

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.: 50-483
License No.: NPF-30
Report No.: 50-483/97-16
Licensee: Union Electric Company
Facility: Callaway Plant
Location: Junction Hwy. CC and Hwy. O
Fulton, Missouri
Dates: September 15-19, 1997
Inspector: Larry Ricketson, P.E., Senior Radiation Specialist
Plant Support Branch
Approved By: Blaine Murray, Chief, Plant Support Branch
Division of Reactor Safety

ATTACHMENT: Supplemental Information

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EXECUTIVE SUMMARY

Callaway Plant
NRC Inspection Report 50-483/97-16

This announced, routine inspection reviewed external exposure controls, internal exposure controls, dose assessment and dose records, controls of radioactive materials and contamination, and surveying and monitoring.

Plant Support

- Generally, external exposure controls and dose assessment techniques were good; however, a noncited violation involving the control of a locked high radiation area was identified and corrected by the licensee (Section R1.1).
- Sound programs were implemented to control internal exposure, but respirator storage needed improvement. Respirators were packed into small bins in a manner that had the potential to distort the rubber or other elastomeric parts (Section R1.2).
- Radioactive material and contamination controls were generally well implemented, but a problem was identified with the control of items conditionally released from the radiological controlled area. Records did not always reflect the actual storage location of items conditionally released (Section R1.3.).

Report Details

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 External Exposure Controls

a. Inspection Scope (83750)

The radiation protection program was inspected during normal operations. No major work activities were conducted during the inspection; therefore, no performance-based inspection was conducted. The inspector interviewed radiation protection personnel and reviewed the following:

- Control of high radiation areas
- High radiation area key control
- Radiological posting
- Radiation work permits
- Access controls
- Dosimetry use
- Dosimetry processing
- Dosimetry records
- Skin dose measurements
- Notifications

b. Observations and Findings

The inspector's reviews indicated that most elements involved in the external exposure control program were implemented properly.

The licensee implemented the use of electronic, alarming dosimeters for routine use during radiological controlled area entries. Workers were knowledgeable of requirements for logging in and out of the radiological controlled area using the new electronic dosimeter system. Access controls functioned appropriately.

Since no major work activities were being conducted, only general radiation work permits were in effect. The work permits provided guidance commensurate with the radiation hazards at the time.

Radiation workers wore the electronic dosimeters and thermoluminescent dosimeters in accordance with procedural guidance. The licensee's dosimetry program was reviewed and accredited by the National Voluntary Laboratory Accreditation Program, as required by 10 CFR 20.1501(c). The inspector reviewed the findings of

the latest dosimetry program review and noted that one deficiency was identified. The licensee addressed the finding appropriately. The licensee's dosimetry accreditation extends through March 31, 1998.

Skin dose calculations were performed appropriately after personnel contamination incidents. The inspector verified that the results of dose calculations were included in the individuals' dosimetry records, in accordance with 10 CFR 20.2103 and 10 CFR 20.2106. The inspector noted that the highest single whole body dose resulting from contamination events was approximately 64 millirems. The inspector concluded that contamination incidents did not contribute significantly to the workers' individual doses.

High radiation areas were properly controlled, during the inspection. However, the licensee identified, through the problem reporting program, events during which personnel entered into a locked high radiation area without complying with the requirements of Technical Specification 6.12. Technical Specification 6.12.1 requires that individuals entering high radiation areas have radiation dose rate measuring devices, radiation dose integrating and alarming devices, or health physics coverage. Technical Specification 6.12.2 requires that individuals entering into an areas with radiation levels greater than 1000 millirems per hour do so in accordance with the requirements of Technical Specification 6.12.1 and a radiation work permit that specifies the dose rate levels in the immediate work areas and the maximum allowable stay time for the individuals in that area.

The licensee documented (in SOS 97-0742) that two entries were made into the emergency personnel hatch vestibule on June 17, 1997, by individuals who did not comply with the requirements of Technical Specification 6.12. The licensee determined through a root cause analysis that the events resulted from a series of miscommunications, a weakness in the key control program, and poor worker knowledge of posting requirements. Corrective actions, implemented or proposed by the licensee, included: revising instructions to security personnel to require the issuance of locked, high radiation area keys only to radiation protection personnel; providing additional training to security personnel informing them of the radiological significance of the emergency personnel hatch door; providing additional training to plant personnel with regard to posting requirements; and using area posting of unique color for locked high radiation areas. This nonrepetitive, licensee-identified and corrected violation is being treated as a noncited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (483/9716-01).

The inspector noted that locked high radiation area keys were issued and controlled properly. Licensee personnel accounted for all keys. Radiological areas were posted appropriately.

c. Conclusions

Generally, external exposure controls and dose assessment techniques were good; however, a noncited violation involving the control of a locked high radiation area was identified and corrected by the licensee.

R1.2 Internal Exposure Controls

a. Inspection Scope (83750)

The inspector interviewed radiation protection personnel and reviewed the following:

- Air sampling results
- Respiratory protection
- Whole body counting

b. Observations and Findings

Internal exposure contributed very little to the total site exposure. In 1996 the site dose was 248 person-rem. Internal sources accounted for approximately 200 millirems of the exposure.

Whole body counts were generally performed as required; however, the inspector noted an example that occurred on October 16, 1996, in which an individual was identified as having contamination on his mustache. The contamination level was approximately 350 counts per minute. Typical industry practice, in such a case, would be to perform a whole body count to determine if radioactive material was ingested. Licensee representatives acknowledged that such a practice is the expectation at the licensee's facility, as well. They could not explain why a whole body count was not performed. Licensee representatives stated that this item will be discussed with radiation protection technicians to ensure they understand management's expectations.

During the review of the personnel contamination event/incident log, the inspector noted that there had been no review of the information in the log by a radiation protection supervisor since May 1997. Licensee personnel acknowledged the inspector's comment and revised the instructions in the shift task assignment to require the radiation protection shift supervisor to review, initial, and date the log weekly. SOS 97-1093 was initiated.

No program existed for testing the effectiveness of ventilation systems or vacuum cleaners equipped with high efficiency particulate air filters. Licensee representatives stated that they would review this item and determine if it would be a beneficial program enhancement. SOS 97-1091 was initiated.

In other areas related to the control of internal exposure, the inspector verified that individuals listed in respirator issue records had current qualifications and that respirators issued to individuals matched the sizes with which the individuals were fitted.

The inspector noted that housekeeping in the respirator issue room needed improvement. Additionally, respirator storage needed attention because it was inconsistent and haphazard. Some respirators in the storage bins were sealed in bags; some were not. Common practice is to store respirator in bags, following inspecting, cleaning, and disinfecting. Respirators were packed into small bins in a manner that had the potential of distorting the rubber or other elastomeric parts. The supervisor with responsibility for the respiratory protection program acknowledged that he had not been in this area recently and stated that he would take action to improve the housekeeping and storage conditions. SOS 97-1096 was initiated.

Regulators and air cylinders for self contained breathing apparatuses were tested according to procedural requirements. Breathing air was tested quarterly to ensure that it met the standards of Grade D air as describe in ANSI/CGA G-7.1

c. Conclusions

Sound programs were implemented to control internal exposure, but respirator storage needed improvement. Respirators were packed into small bins in a manner that had the potential to distort the rubber or other elastomeric parts.

R1.3 Control of Radioactive Material and Contamination: Surveying and Monitoring

a. Inspection Scope (83750)

The inspector interviewed radiation protection personnel and reviewed the following:

- Control/release of materials
- Source accountability
- Source leak testing
- Personnel contamination events
- Portable survey instrument calibration
- Personnel contamination monitors and tool monitor calibration
- Alarming dosimeters/pocket ion chambers calibration
- Whole body counter calibration

b. Observations and Findings

The licensee performed most activities in this area appropriately. Selected sources from the licensee's inventory records were reviewed by the inspector and the licensee accounted for all examples. Likewise, leak test records, documenting that sources were tested at the proper intervals, were available for randomly chosen examples. With the aid of a radiation protection technician and a highly sensitive, portable radiation detection instrument (sodium iodide scintillation detector), the inspector performed checks of a warehouse and several trash dumpsters outside the radiological controlled area. No uncontrolled licensed material was identified.

The licensee established a process for the conditional release from the radiological controlled area of items having fixed or internal radioactive contamination. A log was maintained of these items, listing the locations in which the items were supposed to be stored. The inspector reviewed the log and attempted to verify the locations of selected items. One item, a leak rate monitor (Serial No. 2002), was not in the area identified on the log as the instrument's intended storage area, the measuring and testing equipment room. Radiation protection personnel conducted interviews and searches and found the leak test monitor was checked out of the storage room, used during a test, and left in the radiological controlled area in the equipment operators' mudroom. Because the item was contained within the radiological controlled area, no regulatory deficiency related to the control of radioactive materials occurred. However, the example demonstrated a weakness in the licensee's ability to account for conditionally released items. SOS 97-1078 was initiated.

During tours of the radiological controlled area, the inspector reviewed posted area survey records and compared the results with conditions inside the areas. The inspector noted that areas tagged as hot spots were not consistently indicated on radiation survey records. Licensee representatives stated that, in some cases, the areas tagged as hot spots no longer met the definition of hot spots, but the tags had not been removed. They further stated they would review the matter with radiation protection technicians to ensure they understood management expectations and were consistent in the tagging of hot spots and the recording of survey information.

The previous comment, notwithstanding, the inspector found that survey records were complete and easy to read. The inspector noted examples of radiation measurement instrumentation used to perform the surveys and compared the examples with instrument calibration records. The inspector determined that instruments used for the performance of surveys were within the calibration intervals.

The inspector reviewed the licensee's portable instrument calibration program and found it to be acceptable, but noted that no procedural guidance existed to ensure that instruments that failed response tests were evaluated in a timely manner to

determine when and how the instruments were used prior to failing the test. Licensee representatives acknowledged the inspector's comment and initiated a temporary change notice to Procedure HDP-ZZ-04000, "Health Physics Instrumentation Program," Revision 14, to require instruments to be evaluated within one working day after discovery of the non-conformance. SOS 97-1092 was initiated.

c. Conclusions

Radioactive material and contamination controls were generally well implemented, but a problem was identified with the control of items conditionally released from the radiological controlled area. Records did not always reflect the actual storage location of items conditionally released.

RB Miscellaneous Radiological Protection and Chemistry Issues

8.1 (Closed) Violation 483/96012-01: Failure to Barricade and Post a High Radiation Area

The inspector verified the corrective actions described in the licensee's response letter, dated January 6, 1997, were implemented. No similar problems were identified.

8.2 (Closed) Violation 483/96012-03: Failure to Control Radioactive Materials and Meet Transportation Requirements

The inspector verified the corrective actions described in the licensee's response letter, dated January 6, 1997, were implemented. No similar problems were identified.

8.3 (Closed) Unresolved Item 483/97004-03: Changes to the Offsite Dose Calculation Manual

During a review of corrective actions for an NRC identified violation (483/9516-01), NRC personnel noted that the licensee revised the offsite dose calculation manual wording pertaining to the requirements for gathering of milk and vegetation samples in a manner that may have reduced the requirements of the offsite dose calculation manual. The revisions were discussed with licensee personnel and the offsite dose calculation manual was revised, again, to reflect the original wording. During this inspection, the inspector determined that the revisions resulted in no actual changes in the locations from which milk and vegetable samples were gathered nor in the method by which they were gathered. The inspector determined that no regulatory issues existed as a result of the licensee's revisions to the offsite dose calculation manual.

X1 Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at an exit meeting on September 19, 1997. The licensee acknowledged the findings presented. No proprietary information was identified.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licenses

R. Affolter, Plant Manager
M. Evans, Superintendent, Health Physics
R. Farnam, Supervisor, Health Physics Operations
K. Gilliam, ALARA Coordinator
C. Graham, Health Physics Technical Support
J. Laux, Manager, Quality Assurance
J. Little, Engineer, Quality Assurance
B. Miller, Dosimetry Supervisor, Health Physics
G. Randolph, Vice President, Nuclear Operations
M. Reidmeyer, Engineer/NRC Interface, Quality Assurance
D. Thompson, Instruments Supervisor, Health Physics

NRC

D. Passehl, Senior Resident Inspector
F. Brush, Resident Inspector

INSPECTION PROCEDURES USED

83750 Occupational Radiation Exposure

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

483/9716-01 NCV Personnel Entry into Locked High Radiation Area

Closed

483/9716-01	NCV	Personnel Entry into Locked High Radiation Area
483/9612-01	VIO	Failure to Barricade and Post a High Radiation Area
483/9612-03	VIO	Failure to Control Radioactive Materials/Failure to Meet Transportation Requirements
483/9704-03	URI	Offsite Dose Calculation Manual Changes

LIST OF DOCUMENTS REVIEWED

List of Suggestion Occurrence Solution System reports (9/01/96 - 9/05/97)

Procedures

HDP-ZZ-01400, "Dosimetry Quality Control Program," Revision 14
HDP-ZZ-01500, "Radiological Posting," Revision 15
HDP-ZZ-03000, "Radiological Survey Program," Revision 20
HDP-ZZ-04000, "Health Physics Instrumentation Program," Revision 14
HDP-ZZ-08000, "Respiratory Protection Program," Revision 12
HTP-ZZ-01320, "Internal Dose Assessment," Revision 11
HTP-ZZ-01417, "Dosimetry Processing," Revision 18
HTP-ZZ-02004, "Control of Radioactive Sources," Revision 16
HTP-ZZ-06009, "Personnel Contamination Incidents," Revision 24
HTP-ZZ-08501, "Testing of Breathing Air," Revision 5