U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-483/84-48(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 65077

Inspection Conducted: November 25, 1984 through January 19, 1985

Inspector: B. H. Little

Approved By: William L. Forney
W. L. Forney, Chief
Projects Section 1A

2/11/85
Date

Inspection Summary

Inspection on November 25, 1984 through January 19, 1985
(Report No. 50-483/84-48(DRP))
Areas Inspected: Routine, unannounced inspection by the senior resident inspector of licensee event reports, regional requests, license conditions, plant Technical Specifications, power ascension test witnessing, independent inspection effort, and plant tours. The inspection involved a total of 194 inspector-hours by one NRC inspector including 57 inspector-hours onsite during non-regular hours.
Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

Principal Licensee Employees

*S. E. Miltenberger, Manager, Callaway Plant
D. F. Schnell, Vice President - Nuclear
*D. C. Poole, Assistant Manager - Operations and Maintenance
R. L. Powers, Assistant Manager - Quality Assurance
M. E. Taylor, Operations Superintendent
R. H. Leuther, Maintenance Superintendent
*J. E. Davis, Compliance Superintendent
K. L. Wickes, Instrumentation and Control Supervisor
J. C. Gearhart, Supervisory Engineer - QA
P. T. Appleby, Assistant Manager (SS)
*J. R. Veatch, Supervisory Engineering (QA)
J. T. Patterson, Assistant Superintendent - Operations
C. D. Naslund, Superintendent - Instrumentation and Control
J. V. Laux, Supervisor - QA
*W. A. Norton, QA Engineer
*J. A. Ridgel, Supervisor - Radwaste

*Denotes those present at one or more exit interviews.

In addition, a number of equipment operators, NRC-licensed reactor operators, Senior reactor operators, and members of the Health Physics, Chemistry, and Training staffs were contacted.

2. Licensee Event Report Followup

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished.

(Closed) LER 84-04 - Inadvertent Engineered Safety Feature Actuation Signal: On June 17, 1984, while in Mode 6 (initial fuel loading), an Engineered Safety Feature Actuation Signal (ESFAS) was initiated by a radiation monitor causing a Containment Purge Isolation Signal (CPIS) and a Control Room Ventilation Isolation Signal (CRVIS).

The event occurred while I&C technicians were performing maintenance under Work Request (WR) No. 25426. While troubleshooting a faulty vacuum transducer on a radiation monitor (GT-RE-33), technicians failed to utilize the ESFAS bypass channel. During the course of this work an erroneous high radiation signal was received which initiated the CPIS and CRVIS. The

systems were reset per plant operating procedures, the ESFAS channel was properly bypassed, and the vacuum transducer was replaced and functionally checked satisfactorily.

The inspector reviewed WR No. 25426, which documented replacement of the vacuum transducers, and interviewed the technicians and I&C supervision. The licensee cautioned work groups and planners to assure system bypass features are specified in work packages and bypassed during maintenance/ troubleshooting activities.

(Closed) LER 84-19 - Inadvertent Engineered Safety Features Actuation: On July 19, 1984, a Fuel Building Ventilation Isolation Signal (FBVIS) was actuated by a Fuel Building radiation alarm from radiation element GG-RE-27. The FBVIS in turn actuated a Control Room Ventilation Isolation Signal (CRVIS). The licensee's investigation revealed that Breaker 42 in MCC Distribution Panel NG01BA1 was open. This is the breaker which powers the transmitter for the radiation element indicated above.

Further investigation revealed that at the time of the event, construction electricians working on the electrical panel under WR No. 26131 replaced a panel cover which may have accidently bumped Breaker 42.

The inspector reviewed the licensee's investigation report, and considers this to be an isolated event.

(Closed) LER 84-26 - Technical Specification Violation: On August 11, 1984, while in Mode 4, a maintenance outage for one of two 4160 volt Class IE buses rendered Diesel Generator (D/G) A inoperable. With one D/G inoperable, the Technical Specification Action Statement requires demonstration of the operability of the remaining AC sources after one hour and every eight hours thereafter. Verification of correct breaker alignments was not performed within one hour to show operability of the offsite AC circuit.

The inspector interviewed operations, compliance, planning and scheduling personnel, reviewed the outage work package, and operator logs. The inspector verified that the violation was promptly identified, documented, corrected, and reported to the NRC. Licensee's action to prevent recurrence included discussion of the event with operating crews, compliance and planning and scheduling personnel stressing that work packages must contain adequate instructions relating to Technical Specification requirements and are processed timely providing for adequate review. The licensee has issued an Electrical Circuit Index Document, OP-EC1-001, which should aid in the work package review process and reduce the chance for oversite.

(Closed) LER 84-33 - Technical Specification Violation: On August 16, and 24, 1984, while in Mode 4, work was performed that required adjustment and/or replacement of packing on containment isolation valves BE-HV-8351C and EM-HV-8823, respectively, without performing retest within the time constraints of the Technical Specifications action statements. The licensee attributed the cause of these events to personnel

failing to realize an action statement had been entered. Corrective action included the immediate retest of the two valves. Both valves met their required stroke times and were operable.

Licensee action that had been taken to prevent recurrence included:

a. The Plant Manager and/or Assistant Plant Managers have held a series of meetings with plant staff and support personnel. The purpose of these meetings was to enhance the communication of management's philosophy to all levels of the work force, highlight the recent Callaway events, and stress the necessity for improving individual performance, group performance, and communication. Action completed August 7, 1984.

b. A division of responsibility has been accomplished in the Control Room to allow the Shift Supervisor more time to review the necessary paperwork and control activities.

c. ODP-ZZ-00003, "Shift Relief and Turnover," has been revised to include a review of Incident Reports during shift turnover. Procedure revision completed September 14, 1984.

d. As an additional aid to the Shift Supervisor, PDP-ZZ-00003, "Work Request Processing," has been revised to require the responsible planner to initiate an Equipment Out of Service List (E.O.S.L.) sheet for safety related tasks. The E.O.S.L. shall indicate if the work will cause or the event has already caused entry into an L.C.O. action statement. The E.O.S.L. sheet will be a part of the work package submitted to the Control Room to be worked.

The inspector interviewed operating crews and planning and scheduling personnel relative to their understanding of the corrective action in this matter. The inspector reviewed the revised procedures referred to above and verified that the events were promptly identified, corrected, documented and reported.

(Closed) LER 84-35 - Inadvertent Engineered Safety Feature Actuation: On September 7, 1984, a Feedwater Isolation Actuation occurred while the plant was in Mode 3. The actuation of this Engineered Safety Feature (ESF) resulted from high level signals received from two of four steam generator (S/G) "B" level indicators. Upon receipt of the Feedwater Isolation Signal (FWIS), the required ESF equipment functioned properly.

The "B" Steam Generator level indicator AE-LI-529 spiked high during testing on main steam flow loop AB-F-522. Valving operations performed on the flow loop inadvertently caused the level transmitter to spike because the flow loop and the indicator share the same sensing line. The spike occurred while level indicator AE-L1-522 was in a failed high condition. With two high S/G level signals present, the two-out-of-four logic necessary to initiate a FWIS was satisfied and the feedwater isolation occurred.

The inspector was present in the Control Room during the licensee's evaluation of this event, which included discussions with I&C staff and a detailed review of plant and instrument drawings. This evaluation identified the need for I&C flow loop calibration procedures to be revised to include caution statements indicating common tap instrument ties. The inspector verified that the calibration procedures have been revised. The procedures now identify those instruments having common taps and contain "restoration" caution notes.

(Closed) LER 84-36 - Inadvertent Engineered Safety Features Actuation: Between August 24, 1984 and September 14, 1984, seven incidents of unplanned Engineered Safety Feature (ESF) actuations occurred due to spiking problems associated with radiation monitor GK-RE-4. Six of the seven ESF actuations were initiated because of spurious spikes on GK-RE-4 and resulted in Control Room Ventilation Isolation Signals (CRVIS). The other actuation occurred during the removal of a scintillator tube assembly from a monitor in the Fuel Building for installation into GK-RE-4 and resulted in a CRVIS and a Fuel Building Isolation Signal.

The initial actuations were considered by the licensee to result from spurious signal spikes. On August 26, 1984, following the third actuation brush recorders were attached to the high voltage supply and to the detector output signals to monitor any current or voltage abnormalities. Based on the recorder indications, I&C troubleshooting, and discussions with technical consultants, GK-RE-40 input/output circuit board was replaced. The replacement of the board appeared to correct the problems as no additional spurious alarms occurred on GK-RE-4 until December 9, 1984. This later event was documented on LER 84-63.

(Closed) LER 84-38 - Technical Specification Violation:
On September 11, 1984, the licensee discovered that after a switching evolution of Gas Decay Tanks, the wrong Gas Decay Tank was sampled from September 6, 1984 to September 11, 1984. Upon discovery, the sampling was switched to the on-line Gas Decay Tank.

On October 4, 1984, it was discovered that on September 27, 1984 the Gaseous Radwaste System was returned to the operable status without the satisfactory completion of the associated analog channel operational test surveillance. Upon discovery, the requirements of Action 42 were initiated.

The licensee's evaluation of this event attributed the violation to inadequate communications between radwaste, I&E, and compliance personnel. Licensee action to prevent recurrence included:

a. A radwaste off-normal operating procedure, RTO-HA-000011, "Operation of the Gaseous Radwaste System with Inoperable Gas Monitors," was issued September 17, 1984 to establish what sequence of events need to take place when gas monitors are declared inoperable, and notes that Chemistry is to be notified when the in-service Gas Decay Tank is being switched.

b. Surveillance ISF-HA-000A1 has been made a routine monthly surveillance and will be performed whether or not the Gaseous Radwaste System is in operation.

c. Radwaste will notify the Control Room whenever the Gaseous Radwaste System is being declared inoperable, and confirm with them that the associated surveillances are current before returning the system to an operable status. This was added to off-normal operating procedure RTO-HA-00001.

The inspector reviewed the licensee's evaluation and documentation of the events and verified that the corrective action has been completed.

(Closed) LER 84-39 - Technical Specification Violation:
On September 15, 1984, while in Mode 3 at normal operating temperature and pressure, the analog channel operational test, ISF-NF-0NB02 - "Functional Miscellaneous: NB02 Degraded and Undervoltage to Load Shedder and Emergency Load Sequencer [LSELS])", of the LSELS failed due to no 48 VDC output from the undervoltage power supply assembly (NF039B). This failure caused the action statement to Technical Specification 3/4.3.2.1-8a,b to be entered. This action statement to 3/4.3.2.1-8a,b, Action 19, states that Startup and/or Power Operations may proceed provided the inoperable channel is placed in the tripped condition within one hour. Subsequent attempts to trip the inoperable channel failed due to the failed power supply, and therefore Technical Specification 3.0.3 was entered. The failed power supply (type KRB 1907-1) was replaced with a different power supply (type KRB 1907) per Temporary Modification 84-E612.

The inspector's review of plant logs and Incident Report #84-0733 determined that the licensee took appropriate action in this matter. Maintenance for the replacement of the power supply module (temporary modification 84-E612) was performed under Work Request No. 32782, which contained the required review and approval.

(Closed) LER 84-40 - Inadvertent Engineered Safety Features Actuation:
On September 15, 1984 and October 10, 1984, Engineered Safety Features were actuated as a result of high/low steam generator (S/G) level indication. The events occurred as described below:

On September 15, 1984, a Feedwater Isolation (FWIS) occurred due to high level signals received from two of four S/G "B" level indicators. One of the two level indicators had failed high as a result of isolating common tap equipment. The second level indicator inadvertently spiked high during a valving sequence.

On October 10, 1984, a Reactor Trip, FWIS Auxiliary Feedwater Actuation and S/G Blowdown Isolation, occurred due to low level signals from S/G "B" level indicators. The bi-stables of one of the level indicators were in the tripped position due to maintenance in progress. The second level indicator spiked low as a result of work in progress on common tap equipment.

Corrective action taken after the September 15, 1984, incident included informing Operations personnel of the importance of correctly tagging out equipment to ensure safe operation of the plant and compliance with Technical Specifications. Operations personnel were also instructed to obtain I&C assistance when isolating or restoring instrumentation to reduce the possibility of spurious signals.

As a result of the incident on October 10, 1984, Temporary Operations Procedure OTS-AE-T0001, "S/G Level Transmitter Removal and Restoration," was issued on October 11, 1984. This procedure controls the activities associated with isolating and restoring level transmitters during root valve maintenance.

The inspector attended shift crew briefings given by plant management and reviewed the above procedure.

(Closed) LER 84-42 - Unplanned Reactor Trip with Feedwater Isolation Signal:
On September 23, 1984, an unplanned reactor trip and feedwater isolation signal (FWIS) occurred during testing of Power Range Nuclear Instrumentation. The incident occurred prior to initial criticality with the plant in Mode 3 at 0% power.

Technicians were performing a surveillance test on Power Range channel SE-N43. During the test, the high voltage and detector input cables were incorrectly removed from channel SE-N44 instead of SE-N43. When the cables to SE-N44 were reconnected a spike was generated which caused a reactor trip and FWIS.

The inspector discussed the event with the I&C technicians and plant supervision, reviewed the surveillance procedure and verified that the power range cabinets were correctly labeled. To prevent recurrence, the licensee discussed the significance of the event with I&C technicians and changed the common power range cabinet locks to specific locks for each channel.

(Closed) LER 84-43 - Steamline Low Pressure Channel Inoperable:
On September 25, 1984, the licensee found that the lead-lag controllers in the steamline pressure instrumentation loops had been incorrectly calibrated. The four steamline low pressure-safety injection trips were then declared inoperable per Technical Specification 3.3.2. To comply with Technical Specification 3.3.2, RCS pressure was reduced to 1800 psig. The incorrect procedure was revised and the affected loops recalibrated.

The calibration error was due to incorrect nomenclature which had been used in a generic calibration procedure.

The inspector has completed review of this matter. The generic calibration procedure, ITG-ZZ-WNLL1, has been revised to ensure that the lead-lag time constants are set in accordance with Technical Specifications.

3. Followup on Regional Request

The inspector reviewed the following matters:

a. Determine whether or not seal tube maintenance activities at pressure are specifically prohibited. This request was based on thimble tube movement experienced during seal tube maintenance activities at the Sequoyah and D.C. Cook facilities.

In review of this matter, the inspector determined that the Callaway Plant maintenance procedures did not prohibit similar maintenance activities.

Following the discussion of the matter with the licensee, the plant manager issued a temporary instruction which prohibits maintenance on pressure penetration components with the reactor coolant system pressurized. The instruction will apply until superseded by the issuance of appropriate procedures controlling related maintenance activities.

b. Licensee plans for modification of the pressurizer power operated relief valves (PORV). Based on problems identified during testing of the PORVs at the Wolf Creek Generating Station, and the similarity of the Callaway and Wolf Creek units, Westinghouse issued a Field Change Notice (FCN No. SCPM 10712) for Callaway to inspect and record measurements of annular orifice gap formed by the valve body and valve cage. Valve modification (machining of the cage rib) is subject to inspection findings of inadequate clearances. The licensee has included this FCN in Callaway Modification Package CMP-84-0651A, and plans to accomplish the work during a subsequent scheduled shutdown period.

This matter is open pending completion/disposition of items specified in FCN SCPM-10712. (Open Item No. 483/84-48-01(DRP)).

c. Evaluation of Control Room Discipline and Housekeeping. An inspection in this area was performed to obtain an overall assessment of licensee's performance relating to control room discipline and housekeeping. The inspection included extended control room observations during normal/off shift and shift turnover periods, observation of operations support personnel during corrective/preventive maintenance and surveillance activities, observation of licensee supervision and quality assurance overview activities. An evaluation of the licensee's administrative controls relating to this matter was performed which included a review of the following documents:

NRC Documents

10 CFR 50, "Domestic Licensing of Production and Utilization Facilities," Paragraph 50.54

10 CFR 55, "Operators' Licenses," Paragraph 55.31 and 55.40

Regulatory Guide 1.114, "Guidance of Being Operator at the Controls of a Nuclear Power Plant"

IE Information Notice 79-20, Revision 1, "NRC Enforcement Policy - NRC-Licensed Individuals"

IE Circular No. 81-02, "Performance of NRC-Licensed Individuals While on Duty"

Licensee Documents

Administrative Procedure APA-ZZ-00370 (General Plant Housekeeping)

Operations Department Procedure ODP-ZZ-00001 (Code of Conduct)

Operations Department Procedure ODP-ZZ-00002 (Equipment Status Control)

Operations Department Procedure ODP-ZZ-00003 (Shift Relief and Turnover)

Operations Department Procedure ODP-ZZ-00006 (Routine Logs)

Operations Department Procedure ODP-ZZ-00016 (Watchstation Equipment Logs and Practices)

Control Room Discipline

The inspector observed that the control room operators and supervisors were attentive to plant conditions and displayed a professional attitude toward the control and operation of the plant. Plant alarms and planned and unplanned events were promptly responded to and appropriately communicated and logged. The inspector's review determined that the operating logs, status boards, and equipment out of service log were being maintained and reflected current plant and system conditions. Administrative and operating procedures were adhered to. Crew shift relief and turnovers were performed in a thorough manner and included detailed discussions of past, current and planned activities, review of logs, and panel walkdowns. Control room access is restricted. The licensee modified the shift supervisors' office, (window access), for the processing of work packages, which has resulted in noise and traffic reduction in the control room. The inspector noted that licensee management and quality assurance personnel provide frequent inplant observations of the shift crew's performance.

Housekeeping

Observation of the licensee's housekeeping conditions and practices were made during frequent plant walkdowns. The inspector found that the licensee has implemented an effective housekeeping program. Excellent housekeeping conditions were noted in the control room,

reactor containment, fuel building, battery, vital switchgear and cable spreading rooms. An accumulation of consumables/work materials existed in localized areas in the reactor auxiliary building (2000 and 2026 foot levels). The licensee stated that the accumulation of material resulted from a clean up effort following recent insulation and fire seal penetration work. The licensee is considering permanent racks for the storage of scaffolding material. The other material is being surveyed for removal from the plant. The inspector found no accumulation of burnable material nor materials blocking doors, walkways or access to operating equipment.

Administrative Controls

The inspector's review of the licensee's administrative controls relating to control room discipline and housekeeping, determined that the licensee has developed and implemented controls which satisfy NRC requirements, guidelines and recommendations. In addition to specific duties, responsibilities, and authority, plant procedures specifically establish requirements of professional control room conduct. Plant procedures restrict control room access, prohibit sleeping on shift and potentially distracting activities such as radios, TV, alcohol, drugs, games, horseplay, hobbies, or reading other than job related material. The inspector found that the licensee's administrative controls are being adhered to.

d. Verify operability of the Load Shedder and Emergency Load Sequencer (LSELS) at Callaway. This request was based on a wiring error which was identified during preoperational testing of the LSELS at the Wolf Creek Plant. The Wolf Creek LSELS cabinet contained a wiring error which electrically tied the degraded voltage load shed signal with the undervoltage load shed signal. This caused a standing load shed signal to the essential service water pumps, preventing pump restart. Licensee review of the wiring drawings found that drawing No. J-104-0168-10 (Summary List) contained the wiring error. Drawings No. J-104-0247-10 and No. J-104-0248-9 (Wiring List Logic Rack) did not contain the wiring error.

The inspector reviewed the above drawings and LSELS testing which has been performed at Callaway. Callaway Preoperational Test NF03 and Monthly Surveillance Tests ISF-NF-ONB01-2, demonstrate system operability and verifies independence between the "degraded" and "undervoltage" load shedding functions. On January 21, 1985, the licensee performed wire continuity checks which established that the wiring error did not exist at Callaway. The licensee is processing a Request for Resolution to correct drawing No. J-104-0168-10.

No items of noncompliance or deviations were identified.

4. Inspection of License Conditions

The Callaway Operating License NPF-30, Attachment 1, contains license conditions which the licensee must complete.

(Closed) Attachment 1, Item A (483/82-08-03(FRPS)): The licensee shall implement Radiation/Chemical Technician refresher training within six months following fuel load.

The inspector interviewed Rad/Chem and training department personnel and reviewed licensee's Rad/Chem Retraining Program. The retraining program provided instruction in licensee event reports, INPO significant operating experience reports, administrative and process controls and specialized training. The inspector verified that the retraining program has been implemented.

5. Compliance With Callaway Plant Technical Specifications

Through inplant inspections of system line-ups, control room valve and breaker indications, the review of chemistry logs, calibration data, and plant records, the inspector verified compliance with the following Technical Specifications:

Technical Specification	3.1.1.1	Shut Down Margin
	3.1.3.1	Control Rod Group Height
	3.1.3.2	Control Rod Position Indication
	3.2.1	Axial Flux Difference
	3.2.4	Quadrant Power Tilt Ratio
	3.3.3.5	Remote Shutdown Instrumentation
	3.4.7	Reactor Coolant System Chemistry
	3.5.2	ECCS Subsystems
	3.8.1.1	A.C. Sources

No items of noncompliance or deviations were identified.

6. Power Ascension Test Witnessing

The inspector witnessed portions of the following power ascension tests:

Test Number	Title
ETT-SR-07020	Flux and Thermocouple Mapping
ETT-ZZ-07110	Plant Trip from 100% Power

ETT-ZZ-07093	10% Load Swing from 100% Power
ETT-ZZ-07102	50% Load Reduction from 100% Power

The inspector observed plant operators and test personnel during the performance of testing activities, and through interviews determined that they were knowledgeable of test methods, limitations, and acceptance criteria. Pretest briefings were held prior to starting test activities and included test personnel, supervisors, advisors and plant operators.

The inspector verified that the test procedure in use was the latest revision, and that temporary changes had been properly reviewed and approved. The inspector observed that test prerequisites had been accomplished and that tests were performed in accordance with the procedures. The inspector reviewed the on-line test data and test summaries.

No items of noncompliance or deviations were identified.

7. Independent Inspection Effort

During this period the inspector observed licensee's performance of the following activities:

a. Preventive maintenance of the "B" Emergency Diesel Generator (NE02). Operability checks on NE01 and the one-hour operability run on NE02 prior to placing the unit back in service.

b. Temporary Modification No. 85-012 to power range channel N-43. The modification was performed to permit monitoring of the N-43 detector output signal.

c. I&C Surveillance - Steam Generator Pressure Analog Channel Operational Test of Loop AB-OP516.

d. Calibration of Remote Shutdown Monitoring Instrumentation.

e. Routine Health Physics (HP) radiation survey in the reactor auxiliary building and review of HP Shift Task Log.

f. Crew Refresher Training - Fire drill No. [illegible]-04.

The inspector verified that the technical specifications were met and/or licensee administrative controls were adhered to.

No items of noncompliance or deviations were identified.

8. Plant Tours

The inspector toured site and plant areas frequently during this inspection period to observe housekeeping conditions and practices, plant operations,

control room activities, and maintenance and surveillance testing activities. The inspector reviewed control room logs and observed shift turnovers.

No items of noncompliance or deviations were identified.

9. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. An open item disclosed during the inspection is discussed in Paragraph 3.b.

10. Exit Interview

The inspector met with licensee representatives (denoted under Persons Contacted) at intervals during the inspection period. The inspector summarized the scope and findings of the inspection. The licensee representatives acknowledged the findings as reported herein.