U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-483/93020(DRP)

Docket No. 50-483 License No. NPF-30

Licensee: Union Electric Company
Post Office Box 149 - Mail Code 400
St. Louis, MO 63166

Facility Name: Callaway Plant, Unit 1

Inspection at: Callaway Site, Steedman, MO

Inspection Conducted: November 21, 1993 through January 22, 1994

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2/25/94
Date

Inspection Summary

Inspection from November 21, 1993 through January 22, 1994 (Report No. 50-483/93020(DRP))
Areas Inspected: Routine unannounced inspections of plant operations and maintenance and surveillance were conducted.

Results:
Within the areas inspected one violation with four examples was identified; two of the violation examples were repeat violations. The first example dealt with plant personnel failing to verify a filter was returned to service in accordance with procedure, the second example dealt with the failure to secure a locked valve, the third example dealt with securing a scaffold to safety related equipment and the fourth example dealt with failing to secure a tall scaffold as required.

The strengths noted included: Good root cause analysis and corrective action concerning the loss of reactor coolant pump seal water injection flow, engineering promptly responded to the concerns on inadequately erected scaffolding and was knowledgeable of the seismic two over one requirements,

observed maintenance and surveillance activities were professionally implemented.

The weaknesses noted included: A lack of sufficient questioning attitude that resulted in a brief loss of seal water injection and resulting inadvertent gaseous release that was significantly below the technical specification limits, continuing problems with the control of locked components, failure to control scaffolding, an excessive amount of trash and debris was left laying about the site, and there were further examples of trash in the ultimate heat sink being identified by NRC inspectors.

## DETAILS

1. Management Interview (71707)

The inspectors met with licensee representatives denoted in Paragraph 8 on February 11, 1994, to discuss the scope and findings of the inspection. In addition, the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection was also discussed. The licensee did not identify any such documents or processes as proprietary.

Highlights of the exit interview are discussed below:

a. Strengths noted:

(1) There was good root cause analysis and corrective action concerning the loss of reactor coolant pump seal water injection flow (paragraph 2b).

(2) Engineering promptly responded to the issues on inadequately erected scaffolding and was knowledgeable of the seismic two over one requirements (paragraph 2c).

(3) Observed maintenance and surveillance activities were professionally implemented (paragraph 2).

b. Weaknesses noted:

(1) There was a lack of a sufficiently questioning attitude that resulted in a brief loss of seal water injection and a small inadvertent but monitored gaseous release (paragraph 2b).

(2) Problems continued to occur with the control of locked components (paragraph 2a).

(3) Additional failures to properly control scaffolding were identified (paragraph 2c).

(4) An excessive amount of trash and debris was left laying about the site (paragraph 2d).

(5) There were additional examples of trash in the ultimate heat sink that were identified by NRC inspectors (paragraph 2e).

b. Due to an insufficient questioning attitude and a communications failure, the reactor coolant pump seals experienced a brief loss of seal water injection. This occurrence forced the reactor coolant pump seals to rely on the backup thermal barrier system. The loss of flow was due to vents and drains being open when a seal water injection filter was restored to service. This activity resulted in a brief diversion of seal injection water to

the radwaste storage system and a inadvertent, but monitored, gaseous release out the unit vent. The licensee was informed that when plant personnel are unsure of the status of equipment and cannot find the valve lineup sheet, they must not assume that it was properly restored by the previous work group.

c. During a routine plant walkdown the NRC inspectors identified another example of an unsecured valve. During the last 17 months the inspectors have identified one unsecured locked damper and two unsecured valves. Fortunately, all components were found in their required positions; however, the inspectors were concerned with the adequacy of the locked component program. If problems continue, it is likely that an unsecured component will eventually end up affecting the operability of safety related components.

The NRC inspectors also determined that the operating supervisor failed to initiate a corrective action document (SOS) and failed to inform the shift supervisor (SS) of the unsecured component. While this failure was not a violation of NRC requirements, it reflected an inappropriate attitude towards locked components.

During the exit meeting, a frank and open discussion was held concerning the failure to initiate a corrective action document, the NRC requirements to initiate a corrective action document, and whether those requirements had been recently changed. The licensee suggested alternative procedures that could be implemented if those requirements had been changed. The NRC inspectors responded that officially the requirements had not been changed and that no suggestion that the requirements had been changed was meant to be implied.

d. During a routine plant tour, the inspectors identified several examples of improperly installed temporary scaffolding. Fortunately, engineering was able to verify that safety related equipment was not made inoperable by the scaffolding. A review of corrective action documents and interviews of plant personnel revealed that problems with scaffolding have been minimal. Notwithstanding this, the failure to restrain scaffolding in the upper one third is a repeat violation.

e. Plant housekeeping was allowed to slip to extremely poor levels following the refueling outage. It is normal for debris and trash to build up during a refueling outage, but it should be cleaned up on a timely basis. Following the refueling outage, trash and debris were not properly cleaned up and in fact continued to accumulate. Old tools, 55 gallon drums, sacks, boards, carts, hoses, and many other items were left laying about the site.

f. Trash and debris continued to be found in the ultimate heat sink (UHS) by the NRC inspectors. As previous examples discussed in earlier inspection reports, this trash did not affect the operability of the UHS. However, accumulated trash could degrade

UHS performance and should be avoided. Additional corrective actions were implemented by the licensee.

2. Plant Operations (71707)

The objectives of this inspection were to ensure that the facility was being operated safely and in conformance with license and regulatory requirements and that the licensee's management control systems were effectively discharging the licensee's responsibilities for continued safe operation. The methods used to perform this inspection included direct observation of activities and equipment, tours of the facility, interviews and discussions with licensee personnel, independent verification of safety system status and limiting conditions for operation (LCOs), corrective actions, and review of facility records.

Areas reviewed during this inspection included, but were not limited to, control room activities, routine surveillances, engineered safety feature operability, radiation protection controls, fire protection, security, plant cleanliness, instrumentation and alarms, deficiency reports, and corrective actions.

a. Unsecured Locked Valve

On December 6, 1993, during a routine tour of the condensate storage tank area the inspectors identified an unsecured locked valve. The valve was AP V-0006, condensate reject to the condensate storage tank (CST) manual isolation. The inspectors informed the operating supervisor (OS) who promptly verified that the valve was in the required position and re-locked the valve. The inspectors later determined that the OS had not informed the shift supervisor (SS) and had not initiated a corrective action document (SOS).

While valve AP V-0006 is not a safety related valve it is required to protect equipment or to ensure proper system operation. The CST supplies makeup water to the condenser and also supplies water to the auxiliary feedwater (AFW) system. Due to the design of the CST, the emergency supply to the AFW system would at all times be maintained. However, if the condensate system needed to reject water to the CST then flow would be required through valve AP V-0006.

Previous Occurrences

On September 2, 1992, NRC inspectors identified a safety related damper that was not locked as required by procedure. During additional followup by the licensee, another safety related damper that was not secured was identified (both dampers were in their required positions). The licensee initiated corrective actions and a violation was issued (483/92012-01). The licensee

identified that the root cause was due to system flow balance activities, inadequate procedural controls, and personnel error.

On November 15, 1992, the inspectors identified a valve that was unlocked. It was in its proper position. This incident was not documented in an SOS until prompted by an NRC inspector. A violation was issued (483/92015-01) for failure to secure the valve. Due to the licensee's generally good performance in the initiation of corrective action documents, no violation for failing to initiate an SOS was issued for this event. The licensee identified that the root cause was due to an inadequate restoration procedure from a maintenance evolution.

On November 17, 1992, an equipment operator identified an unsecured locked valve that was in its proper position and initiated an SOS and corrective action.

The preceding discussions identify multiple examples of unsecured locked components along with two failures to initiate corrective action documents within the last 17 months. These examples indicate an indifferent attitude toward the locked component program.

The failure to lock valve AP V-0006 is an example of a violation involving failure to follow procedures (483/93020-01a(DRP)). The failure to initiate a corrective action document was not a violation of NRC requirements, but it was a failure to meet licensee management expectations. This violation was issued to emphasize the importance of locked component control.

b. Loss of Reactor Coolant Pump Seal Water Injection Flow

During this inspection period, seal water injection flow to the reactor coolant pumps was briefly lost and about 500 gallons of reactor coolant system (RCS) water was inadvertently diverted to radwaste holding tanks. In addition, a small, inadvertent, but monitored, release of radioactive gasses occurred. This was due to a communications error and a failure to have a sufficient questioning attitude. There was however, good root cause analysis and corrective action concerning the loss of reactor coolant pump seal water injection flow.

On January 13, 1994 at 2:35 a.m. (CST), the night shift (7:00 p.m. to 7:00 a.m.) operating supervisor (OS), directed the owl shift (11:00 p.m. to 7:00 a.m.) primary equipment operator (EO) to place reactor coolant system (RCS) seal water injection filter FBG04B in service. This action was performed by swapping over from its parallel filter, FBG04A. The intent of this swap was to place the "B" filter back in service and then perform maintenance on the "A" filter. It was later determined that the OS had received incorrect turnover information from the previous shift that seal water injection filter "B" had been replaced.

When the "B" filter inlet isolation valve was cracked open, the "seal injection to reactor coolant pump (RCP) flow low" main control board (MCB) annunciator was received. Without success, the reactor operator (RO) attempted to increase seal water injection flow by throttling closed valve BG HCV-0182, which controls flow to the normal charging line. This action resulted in the pressurizer level decreasing. At the direction of the OS, the EO restored the seal injection flow through the "A" filter by closing the inlet isolation valve to the "B" filter. The EO subsequently discovered that the "B" filter had not been replaced and that its vent and drain valves had been left in their open positions. This occurrence resulted in the brief loss of RCP seal water injection flow with the concomitant loss of approximately 500 gallons of reactor coolant water to radwaste.

In following up on the maintenance activities for the "B" filter it was determined that on January 12, 1994, at 11:30 a.m. (CST), the EO isolated, vented, and drained the "B" filter in accordance with the part A checklist of RTN-HC-00500, Revision 10, "Filter Handling Operation," as part of the preparation for the "B" filter replacement. This action was independently verified by a radwaste technician as required by procedure.

By 2:00 p.m. (CST), the "B" filter was ready to be changed out. Nearing the end of the AM shift (7:00 a.m. to 3:00 p.m.), the radwaste supervisor decided to postpone the changeout to the following AM shift instead of continuing the task through the next shift. This decision was due to an expected shortage of radwaste personnel needed to perform the changeout during the PM shift. The condition of the "B" filter was left as-is, with its vent and drain valves open. Neither the EO nor the radwaste personnel informed the main control room personnel of this end-of-shift status. This communication should have taken place not only because the filter changeout task was left unfinished, but also because the filter was not left in a secured configuration. The checklist and the work documents were left in the radwaste control room. The turnover from the offgoing day shift OS to the oncoming night shift OS indicated that the "B" filter had been changed out and was ready to be restored to service.

Prior to authorizing restoration of the "B" filter to service, the on-duty OS had called radwaste personnel to obtain the status of the checklist. The list could not be located. Despite the absence of this checklist, the activity to restore the "B" filter to service was attempted. Contrary to the first step of section 5.3 in procedure OTN-BG-00001, seal water injection filter "B" was not verified to be filled and vented prior to restoring it to service.

In addition to the brief loss of seal water injection flow and the small diversion of reactor coolant, a radiation monitor in the auxiliary building alarmed. Because the effluent release (noble

gas) was within the background concentration level as measured at the unit vent it did not challenge the health and safety of the public. However, any unnecessary effluent release to the environment is undesirable. Also, the pressurizer level decrease was considered to be an undesirable perturbation to the normal operation of the plant.

In short, the above event could have been prevented if any of the barriers in the following list of contributing causes had not been breached:

- The filter changeout was deferred with its vent and drain valves in their open positions.

- The postponing of the filter changeout and the status of the valves' positions were not communicated to the control room personnel.

- Shifting from filter "A" line-up to filter "B" line-up was authorized in spite of insufficient feedback regarding the status of the filter changeout checklist.

- The multiple use completion form which was required to be signed off by the OS after the completion of the task was not signed.

These communication problems, along with the failure to follow a procedure, depicted a lack of sufficient safety concern and questioning attitude by the radwaste personnel, the EO, and the OS to ensure safe operation of the filter changeout.

The licensee's failure to verify that seal water injection filter FBG04B was filled and vented prior to placing it in service is an example of a violation involving failure to follow procedures (483/93020-01b(DRP)).

c. Scaffold Installation Deficiencies

On January 5, 1994, the inspectors observed two scaffold installations which did not appear to be erected in accordance with procedure MDP-ZZ-S0001, Revision 7, "Scaffolding Installation and Evaluation." Discussions with maintenance and engineering personnel indicated that neither scaffold represented an equipment operability concern but confirmed that the scaffolding did not comply with the procedural requirements.

The first scaffold was observed on the 2047 foot elevation of the auxiliary building adjacent to SGL02, the auxiliary building motor generator set room fan coil unit. The scaffold was installed with vertical supports between and in contact with safety related electrical conduits and the building wall. One horizontal scaffold support was touching and represented a point load on

safety related ducting. Procedure step 5.2.5.4, required scaffolding to not be in contact with or braced to safety related or special-scope equipment or components. The licensee's failure to erect the scaffolding in accordance with procedural requirements is an example of a violation involving failure to follow procedures(483/93020-01c(DRP)).

The second scaffold was observed on the 1974 foot elevation of the auxiliary building adjacent to the trash compactor. The scaffold was approximately 20 feet in height and was not restrained from tipping. Procedure step 5.2.5 required scaffolding over eight feet in height to be restrained from tipping over. The licensee's failure to properly restrain the scaffolding is a repeat example of a violation involving failure to follow procedures(483/93020-01d(DRP)).

The licensee determined that these two scaffolds did not comply with the requirements of procedure MDP-ZZ-S0001. Engineering initiated an SOS to document the occurrences and track corrective actions. The scaffold on the 1974 foot elevation was restrained as required. The scaffold on the 2047 foot elevation was evaluated by the licensee in accordance with procedure MDP-ZZ-S0001 and found to meet Seismic II/I requirements in its existing configuration.

d. Housekeeping Deficiencies

During plant walkdowns on January 4, 5, and 6, 1994, the inspectors noted numerous housekeeping deficiencies. While none of the housekeeping issues related to immediate operability concerns, housekeeping was degraded and reflected inattention to detail. In addition, there was an insufficient sense of ownership on the part of plant personnel who toured these areas.

Specific housekeeping deficiencies included:

- Clear plastic located on the 2047 foot elevation of the fuel building around the spent fuel pool.

- A crescent wrench left near the residual heat removal (RHR) "B" heat exchanger.

- Heavy carts, lockers, and ladders on wheels left near safety related equipment on the 2026 and 1974 foot elevations of the auxiliary building.

- A ladder left leaning vertically against the wall in the control rod drive motor generator set room.

- Three radiation monitors with inlet open light bulbs out, and GT RE-21A, "containment building air exhaust plenum

radiation monitor" had the inlet open lamp lens and purge closed lamp lenses swapped.

- An RHR pump room chain fall was draped over instrumentation tubing.

- A contaminated area boundary rope was tied so as to potentially interfere with the RHR pump room sump level float.

- A chain fall hook left in the lowered position near the outboard bearing of the "C" component cooling water pump.

- A loose pipe support in the "B" essential service water pump room supporting the stuffing box water supply line.

- Spray lubricant, tape, hose, scaffolding knuckles, a vacuum cleaner, a ladder, metal supports, and metal pipe caps left in the essential service water pump rooms.

- Leak detection fluid, wire, wipes, oil, a paint brush, a dust pan, instrumentation transmitter hardware, braided cable, and a standing ladder left in Area 5.

The licensee acknowledged weaknesses in housekeeping and stated that efforts were underway to improve housekeeping following the recent refueling outage. The licensee also stated that efforts were underway to increase worker awareness and ownership of plant equipment.

e. Ultimate Heat Sink (UHS)

On December 21, 1993, the inspectors identified debris in and around the UHS. The UHS is a small, open pond that the licensee utilizes to cool the reactor if the normal cooling systems are unavailable. While none of the identified debris would have prevented the UHS or essential service water (ESW) system from performing their intended safety functions, accumulated debris could eventually result in partial blockage of the ESW pumps intake area.

The inspectors were concerned because this was a repeat problem with debris in the UHS as previously discussed in NRC inspection report 50-483/93017(DRP). At that time licensee management informed plant personnel of the need to pick up debris, directed that the areas near the UHS be cleaned up, and periodically toured the UHS to ensure its continued cleanliness. These corrective actions were inadequate.

The apparent source of most of the debris was maintenance, construction and storage activities outside of a new maintenance

facility located next to the UHS. A trash bin located outside of the building allowed material to be blown into the UHS. In addition, some materials were stored outside of the building. While the materials were large and bulky, packing material and other debris could have been introduced into the UHS from this source.

Short term corrective actions for the new debris included removal of debris and the assignment of a plant helper to tour the UHS daily to identify and remove debris. The material being stored outside the maintenance building was removed at the end of the outage.

The NRC inspectors will continue to monitor the UHS closely to ensure that debris does not continue to migrate into the pond.

3. Maintenance/Surveillance (62703) (61726)

Selected portions of the plant surveillance, test, and maintenance activities on safety related systems and components were observed or reviewed to ascertain that the activities were performed in accordance with approved procedures, regulatory guides, industry codes and standards, and the Technical Specifications. The following items were considered during these inspections: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibration was performed prior to returning the components or systems to service; parts and materials that were used were properly certified; and appropriate fire prevention, radiological, and housekeeping conditions were maintained.

a. Maintenance

The reviewed maintenance activities included:

| Work Request No. | Activity |
|---|---|
| W514164 | Inspect lugs and fingerbase hardware on valve EM HV-8923B, refueling water storage tank to "B" safety injection pump. |
| W546302 | Replaced the PBAX relay on the "C" phase main transformer. |
| W164171 | Replaced the solenoid valve on "B" diesel generator "G" starting air dryer. |
| W159568 | Replaced the valve handle on the "B" diesel generator "C" starting air tank outlet vent. |

| | |
|---|---|
| W160651 | Adjusted packing on valve GK V-0768, electrical equipment air conditioner unit "B" essential service water outlet. |

On November 30, 1993, an equipment operator (EO) notified the control room shift supervisor of a potentially low flow condition through the "B" centrifugal charging pump room cooler. During this time, the licensee was in the process of conducting an "A" train outage on the diesel generator and the essential service water systems. Upon notification of this potential operability concern with the operating "B" train, the licensee began restoration efforts on the "A" train. Subsequently, the licensee performed a flow measurement test on the room cooler which indicated an average flow rate of approximately 5,594 cubic feet per minute (CFM). Although the design flow rate of the unit was 14,679 CFM, this degraded flow met the flow rate limit, as calculated by engineering, for the room cooler to be considered operable.

The licensee determined that the fan belts, on the room cooler, were slipping which caused the low flow condition. A review of the preventive maintenance scheduled for the fan belts indicated that the PM was conducted one week after the scheduled late date of November 24, 1993. The PM came due during the last refueling outage however a decision was made to reschedule the PM as it was not required to be performed during the outage and could be performed while the unit was on line. The licensee's review of fan belt failures did not indicate an adverse trend; therefore, this failure was considered as an isolated case and the preventive maintenance frequency for the belts was not changed.

b. Surveillance

The reviewed surveillances included:

| Procedure No. | Activity |
|---|---|
| OSP-EG-V001B | Component cooling water valve stroke timings. |
| OSP-EG-P001BD | Component cooling water pumps "B" and "D", surveillance pump runs. |
| ITL-BG-0F145 | Loop calibration of the RCP number one seal water injection flow transmitter. |
| OSP-EF-P001B | Train "B" containment cooler flow test. |
| ESP-ZZ-00014 | Heat flux hot channel factor. |

No violations or deviations were identified.

4. Persons Contacted

D. F. Schnell, Senior Vice President, Nuclear
*G. L. Randolph, Vice President, Nuclear Operations
*J. D. Blosser, Manager, Callaway Plant
C. D. Naslund, Manager, Nuclear Engineering
J. V. Laux, Manager, Quality Assurance

*M. E. Taylor, Assistant Manager, Work Control
D. E. Young, Superintendent, Operations
M. S. Evans, Superintendent, Health Physics
G. J. Czeschin, Superintendent, Training
*H. D. Bono, Supervisor, Quality Assurance
*C. E. Slizewski, Supervisor, Quality Assurance
*C. S. Petzel, Senior Quality Assurance Engineer
*S. E. Sampson, Acting Supervising Engineering, Site Licensing
*G. A. Hughes, Supervising Engineer, Nuclear Safety

*Denotes those present at one or more exit interviews.

In addition, a number of equipment operators, reactor operators, senior reactor operators, and other members of the quality control, operations, maintenance, health physics, and engineering staffs were contacted.