QA/QC
- *N. Kalivianakis, Plant Superintendent
- T. Kovac, Radiation/Chemistry Supervisor
- R. Moore, Engineering Assistant, Chemistry
- J. Neil, Training Supervisor
- J. Piercy, ALARA Coordinator
- B. Strub, Nuclear Engineer
- T. Tamlyn, Assistant Superintendent, Operations
- R. Wiebenga, Chemist
- M. Warren, Training Instructor
- N. Griser, QA Auditor

- *S. DuPont, NRC Resident Inspector
- N. Chrissotimos, NRC Senior Resident Inspector

*Denotes those present at the exit interview.

2. General

This inspection, which began about 8:00 a.m. on August 30, 1982, was conducted to review the status of post-TMI requirements, previous inspection findings, and selected aspects of the operational radiation protection program. Tours included the reactor building refueling floor, the administrative building, the trackway, the high radiation sampling systems, and the maintenance machine shop. Radiological controls, posting, and housekeeping appeared to be good.

3. Surveys

The inspectors selectively reviewed surveys performed for radiation work permits. No problems were identified. The inspectors also reviewed routine direct radiation and contamination surveys¹ of the laundry facility and the maintenance shop area conducted over a period of months. Timeliness and quality of the surveys appeared satisfactory.

4. Training

During a previous inspection² involving followup of matters identified during the Health Physics Appraisal conducted in 1980, it was noted that the licensee had provided special training to existing stationmen

¹ Inspection Reports No. 50-254/81-08; 50-265/81-08.

² Ibid.

on proper use of the laundry monitor, but that no provision had been made to provide training to new stationmen who may be assigned this work activity. The licensee had committed to establish a laundry monitor training program for incoming stationmen. During this inspection, it was ascertained that such a training program has been established and implemented. Provision has been made for notification of the training department when new stationmen are hired, and records show that the training is provided shortly thereafter. The training outline was reviewed and appeared to adequately cover the subject matter.

5. Licensee Quality Assurance Audits

Two audits of chemistry and radiation protection were conducted during 1982. Audit QAO 4-82-23, conducted May 19, 1982, examined radiochemical and chemical control. No negative findings were identified during this audit. Audit QAO 4-82-33, conducted August 4-6, 1982, examined radiation protection - surveys, records, and instruments. Three negative findings were made. These matters are under review by the licensee.

No items of noncompliance or deviations were identified.

6. Radiation Protection Procedures

The inspectors reviewed 33 radiation protection procedures which were written or revised since the inspection conducted in February 1982. They appeared to be compatible with regulatory requirements and FSAR commitments. No problems were noted.

7. Instruments and Equipment

During the Health Physics Appraisal,³ it was noted that additional high range survey instruments were needed. The licensee now has a total of eleven portable high range survey instruments (some with underwater measurement capability) on hand, five of which are operable and in calibration. Some recently purchased instruments had not been calibrated. No further problems were noted.

During the Health Physics Appraisal, it was noted that area monitor charts in the control room were not legible. During a later inspection,⁴ it was noted that the printer heads on the multi-point recorders for both Unit 1 and Unit 2 area monitors had been cleaned, and a study had been completed by a contractor to evaluate possible further action. Following this, the licensee made the decision to replace the old recorders with new multi-point recorders (two for each unit). The new recorders have recently arrived on site. Installation was discussed at the exit meeting. (254/82-15-01, 265/82-17-01)

During the Health Physics Appraisal, it was noted that the capability of drawing representative iodine and particulate samples from the chimney should be evaluated. A licensee consultant reviewed the

³ Inspection Reports No. 50-254/80-20; 50-265/80-22.

⁴ Inspection Reports No. 50-254/81-08; 50-265/81-08.

isokinetic sampling capabilities of the current stack and reactor vent air samplers and the new stack and vent air sampler system being installed to meet NUREG-0737, Item II.F.1.2. The licensee had not completed its evaluation of the consultant's report. Further inspector review of this matter will be included under followup of NUREG-0737, Item II.F.1.2.

8. Facilities

During the Health Physics Appraisal, it was noted the combined personal decontamination and medical treatment facility was small, poorly equipped, and it inappropriately shared space with the whole body counter. It was also noted that secure storage space for survey instruments was not provided.

A recently completed service building addition corrected these shortcomings. Secured storage space is now provided and utilized for survey meters. The whole body counter has been moved from its shared location with the personal decontamination and medical treatment facility to a low background area of the new facility.

The medical treatment and personal decontamination facility was expanded into the area vacated by the whole body counter.

9. Transportation Occurrences

On June 22, 1982, and again on August 23, 1982, a total of three 55-gallon drums of solidified LSA radioactive waste shipped to U.S. Ecology in Richland, Washington, arrived with a small hole in each drum lid. In each case, the drums were contained within an NRC certified shipping cask and no release of radioactive material occurred. The holes in the drum lids resulted during loading or transportation when a lifting device for the lower drum pallet was pressed onto a drum lid by the weight of upper layer of drums causing metal deformation and cracking. The clevis pin on the lifting device apparently caused the holes. The clevis was intentionally placed on the drum lid at the request of the waste burial site to facilitate removal of the drums from the cask. The licensee apparently did not take appropriate corrective action following the June occurrence because of erroneous information concerning the location of the punctured drum. The clevis pin was correctly identified as the cause of the puncture following the second occurrence. The licensee's authorization to use the burial site was suspended in both cases. The authorization was reinstated by the State of Washington after corrective actions had been completed. Corrective actions included replacing the clevis with mechanical coupling links, and revising Procedure QOP 2090-10 "Loading Radwaste Drums into Top Loading Casks" and Procedure QOP 2090-11 "Loading Overpack Drums into Top Loading Casks" to ensure slings and lifting equipment are not placed on top of drums.

As noted on the shipping documents, the licensee considered the 55-gallon drums to be the shipping packages for these shipments. The holes in the drum lids are considered noncompliance with the strong and tight package requirements of 49 CFR 173.392(c)(1). (254/82-15-02, 265/82-17-02)

Attachments 1 and 2 to this report are inspection reports from NRC:RV pertaining to this matter. The items of noncompliance recommended in the attached reports are reflected in the preceding paragraph.

10. Installation and Testing of High Density Spent Fuel Racks

The licensee has received 4 of 39 high density spent fuel racks. The racks are designed to use boroflex sandwiched between stainless steel as a neutron absorber. The licensee stated that the function of the test described in this section was solely to demonstrate, with a 95 percent confidence level, the presence of the boroflex in every cell wall of the test group. According to licensee personnel, uniformity in the boroflex material was previously assured by quality control measures employed in the manufacture of the boroflex material. The licensee contracted National Nuclear Corporation to conduct the test. Eighty cells were randomly selected from the 854 cells in the 4 racks. During the period July 25-29, 1982, the four walls of all 80 cells were tested using a one mci californium-252 neutron source. All cell walls passed the test. The inspectors reviewed the results of the tests and no problems or anomalies were noted.

The inspectors also observed the installation of the first high density spent fuel rack in the Unit 1 fuel pool on August 30, 1982. All spent fuel had been moved from the area to enable a diver to aid the installation. The diver was remotely monitored for direct radiation from the surface and also had continuous voice contact. This was in accordance with licensee Procedure QRP-100-12, "Radiation Protection Requirements for New Fuel Rack Installation." No problems were noted.

No items of noncompliance were identified.

11. Status of NUREG-0737 Items

The following constitutes an update of the information provided in a previous inspection report⁵ regarding NUREG-0737 items (longterm). By letter dated April 15, 1982, CECO responded to Generic Letter No. 82-05 concerning the implementation status of various NUREG-0737 items. By letters dated August 27 and September 3, 1982, the licensee has notified the Commission of further delays in completion of some of the items (due primarily to delays in receipt of equipment) and has provided revised planned completion dates.

a. Post-Accident Sampling Capability (Task II.B.3.2)

The licensee has installed a high range sample system (HRSS), supplied by Sentry Systems, for both Units 1 and 2. The HRSS for each unit is located in a separate building adjacent to the reactor building. The building housing the HRSS is shielded and has its own charcoal/HEPA filtered ventilation system. The HRSS has the capability to obtain reactor coolant and containment atmosphere samples with proper dilution to permit analysis. The system has been tested and is considered operational.

⁵ Inspection Report No. 50-254/82-05; 50-265/82-06.

Procedures QCP-930-0 through QCP-1030-0 which address the operation of the sampling and analysis equipment in the HRSS were reviewed ; no problems were noted. Training has been given to RCTs and chemists. At the request of the inspectors, a technician and an engineering assistant demonstrated their knowledge of procedures and ability to collect and analyze reactor coolant samples using the HRSS. No problems were noted.

The licensee appears to have met the criteria of TMI Action Plan Task II.B.3.2 - Post-Accident Sampling, NUREG-0737. The Office of Nuclear Reactor Regulation will conduct a post-implementation review of this item.

b. Extended Range Noble Gas Effluent Monitor (Task II.F.1.1)

SPING-4 units, each having three separate noble gas detectors (low, medium, and high range), will be provided for the two pathways identified as needing extended range noble gas effluent monitors. A replacement has been obtained for one defective high range detector. Extensive lengths of improper cable (causing malfunctioning of the control terminals located in the control room) have been replaced with coaxial cable.

Calibration of the low and medium range detectors is being performed by the licensee while calibration of the high range detectors is being contracted to a vendor. A completed calibration of the low range detectors appeared satisfactory. However, calibration of the medium range detectors appears unsatisfactory in that the linearity was checked over a range of less than one decade, whereas the detectors are indicated as being usable over a range of several decades.

For calibration of the high range detectors, the licensee contracted with a vendor to determine the energy dependence of the monitors to a variety of radionuclides (krypton-85, xenon-127, and xenon-133) and at three source strengths of each radionuclide. Eight of nine gas "calibrations" had been completed as of this inspection with the final one expected very shortly. Development of procedures for calculational methods to convert instrument readings to release rates per unit time (based on exhaust air flow considering radionuclide spectrum distribution as a function of time after shutdown) have been contracted to a different vendor and are not completed.

The extended range noble gas effluent monitor remains an open item pending completion of the medium and high range calibrations. By letter dated September 3, 1982, the licensee has committed to complete calibrations and implement the extended range noble gas effluent monitors by October 15, 1982.

c. High Level Iodine and Particulate Effluent Sampling and Analysis (Task II.F.1.2)

The Victoreen accident range particulate and iodine shielded sampling system previously scheduled for delivery by September 1, 1982, has been delayed. However, the licensee still anticipates meeting the January 1, 1983, implementation date provided in the April 15, 1982 letter to the NRC, Division of Licensing.

The licensee has under consideration sampling system line modifications needed to more accurately provide for isokinetic sampling including heat tracing sample lines exposed to changing temperature conditions. These modifications are based on a study performed for the licensee by Scientific Applications, Incorporated.

The high level iodine and particulate effluent sampling and analysis system remains an open item pending delivery and installation of the shielded sampling system.

d. Containment High Range Radiation Monitors (Task II.F.1.3)

Two General Atomic high range radiation monitors have been installed in drywell seal penetrations on opposite sides of each containment. The monitors have been electronically calibrated throughout the range of the instruments and bugged with a radiation source to demonstrate response to radiation. Calibration with a large cesium-137 sealed source irradiator has not been accomplished. The irradiator that was to arrive from the vendor in April 1982 still has not arrived. Also, longer detector cables are needed to allow for removal of each detector from its penetration high above floor level and allow it to be brought down to the irradiator for source calibration. The needed cable has been ordered. The licensee stated that the latest commitment from the vendor for delivery of the irradiator is early October. Based on the vendor commitment, the licensee submitted a letter dated August 27, 1982, to NRC, Division of Licensing, committing completion of this item by October 30, 1982.

On June 1, 1982, the licensee submitted to NRC, Division of Licensing, procedures and correction factors to modify the instrument readings to correspond with the actual radiation levels inside containment versus time after a LOCA. This was in response to the deviation from the stated position of NUREG-0737 regarding placement of the containment high range monitors in drywell sealed penetrations rather than in the containment proper. In a telecon with NRC Division of Licensing, the inspector learned that an SER, accepting the deviation based on the procedures and correction factors submitted by the licensee, is in preparation.

The licensee has committed to complete the containment high range radiation monitor source calibrations by October 30, 1982. This matter remains open.

12. Hot Laboratory Ventilation (Leaking Xenon-133 Calibration Source)

During a licensee conducted drill, in April 1981, to critique the short-term solution for handling post-accident coolant samples, the need for improved air flow in the Hot Laboratory hood(s) was identified.⁶ Upon opening an outer shipping container of a leaking xenon-133 source in the Hot Laboratory in February 1982, the need for improved hood/room exhaust flow was again identified.⁷ The licensee has contracted a consultant to evaluate the laboratory hood system to see if the current system can be adjusted or if modifications are needed. The need to consider the laboratory room exhaust flow as well as hood exhaust flow was discussed at the exit meeting.

The leaking xenon-133 was retained in the laboratory hood until no activity remained as determined by radioactive decay and verified by radiation survey. The empty source container was then returned to the manufacturer for evaluation. The licensee is in the process of revising procedures for receiving and opening packages of radioactive materials. The procedure revision was discussed in the exit meeting. (254/82-05-01, 265/82-06-01)

13. Contamination Occurrence Originating in Mechanical Maintenance Shop

On August 9, 1982, a reactor water cleanup pump was removed from the pump room in the reactor building, wrapped in plastic, and taken to the decontamination area of the service building maintenance shop for decontamination and repair. The work activity was conducted under a Special Work Permit (SWP) and continuous monitoring was provided by a radiation/chemistry technician (RCT). Due to the limited nature of the repair, a decision was made to forego planned ultrasonic cleaning. Although this decision apparently was not inconsistent with previous practice, radioactivity from the pump became airborne, resulting in widespread contamination in the maintenance shop, electrical shop, maintenance foreman's office, storeroom, and service building. All first floor areas of the old service building were immediately evacuated. Contributing to the spread of contamination was the use of a work table which was not equipped with an exhaust hood and the existence of a rather strong inward air flow through a nearby open roll-up door. All contaminated areas were decontaminated to acceptable levels. No contamination was found outside the building. Full face masks and protective clothing were worn by those individuals working on the pump. Whole body counts on representative personnel showed no evidence of significant internal exposure.

Although no violation of Station procedures occurred, the decision not to ultrasonic clean the pump before performing the maintenance was not communicated to radiation protection supervisory personnel for their evaluation.

⁶ Inspection Report No. 50-254/81-08; 50-265/81-08.

⁷ Inspection Report No. 50-254/82-05; 50-265/82-06.

The inspectors reviewed the radiation occurrence reports written by radiation protection personnel and the PRO report of the investigation conducted by a group of onsite managerial personnel. The investigation team proposed corrective measures, included: (1) use of ultrasonic cleaning of contaminated pump components, where appropriate, and keeping components wet until going through the ultrasonic cleaner; (2) consideration of air flow before working in the decon room; and (3) consideration of establishing a hot shop on the third floor of the reactor building for overhauling contaminated equipment. This matter was discussed at the exit meeting.

14. Person-Rems Associated with IEB 79-14 Task (Drywell Hanger Work)

The hanger work both inside and outside the drywell began in 1980 with some work on Unit 1. Most of the remaining Unit 1 hanger work will be completed during the refueling outage beginning in September 1982. Most of the hanger work for Unit 2 was completed during a 1981 refueling outage with the exception of a few hangers to be installed during the next refueling outage. To date, about 1850 person-rem have been expended for the hanger work and it is estimated that about 1350 additional person-rem will be expended during the Unit 1 work this fall for an estimated total of about 3200 person-rem.

15. Exit Meeting

Inspectors L. Hueter and W. Grant met with licensee representatives (denoted in Section 1) on September 2, 1982. The inspectors summarized the scope and findings of the inspection. In response to certain items discussed by the inspectors, the licensee:

- a. Stated that new multi-point recorders for the area monitors would be installed in the control room for each reactor unit by March 31, 1983. They noted that since two recorders will replace each of the single recorders now in use, rather extensive drawing and wiring modifications will be required. (Section 7)
- b. Acknowledged the inspectors' comments concerning the item of noncompliance. (Section 9)
- c. Acknowledged the importance of heat traced lines for obtaining isokinetic samples of iodine. (Section 11.c)
- d. Agreed to increase the scope of the laboratory hood exhaust flow evaluation to include the laboratory room flow. (Section 12)
- e. Stated that revision of procedures for receipt and opening radioactive material packages would be completed by October 1, 1982, and would include provisions for checking incoming survey readings against those indicated by the shipper and instructions to notify supervisory personnel when differences are observed so that special precautions can be taken. Also, the procedures will specify that packages containing radioactive gases will be opened under a hood. (Section 12)

- f. Acknowledged the inspectors' concern that the recent contamination problem in the mechanical maintenance shop may be indicative of a more general problem regarding decision making input by radiation protection personnel. The licensee stated that joint efforts are underway with Dresden to develop a criteria for initiation of supervisory/management notification and concurrence regarding radiation protection matters. Further, considering previous contamination problems in the maintenance shop located in the service building, the licensee stated that they would attempt to establish a hot work shop within the reactor building during 1983. Initially, it is to be equipped with a lathe; an ultra-sonic cleaner is to be added later. (Section 13)

Attachments:

1. Region V Inspection Report
No. 15000046/82-09
2. Region V Inspection Report
No. 15000046/82-10

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 82-10Docket No. 15000046 License No. _____ Safeguards Group _____

Licensee:

Facility Name: U. S. Ecology, Inc.Inspection at: Richland, WashingtonInspection conducted: August 23, 1982Inspector: L. L. Brock, for 9/14/82
Norman J. Stewart, Washington State Inspector Date SignedApproved by: R. D. Thomas, for 9/14/82
R. D. Thomas, Chief, Materials Radiation Protection Section Date SignedApproved by: H. E. Book 9/15/82
H. E. Book, Chief, Radiological Safety Branch Date Signed

Summary:

Inspection of August 23, 1982 (Report No. 15000046/82-10)

As part of the inspections conducted by the State of Washington during August 23, 1982 at the Richland Burial Site, two shipments of waste from Commonwealth Edison, Quad Cities, Cordova, Illinois were inspected. The results of the inspection, which were received at the NRC Region V office on September 3, 1982, are detailed in this report.

Results: Two items of noncompliance with DOT/NRC regulations were identified.

It appears that the NRC Region III office and the Department of Transportation are the appropriate organizations to take enforcement action.

15000046/82

DETAILS

1. Persons Contacted

E. Lee Gronemeyer, Transportation and Waste Management, State of Washington

Earl Ingersoll, Transportation and Waste Management, State of Washington

2. Background

As part of the low-level waste inspections conducted by the State of Washington inspectors during the period of August 23-27, 1982 at the Richland, Washington Burial Site, two shipments of waste received on August 18 and 19 respectively from Commonwealth Edison, Quad Cities, Cordova, Illinois, were inspected on August 23, 1982. As a result of this inspection, one 55 gallon drum in each shipment was observed to have a hole in the lid of the drum.

Pursuant to this item of noncompliance with DOT/NRC regulations, the State of Washington banned the NRC licensee from using the burial site and suspended the burial permit effective August 23, 1982.

3. Inspection

Licensee-Shipper: Commonwealth Edison
P. O. Box 767
Quad Cities Station
Chicago, Illinois 60690

Docket Nos. 50-254
50-265

Shipments Inspected: August 23, 1982

Carrier: Chem Nuclear

Trailer Nos: 085 and 086

Radioactive Waste Shipment Record (RSR) Nos: 0214 and 11397

- a. Each of the two shipments consisted of fourteen 55 gallon drums of Low Specific Activity (LSA) Radioactive Material inside a shielded cask. The drums contained spent resins solidified in cement. The shipments were assigned as exclusive use.
- b. The state inspector observed that one drum on the bottom tier of each shipment had a 1" - 1 1/2 inch hole punched into the lid of the drum by the bolt for the clevis used for lifting the drums which had been left inside the cask. It appeared that the weight of the upper drums forced the bolt of the clevis through the lid of the lower drum on which the bolt was resting.

- c. Radiation surveys of the drum and of the trailer indicated no loose radioactive contamination present.
- d. The hole in the lid of each drum appear to be items of noncompliance with 49 CFR 173.392 (c)(1) which requires that materials be packaged in strong, tight packages so that there will be no leakage of radioactive material under conditions normally incident to transportation.

U.S. NUCLEAR REGULATORY COMMISSION
REGION V

Report No. 82-09
 Docket No. 15000046 License No. _____ Safeguards Group _____
 Licensee: _____

Facility Name: U.S. Ecology, Inc.

Inspection at: Richland, Washington

Inspection conducted: June 22, 1982

Inspector: *J. A. Waite* 7/29/82
 Jerome A. Waite, Washington State Inspector Date Signed

Approved by: *R. D. Thomas* 7/29/82
 R. D. Thomas, Chief, Materials Radiation Protection Date Signed
 Section

Approved by: *H. E. Book* _____
 H. E. Book, Chief, Radiological Safety Branch Date Signed

Summary:

Inspection of June 22, 1982 (Report No. 15000046/82-09)

As a part of the inspections conducted by the State of Washington during June 21-25, 1982, at the Richland Burial Site, a shipment of waste from Commonwealth Edison, Quad Cities, Cordova, Illinois was inspected. The results of the inspection, which were received at the NRC Region V office on July 19, 1982, are detailed in this report.

Results: One item of noncompliance with DOT/NRC regulations was identified.

It appears that the NRC Region III office and the Department of Transportation are the appropriate organizations to take enforcement action.

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DETAILS

Persons Contacted

E. Lee Gronemeyer, Transportation and Waste Management, State of Washington
Earl Ingersoll, Transportation and Waste Management, State of Washington
Jerome A. Waite, Radiation Health Physicist, State of Washington

Background

As a part of the low-level waste inspections conducted by the State of Washington inspectors during the period of June 21-25, 1982 at the Richland, Washington Burial Site, a shipment of waste which was received on June 22, 1982 from Commonwealth Edison, Quad Cities, Cordova, Illinois, was inspected on June 22, 1982. As a result of this inspection, one 55-gallon drum was observed to have a 1 to 1½ inch diameter hole in the lid of the drum.

Pursuant to this item of noncompliance with DOT/NRC regulations, the State of Washington banned the NRC licensee from using the burial site and suspended the burial permit effective June 22, 1982.

Inspection

Licensee - Shipper: Commonwealth Edison
P. O. Box 767
Quad Cities Station
Chicago, Illinois 60690

Docket Nos. 50-254
50-265

Shipment Inspected: June 22, 1982

Carrier: Chem Nuclear

Trailer No.: 21

Radioactive Waste Shipment
Record (RSR): 2347

1. The shipment consisted of twenty-one, 55-gallon drums of Low Specific Activity (LSA), NOS, Radioactive Material inside a shielded cask. The shipment was assigned as exclusive use.
2. The State inspector observed that drum number 11, which was listed on the Radioactive Waste Shipment Record (RSR) No. 2347 as containing spent resins solidified in concrete, had a 1 to 1½ inch diameter hole in the lid of the drum.
3. Radiation surveys of the drum and of the trailer indicated no loose radioactive contamination present.

4. The hole in the lid of the drum appears to be an item of noncompliance with 49 CFR 173.392(c)(1) which requires that materials be packaged in strong, tight packages so that there will be no leakage of radioactive material under conditions normally incident to transportation.