

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-483/92025(DRSS)

Docket No. 50-483

License No. NPF-30

Licensee: Union Electric Company
Post Office Box 149
St. Louis, MO 63166

Facility Name: Callaway County Nuclear Station

Inspection At: Callaway Site, Callaway County, Missouri

Inspection Conducted: November 2-6, 1992

Inspector: W. Snell for
D. W. Nelson
Radiation Specialist

12/2/92
Date

Approved By: W. Snell
W. Snell, Chief,
Radiological Controls Section 2

12/2/92
Date

Inspection Summary

Inspection on November 2-6, 1992 (Report No. 50-483/92025(DRSS))

Areas Inspected: Routine announced inspection of the radiation protection, solid radioactive waste and transportation programs including: organization, management controls and training; quality assurance (QA) audits and surveillances; processing of solid waste; waste classification methodology and transportation of radioactive materials and waste (IP 83750, 86750).

Results: One violation for two failures to survey packages containing radioactive material upon receipt (Section 9). One non-cited violation for failure to register as a user to transport licensed material in a package for which a certificate of compliance had been issued by the NRC (Section 6). One Inspection Followup Item was identified for a lack of documentation for the 10 CFR 71 QA program (Section 6).

Areas for which improvement appears to be merited are training for new supervisors (Section 4), the review of radioactive waste and transportation procedures (Sections 7 and 8), control of containers in the radioactive waste building (Section 10) and the receipt of packages containing radioactive material (Section 9).

A number of strengths were identified including the 1992 QA audit of Radwaste (Section 5), the computerized Suggestion Occurrence Solution system (Section 4), and housekeeping in the generally accessible areas of the auxiliary and radioactive waste buildings (Section 10).

DETAILS

1. Persons Contacted

- * W. Campbell, Manager, Callaway Plant
- * F. Cruickshank, Supervisor, Rad/Chemistry
- * M. Henry, QA Engineer
- * M. Evans, Superintendent, Training
- * G. Hamilton, Supervisor, Quality Assurance
- * G. Hughes, Supervisor, Independent Safety Engineer Group
- * J. Laux, Quality Assurance Manager
- * R. Miller, Supervisor, Radwaste/Environmental
- * J. Neudecker, Supervisor, Health Physics Operations
- * S. Petzel, Engineer
- * J. Peevy, Manager, Operations Support
- * J. Polchow, Superintendent, Chemistry and Radioactive Waste
- * R. Roselius, Superintendent Health Physics

- * D. Calhoun, Resident Inspector

The inspector also interviewed other licensee personnel during the course of the inspection.

* Denotes those present at the exit meeting on November 6, 1992.

2. General

This inspection was conducted to review aspects of the licensee's radiation protection, solid radioactive waste and transportation programs. The inspection included tours of radiation controlled areas, observations of licensee activities, review of representative records and discussions with licensee personnel.

3. Licensee Action on Previous Inspection Findings:

(Closed) Violation (50-483/92011-02(DRSS)): Failure to perform a written safety evaluation prior to storing radioactive waste in a yard outside of the Radwaste building. Since the inspection, the licensee has moved all of the stored waste into the Radwaste building. This item is closed.

4. Organization, Management Controls and Training (IP 83750, IP 86750)

The inspector reviewed the licensee's organization and management controls for the radioactive waste management, solid radioactive waste and transportation programs, including: organizational structure, staffing, delineation of authority and management techniques used to implement the program and experience concerning self identification and correction of program implementation weaknesses.

On December 1, 1992, the Superintendent of Training will be named the new Superintendent of Health Physics. Historically, the Superintendent of Health Physics also served as the Radiation Protection Manager (RPM). During a July 1992 inspection (Inspection Report 50-483/92011(DRSS)) the inspector raised a concern about whether or not the Superintendent of Training would meet the experience requirements of Regulatory Guide (RG) 1.8 to serve as the Radiation Protection Manager. Subsequent to the July 1992 inspection, NRC management reviewed the Superintendent of Training's resume and determined that he would not be qualified to serve as RPM due to a lack of experience. This information was conveyed to the licensee. As a result, the licensee has decided to temporarily assign the title of RPM to the Supervisor of Health Physics Operations. The title of RPM will be reassigned to the Superintendent of Training (after he becomes the new Superintendent of Health Physics) once after he gains enough experience to satisfy the requirements of the RG.

In June of 1992 the Supervisor of Radioactive Waste and Transportation (RW&T) was reassigned to Quality Assurance. The Environmental Engineer assumed the responsibilities of the Supervisor RW&T and was given the title of Supervisor of Radioactive Waste/Environmental. A review of the new supervisor's qualifications indicated that he was only marginally qualified to supervise the radioactive waste and transportation programs. During the review, the inspector noted that although the supervisor had an extensive background in the processing and transportation of hazardous materials he had less than one year of experience working with radioactive waste and/or supervising activities involving radioactive materials. In addition, his radiological training was limited to the in-house RP core training program. ANSI 3.1.4.3.2-1a requires, in part, that supervisors shall have four years of experience in the craft or discipline they supervise. The new supervisor had not met that standard. However, the NRC has taken the position that specialists (supervisors) assigned to narrow, specific areas of responsibility with small support staffs would not be expected to meet the requirements of the standard. (See HPPOS-172, NUREG/CR-5569, "Health Physics Positions Data Base," May 1992.) In this case, the supervisor had been assigned to a specific narrow area with a relatively small staff. Therefore, the NRC has determined that although the supervisor of Radioactive Waste/Environmental does not meet the four years of experience specified in ANSI 3.1, his experience is adequate for him to assume this position. However, the licensee is responsible for ensuring that these specialists (supervisors) are given sufficient turnover time and training to make up for their lack of experience. The inspector noted that the supervisor had spent approximately one year working with the previous supervisor and had received approximately three months of formal turnover time. The supervisor had not, however, received any additional training beyond the in-house RP core curriculum. In light of the Supervisor's lack of experience the inspector identified this as an area where improvement is warranted.

Two Rad/Chem supervisors were reassigned in June of 1992, to new positions within the Radwaste group. One Rad/Chem supervisor, formally assigned to training, was reassigned to radioactive waste and transportation (RW&T) and the other, formally assigned to Chemistry, was reassigned to radioactive waste packaging. Both individuals appeared to be qualified to hold their new positions; both had extensive backgrounds in radiation protection. The inspector noted, however, that only one of the supervisors (RW&T) had received training beyond the in-house core RP program in addition to receiving an extensive amount of turnover time in his new program. The lack of training beyond the RP core curriculum for new supervisors was identified as an area where the program could be improved. This issue was discussed at the exit meeting.

There were 11 Rad/Chem technicians assigned to Radwaste, all of which had graduated from the licensee's RP apprenticeship and core training programs. These same technicians have remained in the program since the last radioactive waste inspection.

The licensee's computerized Suggestion Occurrence Solution (SOS) system is excellent. A description and analysis of each SOS is entered into the database. Corrective actions are documented and dated for implementation. The system is easy to access; enter a few simple commands on any computer and you have access to the SOS's written for the year. Using the resident's computer, the inspector reviewed all of the SOS's written in 1992 to document concerns about the radioactive and transportation programs.

No violations or deviations were identified.

5. Audits, Surveillances and Self Assessments (IP 86750)

The inspector reviewed the results of Quality Assurance (QA) audits and surveillances conducted by the licensee since the last radioactive waste and transportation inspection. The inspector reviewed the extent, thoroughness and results of one Quality Assurance (QA) audit and three surveillances performed on the radioactive waste program.

The inspector reviewed the last audit performed on the radioactive waste program (QA audit AP92-004 (March 16, 1992)). The audit was excellent; it was informative, comprehensive and corrective actions were taken in a timely manner. The audit found that programs within radioactive waste had been effectively implemented in accordance with regulatory and procedural requirements. There were, however, six Suggestion Occurrence Solutions (SOS) written as a result of the audit. Several included:

- a. Bags containing potentially contaminated trash were not being surveyed prior to leaving the Radiological Control Area (RCA).

- b. Several errors were found in the Radwaste storage logs. Radiation level survey results for a number of barrels were missing from the Radwaste Shipment Storage and Stovepipe Drum Storage Logs and radiological data for a shipment of a 1040 liner was missing from another log.
- c. Several radwaste procedures needed clarification and additional instructions. For example, all solid waste was being treated as potentially contaminated waste whether it was potentially contaminated or not. This was creating a lot of additional work for radwaste. The SCG recommended that this policy be changed.

The inspector did note one entry in the audit that should have been reported as a deficiency. On August 24, 1992, a Notice of Violation was issued to the licensee for failing to perform a safety evaluation for storing radioactive waste in an area outside the radwaste building. The audit assessed the adequacy of the yard west of the radwaste building for the storage of radwaste and found that "it appears Callaway Plant is not in full compliance with regulatory requirements pertaining to storage of low-level radwaste in the yard west of the radwaste building". The auditor did an excellent job discussing the reasons for reaching this conclusion. The team decided not to issue a SOS; the team was told that another SOS had been written to address the problem and corrective action had been initiated. Later it was learned that although a SOS had been written, corrective action had not been initiated. In retrospect, the team should have written an additional SOS. This issue was discussed at the exit meeting.

The inspector reviewed the following three surveillances:

- * Surveillance SP91-034 (November 2, 1991) of the status of unused radwaste containers.
- * Surveillance SP92-080 (August 28, 1992) to verify that Radwaste/Chemistry records have been completed with valid information.
- * Surveillance SP92-093 (October 14, 1992) to assess the effectiveness and adequacy with which Radwaste procedures implement the new 10 CFR 20.

The three surveillances were thorough, substantive in nature and corrective actions were taken in a timely manner. One SOS suggestion for improvement was issued as a result of Surveillance SP92-080 and two were issued as a result of Surveillance SP92.093. Due to the scope of the 1992 audit there were fewer surveillances performed in the first nine months of 1992.

No violations or deviations were identified.

6. 10 CFR 71, Subpart H (IP 86750)

10 CFR 71, Subpart H, requires in part that a licensee shall establish, maintain, and execute a quality assurance program satisfying each of the applicable criteria of 10 CFR 71.101-137 of Subpart H and satisfying any specific provisions that are applicable to the licensee's activities, including procurement of packaging. The licensee's established 10 CFR 50, Appendix B, QA program meets the requirements of the Subpart if the program satisfies each of the applicable criteria. To satisfy the requirements the licensee must include and address all of the applicable elements for transport packages. The inspector reviewed the QA program for compliance.

The inspector reviewed:

- * Operating Quality Assurance Manual
- * QA Planning Guide for the Functional Area of Radioactive Waste QAPG-RW (includes packaging and shipping of radioactive waste)
- * Critical Attributes for implementing the Planning Guide
- * QA audit of one of the licensee's 10 CFR 71 package suppliers
- * Commitment Display Report for commitment number 42667 (10 CFR 71 QA program)
- * Letter to the NRC dated September 6, 1991 requesting an amendment to the licensee's QA program
- * Radwaste procedures for shipping 10 CFR 71 packages.

The inspector concluded after the review that although the licensee had complied with the requirements of Subpart H, the licensee lacked a "bridging" document or set of documents that described in some detail their 10 CFR 71 QA program and the manner in which the program would meet the requirements of the Subpart. For example, commitment number 42667 lists those activities which fall within the licensee's Part 71 QA program and those activities which are the responsibility of the vendor. It also states that the licensee is responsible for ensuring that all transportation activities meet the requirements. The document does not, however, describe the manner in which those responsibilities will be met. The QA manual states in part that measures shall be established to control the shipping of radioactive materials in accordance with 10 CFR 71. The manual does not describe those measures. The Critical Attributes was the only document reviewed that specifically addressed a 10 CFR 71 requirement. Critical Attribute 2715, requires in part that the QA auditor verify the existence of a certificate of compliance and that the care of containers is in accordance with manufactures recommendations. Failure to address or describe all of the applicable elements of Subpart H was identified at the exit meeting as a weakness in the program. This issue will be reviewed during a future inspection (Inspection Follow-up Item 483/92025-01).

The inspector reviewed a 1988 QA audit of the licensee's 10 CFR 71 transport package vendor, Westinghouse Radiological Services. The audit was comprehensive and substantive in nature. The audit identified three findings and four comments all of which were corrected within 30 days of the audit.

The inspector reviewed five 10 CFR 71 package shipping procedures (RTS-ZZ-CH001, CH002, CH003, CH004, and CH005); one for each of the type B packages. The procedures were comprehensive, user friendly and included all of the Quality Control requirements.

During a review of the SOSs the inspector noted that on three separate occasions the licensee shipped radioactive material in a 10 CFR 71 package (10-142 cask) without first registering as a user (SOS 92-1933). The licensee could have a copy of the "Certificate of Compliance" and had followed all of the other conditions applicable to 10 CFR 71. The shipments were made on November 4, 1988, April 27, 1989, and June 3, 1991. When the licensee recognized that it had failed to register as a user they immediately sent a letter to the NRC to correct the deficiency. The licensee later learned that, sometime in 1988 or 1989, the cask had been modified and recertified under a new identification number. The licensee had been registered under the old ID number and had not been notified of the change. The shipping procedures, however, require that the licensee verify before each shipment that the facility is listed as a user. Failure to register as a user is a violation of 10 CFR 71.12. Since the licensee identified the violation and the corrective action taken appears to be adequate, the violation meets the non-citing requirements of 10 CFR 2, Appendix C. A review of the records indicated that the licensee had current Certificates of Compliance for each package and were on each package's users list.

One non-cited violation was identified. No deviations were identified.

7. Solid Radioactive Waste (IP 86750)

a. Waste Treatment

There are four main solid waste streams at the facility. They are spent resins, evaporator bottom residue, spent filters and Dry Active Waste (DAW).

The licensee uses the Radlock 500 system to dewater resins. The wet spent resin is transferred to a high integrity container (HIC) and the Radlock system dewateres the resin in the HIC. The licensee purchased the Radwaste Volume Reduction (RVR) 800 system to process their wet evaporator bottom residue. The system collects, dries and mixes the residue with hot paraffin. The hot mixture is transferred to 55 gallon drums for shipment. Spent filters are first drained and then transferred to filtered HICs to

dry. DAW is shipped to one of two vendors, Scientific Ecology Group and Quadrex, for incineration and/or supercompaction. HICs and drums are shipped directly to a the burial site. For DAW, the vendor is responsible for disposal following treatment.

b. Waste Classification

The licensee uses RADMAN, a computer based program, to calculate isotopic activities for each shipment. The program calculates scaling factors based on the vendor supplied isotopic analyses of each waste stream. Annually, samples from each waste stream are sent to a vendor for isotopic analyses. The licensee will send additional samples if conditions change within the plant or a new waste stream is generated. The results of the analyses are fed into RADMAN and the program uses the data to calculate the scaling factors for each stream. For spent resins, HIC isotopic activity is based on the scaling factors and the weight/mass of the waste in the HIC. For DAW and filter shipments, isotope activities are based on the scaling factors and a container dose-to-curie conversion. For RVR shipments, representative core samples are obtained and analyzed. If the analyses match those of the vendor the results are fed into RADMAN and the isotopic activities for each drum are calculated. RADMAN performs all of the required calculations for each shipment and is capable of generating many of the shipping documents. Many other licensees are using RADMAN and it appears to be an excellent program.

Since the last radioactive waste inspection, several problems have arose with regard to their 10 CFR 61 laboratory vendors (SOS 92-1939). In December 1991, solid radioactive waste samples were sent to their vendor for analysis and after waiting several months for the results the licensee was told that the vendor could no longer perform the analyses. Further samples were collected and sent to another vendor. Upon receipt of the results, the licensee determined that the liquid evaporator bottom sample gamma results were too low by a factor of 100 when compared to the in-house analysis and the transuranic and beta results were too high. An investigation concluded that the laboratory had allowed the solids in the sample to settle, prior to the analysis, and this had effected the sample's geometry with respect to the detector. Since the other results were in agreement with past analyses the licensee core sampled ten additional RVR barrels, composited the samples and sent the composite to the vendor for analysis. The results of this analysis agreed with past analyses.

The inspector noted that a QA audit had not been performed on either of the vendor labs. This issue was discussed at the exit meeting. Following the inspection, the inspector was told that QA was planning to conduct a surveillance on the Radwaste program to determine if audits of vendor laboratories were needed and/or required.

The inspector reviewed selected radioactive waste and transportation procedures. The procedures appeared to be comprehensive and user friendly. With one exception, each of the procedures had been reviewed and/or revised within the previous 12 months. The lone exception was procedure RDP-ZZ-00013, 10CFR61 Sampling Program. The procedure had not been reviewed since 1988. The inspector identified several errors in the procedure and noted that it could not have been used as written. The inspector was told that another procedure (RTS-HC-01130) had been written to replace RDP-ZZ-00013 but that procedure had not been formally approved. Recognizing the requirement for procedural "adherence" and in light of the recent decision to drop the requirement for a biannual review of all procedures, the licensee has decided to reconsider all of their procedural review options. Even though one procedure in need of revision does not indicate a weakness in the whole program, the need for reviewing all of the radioactive waste and transportation procedures was discussed at the exit meeting.

No violations or deviations were identified.

8. Transportation of Radioactive Material (IP 86750)

A review of the records indicated that the licensee had made 14 radioactive waste and 40 radioactive materials shipments beginning January 1, 1992. The inspector noted that none of the shipments were found to be in violation of any of the NRC, DOT or State requirements.

The inspector reviewed selected radioactive waste and radioactive materials shipments for the adequacy of surveys; shipping documentation; package marking and labeling; package blocking and bracing; vehicle placarding and driver's instruction. In each case, the licensee had met all of the regulatory requirements.

No violations or deviations were identified.

9. Receipt of Radioactive Material (IP 83750)

In Inspection Report 483/92006(DRSS), a non-cited violation and an open item (Open Item 483/92006-03(DRSS)) were identified for failing to survey incoming packages within time frames specified in procedure HTP-ZZ-02002. In both cases, storekeepers had failed to recognize that the packages contained radioactive material. During a subsequent inspection, the licensee indicated that their vendors had been instructed to attach labels to packages indicating the presence of radioactive material and storekeepers had been trained to recognize packages containing radioactive material. The inspector closed the open item in Inspection Report 483/92011(DRSS). Since that inspection, two similar incidents have occurred involving the receipt of packages containing radioactive material. In both cases, the packages were not surveyed prior to their release to other areas within the plant as required by HTP-ZZ-02004 and HTP-ZZ-02002 (SOS 92-1748 and SOS 92-1579). These procedures require that upon receipt of a package containing radioactive material, including the receipt of radioactive sources, the

warehouse will notify Health Physics. Upon notification, Health Physics shall perform a survey within three hours if the package was received during normal working hours or within eighteen hours if received after normal working hours.

In one case, a set of radioactive sources was received on September 9, 1992, and the vendor had failed to attach the required label and the storekeeper had failed to recognize that the package contained radioactive material. In the second case the warehouse received a radioactive 55 gallon drum on July 22, 1992, and even though the container was clearly marked as containing radioactive material, the storekeeper had failed to notify HP prior to its release from stores. In both cases surveys were not completed within three or eighteen hours. These cases indicated that the licensee's corrective actions from the earlier incidents had been inadequate. The inspector noted, however, that the licensee's procedures go beyond the regulatory requirements of 10 CFR 20.205; limited quantity shipments are exempt from the surveying requirements. Recognizing the need to take additional corrective action, the licensee conducted an additional training seminar for the storekeepers. The two failures to survey the packages are violations of Technical Specification 6.8.1 for failure to implement written procedures. (Inspection Follow-up Item 483/92025-02.)

No violations or deviations were identified.

10. Plant Tours (IP 83750, IP 86750)

The inspector toured the Hot Machine Shop (HMS) and the auxiliary and radwaste buildings. The inspector observed the following:

- * Significant improvements were observed in housekeeping practices in the Hot Machine Shop and the auxiliary and radwaste buildings. The inspector did find some debris (gloves and a towel) on the floor in the Hot Machine Shop and the area needed some additional work. Housekeeping in the radwaste and auxiliary buildings had improved from poor to excellent in many areas of both buildings.
- * Many contaminated rooms in the radwaste building had been decontaminated. In addition, in those areas where total decontamination was problematic (pumps on skids for example) total surface contamination levels had been reduced significantly.
- * The inspector found multiple examples of mislabeled containers during a tour of the radwaste building. The inspector found old dose rate and shipping labels on empty drums, drums with multiple labels or markings, empty drums without labels and drums with no description of the contents. During a review of the SOS's, the inspector noted that the Radioactive Waste group had written a SOS in October of 1992 documenting many of the same problems observed during the tour (SOS 92-1937). As a result of the SOS and the need to ship all of their radioactive waste before January 1, 1993, many of the drums were opened to see what was in them. The

SOS concluded in part that plans and procedure changes need to be made to prevent a recurrence of these problems. The inspector concurred with this conclusion and will review the corrective actions taken in subsequent inspections. Inspection Follow-up Item 483/92025-03.

No violations or deviations were identified.

11. Exit Interview (IP 83750, IP 86750)

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on November 6, 1992, to discuss the scope and findings of the inspection.

During the exit interview, the inspector discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. Licensee representatives did not identify any such documents or processes as proprietary. The following matters were specifically discussed.

- a. Inspector concerns regarding the qualifications and training of new supervisors (Section 4).
- b. Inspector concerns regarding the implementation of the 10 CFR 71 Subpart H, QA program (Section 6).
- c. Inspector concerns regarding the receipt of packages containing radioactive material (Section 9).
- d. Inspector concerns regarding the control of containers in the Radwaste building (Section 10).