

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-295; 50-304  
Licenses No: DPR-39; DPR-48

Reports No: 50-295/96021(DRS); 50-304/96021(DRS)

Licensee: Commonwealth Edison Company (ComEd)

Facility: Zion Generating Station, Units 1 & 2

Location: 105 Shiloh Boulevard  
Zion, IL 60099

Dates: December 3, 1996 - January 22, 1997

Inspectors: S. K. Orth, Radiation Specialist

Approved by: Thomas J. Kozak, Chief, Plant Support Branch 2  
Division of Reactor Safety

## EXECUTIVE SUMMARY

Zion Generating Station, Units 1 & 2  
NRC Inspection Reports 50-295/96021, 50-304/96021

- An apparent violation was identified concerning the shipment of radioactive materials. The external surface of a December 9, 1996 limited quantity shipment from Zion exceeded the radiation dose rate limit of 49 CFR 173.425. Problems were also identified concerning the coordination and planning of radioactive material shipping operations. (Section R1.1)
- Access to safety related equipment continued to be radiologically encumbered. Pump seal leakage contributed to the high number of contaminated areas within the auxiliary building. Several examples of inadequate radiological housekeeping and control of radiological boundaries were identified. (Section R1.2)
- Although the licensee had focussed efforts on resolving operability issues for the steam generator blowdown and radioactive waste (radwaste) systems, material condition deficiencies, including inoperable chemical drain tank pumps, were not resolved. Radwaste operators continued to work around inoperable equipment. Inconsistencies were identified concerning radwaste system configurations and the Updated Final Safety Analysis Report (UFSAR). (Section R2.1)
- Two apparent violations were identified concerning radioactive material shipping procedures. The licensee had not adequately maintained certain procedures to be consistent with the revisions to regulatory requirements. In addition, the licensee had not properly implemented procedures concerning the use of radionuclide scaling factors in determining the activity of radioactive waste. (Section R3.1)
- An apparent violation was identified for not adequately implementing radiation control procedures. Operations personnel removed instruments from a posted contamination area without containing the instrument or having the instrument released by radiation protection personnel. (Section R4.1)
- The licensee demonstrated good communication and coordination during the December 4, 1996 medical drill. The licensee was effective in minimizing the spread of simulated radioactive contamination, with some exceptions. (Section R4.2)
- Radioactive material shipping training lesson plans were consistent with the revisions to 10 CFR Part 71 and 49 CFR Parts 172 and 173. An apparent violation was identified concerning the failure to train two operations personnel in accordance with procedures. (Section R5.1)
- The licensee's self assessments of the radioactive material transportation program were not thorough and failed to identify fundamental radioactive material shipping problems. (Section 7.1)

## Report Details

### IV. Plant Support

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

##### R1.1 Transportation of Radioactive Materials

###### a. Inspection Scope (83750, 2515/133)

The inspector reviewed the shipping documents for the following radioactive waste (radwaste) and material shipments and verified the licensee's waste classification, and package classification, labeling, and shipping papers:

ZRW 96-02 Dewatered Ion Exchange Resin (1/25/96);  
ZRW 96-12 Dewatered Ion Exchange Resin (4/24/96);  
ZRW 96-25 Dewatered Ion Exchange Resin (10/24/96); and  
ZRM 96-131 Radioactive Material (12/9/96).

The inspector also observed the licensee's preparation and packaging of a liner of ion exchange resin (ZRW 97-01) for shipment to a radwaste burial site.

###### b. Observations and Findings

During the review of the shipping documents, the inspector identified problems concerning the licensee's implementation of shipping and waste classification procedures (also see Section R4.1). With the exception of radioactive material shipment ZRM 96-131, the inspector verified that the licensee's waste classification and shipping classifications were accurately calculated and that packaging requirements were met. The inspector also observed that the shipping papers were completed as required.

The inspector reviewed documentation about a problem concerning the licensee's December 9, 1996 shipment of radioactive material (ZRM 96-131) to the Byron Nuclear Station. Although the material was shipped as a limited quantity shipment, the Byron staff identified that the package's contact dose rates of 0.7 mrem/hr exceeded the Department of Transportation's (DOT) contact radiation limit of 0.5 mrem/hr for that type of package. Zion Station's documented survey of the shipment clearly indicated the actual contact dose rate of 0.7 mrem/hr, but personnel incorrectly documented that dose rates were less than 0.2 mrem/hr on the shipping forms. Although four members of the licensee's staff reviewed this information, the problem was not identified until the Byron staff performed an incoming shipment review. Byron personnel made a courtesy notification to NRC to report the problem with the shipment.

10 CFR 71.5 requires, in part, that each licensee who transports licensed material outside of the site of usage, or where transport is on public highway, or who delivers licensed material to a carrier for transport, shall comply with the applicable Department of Transportation regulations in 49 CFR parts 170 through 189 appropriate to the mode of transport. 49 CFR 173.421 requires, in part, that a

Class 7 (radioactive) material whose activity per package does not exceed the limits specified in 49 CFR 173.425 and its packaging are excepted from the specification packaging, marking, and labelling, and the shipping paper and certification requirements, if the radiation level at any point on the external surface of the package does not exceed 0.005 millisievert (mSv)/hr (0.5 mrem/hr). The failure of the licensee to properly ship radioactive material in accordance with 49 CFR 173.425 is an apparent violation (EEI No. 50-295/96021-01(DRS) and 50-304/96021-01(DRS)).

On January 8, 1997, the inspector also observed the packaging of a high integrity container of ion exchange resins (ZRW 97-01) and identified the following problems:

- Poor planning and coordination between the radiation protection (RP) and operations staff was noted. The operations staff had unloaded an empty liner from a carrier's vehicle, had weighed the full liner, and were preparing to move a full liner of ion exchange resins onto the carrier's vehicle. However, minutes before the liner was to be loaded on the carrier's truck, RP personnel notified the operations staff that they did not have a current analysis for the resin. All activities in support of loading of the liner were suspended.
- While positioning the carrier's truck into the Radwaste Annex, the licensee directed the carrier's truck near a contaminated area boundary. The truck struck and moved the boundary. The truck also brushed against a storage cask (containing a loaded liner) within the contaminated area in the Radwaste Annex.

Although a violation of NRC requirements was not identified, this evolution could have potentially damaged the storage cask containing the resins and could have potentially contaminated areas outside of the posted area.

As immediate corrective actions for the problems described above, the licensee suspended all radioactive material shipping on January 10, 1997, and began to review, delete, and/or revise a number of shipping procedures to be consistent with the requirements.

c. Conclusions

An apparent violation was identified concerning the shipment of radioactive materials. On December 9, 1996, the licensee shipped radioactive material as a limited quantity shipment which exceeded the limits of 49 CFR 173.425. Problems were also identified concerning the coordination and planning of radioactive material shipping operations.

## R1.2 Plant Radiological Conditions

### a. Inspection Scope (83750, 86750)

The inspector reviewed the radiological conditions of the plant and assessed the effect of radiological contamination and high radiation levels on access to safety related and radwaste equipment. Specifically, the inspector reviewed the licensee's surveys of the auxiliary building (AB) and the associated posting and control of radiological hazards. In addition, the inspector assessed the radiological housekeeping in the AB and the control of contaminated area boundaries.

### b. Observations and Findings

The licensee continued to have several radiological impediments encumbering access to safety related equipment, as documented in NRC Inspection Report 50-295/96016(DRS), 50-304/96016(DRS). Extensive pump seal leakage contributed to contamination in several emergency core cooling system (ECCS) pump rooms. Although these areas were properly posted and controlled, the access to safety related equipment was significantly impeded. In addition, high radiological source term has resulted in elevated dose rates and numerous hot spots. For example, the licensee posted and controlled all four of the residual heat removal (RHR) pump rooms as high radiation areas (HRAs) and contaminated areas (CAs). The RHR heat exchanger rooms were similarly controlled, with the unit 1 (U1) rooms being locked HRAs as well. Although a small non-contaminated area walkway was maintained in the RHR rooms, the access to equipment remained encumbered.

The centrifugal charging pump (CCP) rooms were accessible; however, the overall, higher U1 dose rates resulted in the licensee posting and controlling the 1B CCP as an HRA. The inspector also observed that the pumps and pedestals were posted as CAs, owing to pump seal leaks and visible boric acid crystallization.

Similar to the ECCS pump rooms, the inspector observed that the access to areas containing radwaste system components was highly, radiologically encumbered. As a result of numerous hot spots and high radiological source term within the radwaste tanks, the licensee controlled the AB equipment drain tank (EDT) and chemical drain tank (CDT) as locked HRAs. In general, the inspector noted that pump seal leakage had also resulted in the posting of radwaste tank pumps as contaminated areas. In addition, the inspector observed that the licensee had also restricted access to the crystallizer and evaporator rooms, which had been abandoned in place, with RA and CA postings at the access point and with radiation protection (RP) permission necessary for access.

During plant observations on December 3 and 4, 1996, the inspector identified problems concerning radiological boundary control and housekeeping in several areas of the AB. For example, the inspector observed several signs of leakage within the U1 and U2 horizontal pipe chases, including leakage from the high radiation sampling system waste tank pump. The inspector also identified protective clothing strewn about the area and full laundry collection containers improperly stored within CAs. The inspector also identified several radiological housekeeping issues in a work area outside of the U2 volume control tank room



including hoses not properly secured crossing CA boundaries, hoses containing fluids not leading to collection devices, and protective clothing strewn about within the CA.

c. Conclusions

Access to safety related equipment continued to be radiologically encumbered. Pump seal leakage contributed to the number of contaminated areas within the AB. Several examples of inadequate radiological housekeeping and control of radiological boundaries were identified.

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

**R2.1 Material Condition of Radioactive Waste Processing System**

a. Scope (86750)

The inspector reviewed the material condition of the radwaste processing system. The inspector compared the current system condition and operation to the licensee's Updated Final Safety Analysis Report (UFSAR) section 11.2, "Liquid Waste Management Systems," and section 11.4, "Solid Waste Management System." The inspector also reviewed the outstanding work orders for the system and the licensee's progress in performing system maintenance. The inspector also discussed system operability and planned corrective maintenance with members of the operations staff.

b. Observations and Findings

With the exception of the spent resin storage tank (SRST), the inspector verified that the integrity of the radwaste tanks was acceptable and did not identify any indications of leakage. However, as described in Section R1.2, high dose rates impeded access to several radwaste tank rooms. Current radiological conditions (i.e., estimated general area dose rates in excess of 40 rem/hr) made the SRST inaccessible. However, the licensee had decontaminated the tank in July 1996 to perform maintenance on valves. RP personnel, who were involved in the evolution, indicated to the inspector that the integrity of the tank was good and that there were no visible indications of resin leakage from the tank.

The inspector observed that both CDT pumps were inoperable. The A pump was completely removed from the pump pedestal and the B pump was wrapped with plastic to contain leakage. Operations personnel indicated that the pumps had been out of service for over ten years and that the pump suction valves had been isolated. In accordance with 50I-67D, "Liquid Waste Disposal Chemical Drain Tank," Revision 3, operations personnel directed the unanalyzed CDT contents to the OB AB sump, which was normally pumped to the AB floor drain analysis tank. The licensee identified this practice as an operator work around. Although the problem was not documented in a work request and progress in correcting the problem was slow, the system engineer had an action plan to correct the deficiencies. The inspector noted that the licensee's process was in conflict with the UFSAR. As described in UFSAR Section 11.2.2.8, the contents of the CDT

were to be mixed and sampled, then pumped directly to the applicable radwaste processing system. In addition, the inspector noted that the AB floor drain analysis tank and AB sumps (UFSAR Section 11.2.2.2 and 11.2.2.8.2.7, respectively) were not designed to accept inputs from the CDT nor inputs to the CDT. At the time of this inspection, the licensee was determining if a safety evaluation had been completed for the above system configuration. (Unresolved Item No. 50-295/96021-02(DRS) and 50-304/96021-02(DRS))

In addition to the discrepancy above, the inspector also noted other issues concerning radwaste operations which were not in conformance with the UFSAR. The inspector also noted that UFSAR Section 11.2.2.8.5 states that a radwaste evaporator was to be used for radwaste processing. However, the licensee did not have any plans or work requests to repair the non-functioning radwaste evaporator. The licensee exclusively uses ion exchange demineralization to process the contents of the liquid radwaste tanks. UFSAR section 11.2.2 also states that the contents of radwaste tanks were to be mixed and sampled to determine the most effective processing of the liquids. Specifically, UFSAR Section 11.2.2.8 indicates that the contents of the following tanks were to be mixed and sampled prior to being discharged through a treatment process: AB equipment drain analysis tank, AB floor drain analysis tank, CDT, and laundry and hot shower drain tanks. However, chemistry and operations personnel indicated that the licensee did not sample the contents of each tank prior to processing. After processing the tanks' contents, the licensee sampled the accumulated, processed liquid waste in the evaporator monitor tanks. Prior to releasing the processed waste to the lake, the licensee also sampled the contents of the lake discharge tanks (LDTs). At the time of this inspection, the licensee was determining if a safety evaluation had been completed for the above difference in radwaste operations. (Unresolved Item No. 50-295/96021-03(DRS) and 50-304/96021-03(DRS))

The inspector noted some progress in the licensee's actions to resolve longstanding, extensive material condition deficiencies on the steam generator (SG) blowdown system. Material condition deficiencies in this system (documented in NRC Inspection Report 50-295/95016(DRP) and 50-304/95016(DRP)) included several indications of valve packing and pump seal leakage. Since September 1996, the licensee dedicated an oversight group to improve system operability and to complete outstanding work orders. As of November 1, 1996, the licensee had resolved issues on the blowdown system which were of high priority to the operations staff. After complete resolution of the blowdown system maintenance problems, the licensee planned to focus efforts on the remainder of radwaste system issues. A radwaste operations supervisor indicated that over 30 work requests were in the licensee's system for general radwaste corrective maintenance.

c. Conclusions

Although the licensee had focussed efforts on resolving operability issues for the steam generator blowdown and radwaste systems, material condition deficiencies, including inoperable chemical drain tank pumps, were not resolved. Radwaste operators continued to work around inoperable equipment. Inconsistencies were identified concerning radwaste system configurations and the UFSAR.

### R3 **RP&C Procedures and Documentation**

#### R3.1 Radioactive Material Shipping Procedures

##### a. Scope (86750)

The inspector reviewed the licensee's procedures providing instruction in the classification, packaging, transport, and shipping of radioactive materials and radwaste. The inspector reviewed the following licensee procedures and their implementation:

- ZAP 620-01, "Radioactive Material Shipping and Receiving Guidelines," Revision TA-96-973;
- ZRP 5600-3, "Classification of Radioactive Waste for Near-Surface Burial Site Disposal," Revision 0;
- ZRP 5600-4, "Completion of Radioactive Material Shipping Record," Revision 2;
- ZRP 5600-7, "Off-Site Shipment of Radioactive Material," Revision 0;
- ZRP 5600-11, "Radioactive Shipments (RM) (Other Than Waste)," Revision TA-96-008;
- ZRP 5610-2, "Calculation of Curie Content of Radioactive Shipments," Revision 0;
- ZRP 5610-4, "Preparation and Shipment of Samples for Special Analysis," Revision 0;
- ZRP 5610-6, "Surveying Radioactive Material Shipments," Revision 2; and
- ZRP 5610-10, "Radioactive Waste Shipments," Revision 0.

##### b. Observations and Findings

The inspector observed that the licensee had revised procedure ZAP 620-01 to be consistent with recently implemented revisions to applicable transportation regulations. ZAP 620-01 contained guidance in preparing packages, consistent with the categories of low specific activity (LSA) and surface contaminated object (SCO). The procedure also contained instructions consistent with the revised packaging requirements. However, ZAP 620-01 often directed the user to refer to applicable regulations instead of providing specific instructions. For example, in determining the type of label for the package, ZAP 620-01 referred the user to 49 CFR 172.403. The licensee indicated that its computer software was used to ensure that the regulatory requirements were met.

The licensee also used computer software to determine packaging requirements such as activity limits, LSA classification, and SCO classification for transport of radioactive materials. The licensee's procedures properly reflected the use of the computer software which appropriately implemented the applicable regulations. The licensee also had approved procedures which provided instructions for manual determination of the above packaging requirements. The inspector determined that ZRP 5600-7, "Offsite Shipment of Radioactive Material," Revision 0, dated November 2, 1993, contained inaccurate instructions for determining packaging requirements (i.e., activity limits, LSA classification, SCO classification, etc.). Specifically, this procedure contained instructions which complied with the previous regulations and, thus, were outdated. Once this was brought to the licensee's attention, the licensee deleted the procedure.



Technical Specification (TS) 6.2.2.A requires, in part, that radiation control procedures be maintained. The failure to maintain radiation control procedure ZRP 5600-7 is an apparent violation of TS 6.2.2.A (EEI No. 50-295/96021-04(DRS) and 50-304/96021-04(DRS)).

During a review of shipment documents, the inspector identified that the licensee had not adequately implemented its radioactive waste shipping procedures concerning the sampling and analysis of waste streams to determine radionuclide scaling factors. In accordance with 10 CFR 61.55(a)8, scaling factors are used as an indirect method to determine radionuclide activity in radioactive waste shipments. This is done by inferring a concentration of hard to detect radionuclides by applying scaling factors to a known concentration of an easier to detect radionuclide provided there is reasonable assurance that the indirect method can be correlated with actual measurements. Licensee procedures require that sampling and analysis of certain waste streams be done annually.

The inspector identified that the steam generator blowdown resin scaling factors had not been analyzed since September 1994. Further, this analysis was not used because it was determined that the sample was not representative of the actual radionuclide content of the resin. No additional sampling was performed and there was no laboratory analysis to support the pre-1994 scaling factors which were in use at the time of the inspection. The significance of this omission is that the slight steam generator tube leakage which had occurred since the last valid sample analysis could have changed the radionuclide content of the blowdown resin.

Additionally, the sampling and analyses of the primary resin waste stream was not performed from August 1993 through November 1996. Even though the primary resin was sampled in November 1996, a combined average of 1992 and 1993 sample data was in use at the time of the inspection.

TS 6.2.2.A requires, in part, that radiation control procedures be implemented. Licensee procedure ZRP 5610-4, dated November 12, 1993, requires, in part, that spent resin samples be sent out for analysis yearly, in accordance with 10 CFR 61 guidelines. ZRP 5610-4 required that annual samples of SG blowdown resin and primary resin be analyzed in accordance with 10 CFR 61 guidelines and procedure ZRP 5610-10, dated December 12, 1994, required that the current shipment be compared to "annual waste stream analyses". The failure to obtain and analyze annual samples of SG blowdown resin and primary resin is an apparent violation of TS 6.2.2.A (EEI No. 50-295/96021-05b(DRS) and 50-304/96021-05(DRS)).

c. Conclusion

Two apparent violations were identified concerning radioactive material shipping procedures. In the first violation, the licensee did not adequately maintain certain procedures consistent with the revisions to regulatory requirements. The second violation concerned the failure to have samples of various waste streams analyzed to establish acceptable scaling factors within the procedurally-specified timeframe.

#### **R4 Staff Knowledge and Performance in RP&C**

##### **R4.1 Radiation Worker Practices**

During the inspector's observations of radwaste shipment ZRW 97-01 (Section R1.1), the inspector identified an apparent violation of procedure ZAP 610-03, "Unescorted Access To and Conduct in Radiologically Posted Areas," Revision 1(G), dated September 12, 1996. This procedure states that personnel are to contain contaminated equipment removed from contaminated areas or have the equipment released by a radiation protection technician. On January 8, 1997, the inspector observed an operations individual pick up a rod in a clean area, use the rod to manipulate potentially contaminated equipment in a posted contaminated area, and remove the rod from the posted contaminated area without containing the rod or having the rod released by a radiation protection technician. In utilizing the rod to manipulate equipment within the posted contaminated area, the individual potentially contaminated the rod. Following the observation, the inspector alerted a radiation protection technician (RPT) in the area, who took control of the rod and performed a contamination survey.

TS 6.2.2.A requires, in part, that radiation control procedures be implemented. The failure to adhere to ZAP 610-3 is an apparent violation of TS 6.2.2.A (EEI No.50-295/96021-06(DRS) and 50-304/96021-06(DRS)).

##### **R4.2 Onsite Emergency Medical Drill**

###### **a. Inspection Scope (83750, 82301)**

The inspector observed the licensee's December 4, 1996 onsite emergency medical drill. The drill scenario included a simulated contaminated, injured person (CIP) who had fallen in the 1B CCP room. The inspector reviewed the licensee's response to the scenario events, including the licensee's first aid response, evaluation and communication of radiological hazards, and contamination control.

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

The inspector observed good communications and coordination with offsite responders and between onsite personnel. With the exception of a simulation problem, the onsite personnel responded to the CIP in a timely manner. The initial responders (security, operations, and RP personnel) ensured that appropriate first aid was administered and that information was properly communicated with offsite fire protection personnel. The RPTs monitored the CIP's vital signs and ensured that the individual remained conscious and aware of what was occurring. The status of the CIP was appropriately relayed to the offsite fire protection personnel responding to the scenario events.

Contamination control practices were good, with some minor exceptions. The RP personnel established a boundary around the CIP to control the potential spread of contamination and limit personnel in the area. The RPTs also prepared a "clean area runway" to reduce the potential for contaminating offsite emergency responders and their equipment. Although the RPTs did not perform extensive

contamination surveys of the CIP, the RPTs indicated that their main concern was to assess the CIP's medical condition and to stabilize his condition. As a result, they treated the CIP as potentially contaminated, communicated this to all other medical responders, and performed further surveys when the CIP was in a stable condition. The RPTs demonstrated good use of contamination control practices while treating the CIP. The RPTs donned gloves while working on the CIP and removing his protective clothing, but the inspector observed that the RPTs did not always change gloves while moving from more to less potentially contaminated articles of protective clothing. Potentially, this practice could have spread contamination to the CIP. In addition, the inspector identified that a security officer, initially responding to the event, potentially contaminated himself when he approached the CIP and assessed the casualty. Since the security officer did not identify that he had been near the CIP, RP personnel did not control or survey this person to ensure that he did not spread contamination at the accident site.

The inspector also identified a problem concerning the control of the medical drill. As the CIP was removed from the radiologically posted area (RPA), a drill controller indicated to the RPTs and RP supervisor that the individual was not to be removed from the stretcher to enter the personnel contamination monitors (PCMs) (the routine, automated method of personnel survey) but that he was to be surveyed on the stretcher in his medically dressed position. Although the RPTs and RP supervisor were hesitant, they performed a manual survey of the CIP and the stretcher, then accompanied the CIP to the hospital for additional surveys. Although allowed by licensee procedures, the inspector indicated to the licensee that this was a nonconservative decision. For an actual medical situation, a partial survey and RPT accompaniment would have been appropriate. However, since a medical situation did not exist, not entering a PCM prior to exiting the RPA could have potentially resulted in the unnecessary spread of contamination. The licensee representatives indicated that their original intent was to have the CIP survey through the PCMs and planned to review RPA access and egress requirements for future drills.

c. Conclusion

The licensee demonstrated good communication and coordination during the December 4, 1996 medical drill. The licensee was effective in minimizing the spread of simulated radioactive contamination, with some exceptions.

**R5 Staff Training and Qualification in RP&C**

**R5.1 Radioactive Material and Waste Shipment Training**

a. Scope (86750, TI 2515/133)

The inspector reviewed the licensee's training program for personnel involved in the radioactive waste and radioactive material shipping program to ensure personnel involved in the shipping program were adequately instructed in the revisions to 10 CFR Part 71 and 49 CFR Parts 172 and 173. The inspector reviewed the following procedures and training lesson plans:

ZAP 200-9, "Training," Revision 0;  
Radioactive Material Shipping, Initial Training, Revision 1;  
Level II Radioactive Materials Shipping Training, Fuel Handler/Station Laborer  
Personnel, Revision 2; and  
Level II Radioactive Materials Shipping Training, Quality Control Personnel,  
Revision 2.

The inspector also reviewed the training history of those persons who were authorized by the licensee's procedures to release radioactive material shipments.

b. Observations and Findings

The inspector observed that the lesson plans for the licensee's Radioactive Material Shipping training was consistent with the April 1996 revisions to 10 CFR 71, 49 CFR 172, and 49 CFR 173. The lesson plans contained appropriate instructions concerning the classification of waste for burial and the requirements for packaging and shipping radioactive materials, including the LSA and SCO classifications.

In reviewing the licensee's training records, the inspector identified that two of the seven persons authorized to release/approve shipments of licensed materials were not trained in accordance with ZAP 200-9, which requires biennial radioactive materials shipment training in accordance with NRC IE Bulletin 79-19. IE 79-19 states that individuals are expected to be trained and retrained in the following:

- (1) DOT and NRC regulatory requirements,
- (2) Waste burial license requirements, and
- (3) Licensee instructions and operating procedures.

The inspector verified that the two members of the operations staff were involved in the shipping program and were authorized to release radioactive shipments. In April 1996, the individuals attended the Radioactive Material Shipping training but did not successfully pass the associated exam and had not successfully completed this training since April 1992 and April 1994, respectively. In July 1996, those persons successfully completed the task specific training (Level II Radioactive Materials Shipping Training, Quality Control Personnel) which was limited to instruction on vehicle and package inspections and limited regulatory requirements (i.e., radiation levels and placarding). This training did not fully meet the requirements of ZAP 200-9. Neither training course appeared to review the licensee's instructions and operating procedures. Although these individuals were authorized, the licensee indicated that the two operations personnel had not released any shipments.

TS 6.1.5 requires that retraining and replacement training of station personnel shall be in accordance with ANSI N18.1, "Selection and Training of Nuclear Power Plant Personnel," dated March 8, 1971. ANSI N18.1, dated March 8, 1971, requires that a continuing program of training be used for training replacement personnel and for retraining necessary to ensure that personnel remain proficient. ZAP 200-09, dated September 17, 1992, requires, in part, that personnel, other than stationmen, involved in the transfer, packaging, or transport of radioactive material shall be trained in accordance with IE Bulletin 79-19, and retrained biennially. IE Bulletin



79-19 states that personnel should be trained in the DOT and NRC regulatory requirements, the waste burial license requirements, and in the instructions and operating procedures for the transfer, packaging, and transport of radioactive waste. The failure to adequately train personnel in accordance with ZAP 2000-9 is an apparent violation (EEI No. 50-295/96021-07(DRS) and 50-304/96021-07(DRS)).

c. Conclusion

Radioactive material shipping training lesson plans were consistent with the revisions to 10 CFR Part 71 and 49 CFR Parts 172 and 173. An apparent violation was identified concerning the failure to train two operations personnel in accordance with procedures.

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

**R7.1 Self Assessments of Radioactive Material Shipping Activities**

The inspector reviewed quality assurance audit QAA 22-96-04 "Zion Site Quality Verification Audit of REMP/ODCM/PCP/RW Shipping" conducted on April 15-19, 1996. The site quality verification (SQV) staff reviewed the status of the radiological environmental monitoring program, the liquid and gaseous effluents program, and the radioactive materials transportation program. The audit concluded that the radioactive shipping program was sound and that radioactive shipments were being performed by qualified personnel using approved procedures. Given the fundamental problems identified during this NRC inspection, which ranged from worker training and procedural adherence to the shipment of material above applicable limits, the inspector concluded that this audit was not thorough and failed to identify basic problems which existed at the time of the audit. The Quality Assurance Manager indicated that considering a major change to radioactive material transportation regulations had been implemented two weeks prior to the audit, an in-depth review of this program to ensure proper implementation of the new requirements should have been conducted.

**V. Management Meetings**

**X1 Exit Meeting Summary**

On January 22, 1997, the inspectors presented the inspection results to licensee management. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.



## PARTIAL LIST OF PERSONS CONTACTED

G. Geer, Radioactive Waste Operations  
M. Hagen, Health Physics  
R. Krueger, Radioactive Waste Operations  
R. Laburn, Health Physics  
W. Lacey, Plant General Manager  
M. Madigan, Site Quality Verification  
L. Menejevs, Site Quality Verification  
T. Patterson, Operations  
F. Rescek, Health Physics Support Director  
G. Schwartz, Site Quality Verification  
W. Stone, Regulatory Assurance  
W. Strodl, Health Physics Supervisor

## INSPECTION PROCEDURES USED

IP 83750: Occupational Radiation Exposure  
IP 86750: Solid Radioactive Waste Management and Transportation of Radioactive Materials  
IP 92904: Followup - Plant Support  
TI 2515/133: Implementation of Revised 49 CFR Parts 100-179 and 10 CFR Part 71

## ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

50-295/304-96021-01	EEI	Shipment in excess of 49 CFR 173.425 limits
50-295/304-96021-02	URI	Discrepancies between radioactive waste system configuration and UFSAR
50-295/304-96021-03	URI	Discrepancies between radioactive waste system operation and UFSAR
50-295/304-96021-04	EEI	Failure to maintain radiation control procedures
50-295/304-96021-05(a,b)	EEI	Failure to implement radiation control procedures
50-295/304-96021-06	EEI	Failure to implement radiation control procedures
50-295/304-96021-07	EEI	Failure to train personnel in accordance with ZAP 200-9

### Closed

None.

### Discussed

None.

## LIST OF ACRONYMS USED

AB	Auxiliary Building
CA	Contaminated Area
CCP	Centrifugal Charging Pump
CDT	Chemical Drain Tank
CFR	Code of Federal Regulations
CIP	Simulated Contaminated Injured Person
DOT	Department of Transportation
ECCS	Emergency Core Cooling System
EDT	Equipment Drain Tank
HRA	High Radiation Area
LDT	Lake Discharge Tank
LSA	Low Specific Activity
MREM/HR	Millirem per hour
MSV/HR	Millisievert per hour
PCM	Personnel Contamination Monitor
PIF	Problem Identification Form
RA	Radiation Area
Radwaste	Radioactive Waste
RHR	Residual Heat Removal
RP	Radiation Protection
RPA	Radiologically Posted Area
RPT	Radiation Protection Technician
RP&C	Radiation Protection and Chemistry
SCO	Surface Contaminated Object
SG	Steam Generator
SI	Safety Injection
SQV	Site Quality Verification
SRST	Spent Resin Storage Tank
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VIO	Violation

# PARTIAL LIST OF DOCUMENTS REVIEWED

Engineering Request, "Dumbwaiter Shaft Ventilation Barrier"

Initial Operability Assessment No. ER9605838

Problem Identification Form (PIF) 96-4677, "Exceeding Dept. of Transportation (DOT) Limited Quantity Limit"

PIF 96-4998, "Hot and Cold Lab Vent Delta P"

SOI-67D, "Liquid Waste Disposal: Chemical Drain Tank," Revision 3

Temporary Alteration Log Sheet, Attachment A and B, TA-96-075