

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-483/84-34(DRS)

Docket No. 50-483

License No. NPF-25

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

Facility Name: Callaway, Unit 1

Inspection At: Callaway Site, Callaway County, MO

Inspection Conducted: July 16 through August 30, 1984

Inspectors: *M. L. McCormick-Barger*  
M. L. McCormick-Barger

9-26-84  
Date

*D. S. Butler*  
D. S. Butler

9/27/84  
Date

*P. D. Eng*  
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*W. E. Milbrot*  
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*D. L. Williams*  
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*P. R. Wohld*  
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Approved By: *L. A. Reyes*  
L. A. Reyes, Chief  
Test Programs Section

9/27/84  
Date

Inspection Summary

Inspection conducted on July 16 through August 30, 1984 (Report No. 50-483/84-34(DRS))

Areas Inspected: Routine announced inspection of licensee action on previous inspection findings; preoperational test results package reviews; preoperational test results verification; initial startup test procedure reviews; inservice testing of pumps and valves; reactor coolant leak rate testing; and containment ECCS recirculation sump suction line filling and venting. The inspection involved a total of 180 inspector-hours onsite and 21 inspector-hours offsite by six NRC inspectors, including 8 inspector-hours onsite during off-shifts.

Results: Of the seven areas inspected, no items of noncompliance or deviations were identified in five areas; one item of noncompliance with three examples was identified in the two remaining areas (failure to evaluate a preoperational test deficiency, Paragraph 3; and inadequate procedures controlling activities affecting quality, two examples - Paragraphs 7 and 8).

## DETAILS

### 1. Persons Contacted

- \*W. H. Sheppard, Superintendent of Engineering
- #W. R. Campbell, Assistant Superintendent of Engineering
- J. T. Patterson, Acting Assistant Superintendent of Operations
- \*#W. A. Norton, QA Engineer
- \*D. E. Heinlein, Assistant Superintendent of Operations
- \*V. J. Shanks, Superintendent of Chemistry
- \*R. D. Affolter, Supervisor Engineering
- \*S. M. Hogam, QA Engineer
- \*D. R. Miller, Compliance Engineer

\*Denotes those attending the exit interview on August 3, 1984.

#Denotes those attending the exit interview on August 30, 1984.

Additional plant technical and administrative personnel were contacted by the inspectors during the course of the inspection.

### 2. Action on Previous Inspection Findings

- a. (Closed) Open Item (483/84-31-01(DRS)): Review of revised RTD/TC cross calibration procedure. The inspector reviewed ETT-ZZ-00008, Rev. 4 and verified that all items had been properly addressed.
- b. (Closed) Unresolved Item (483/83-01-01(DE)): FSAR Question 640.10 on preoperational test acceptance criteria. The inspector reviewed changes to the Callaway FSAR in Revision 15 which clarify which numbers should or should not be used in determining ECCS pump performance adequacy. The changes resolve the final outstanding issue originated with this open item and the inspector considers the item closed.
- c. (Closed) Unresolved Items (483/83-17-07(DE) and 483/83-17-08(DE)): Testing at maximum and minimum design voltages. The inspector reviewed the Union Electric letter and attachment sent to J. G. Keppler from D. F. Schnell, ULNRC-885, dated July 31, 1984. In its letter, Union Electric indicates it has evaluated the Emergency Core Cooling System (ECCS) pump trip margins and considers them properly set. The inspector notes that the trip margins are well above those previously thought to exist during an onsite inspection as documented in Paragraph 2, Item u, of Inspection Report 50-483/84-09. The inspector considers the evaluation and clarification by the licensee as adequate in lieu of testing (the original issue raised in Inspection Report 50-483/83-17) and considers this item closed. This also resolves the issue in Item C-2 of Attachment 1 to the Callaway Plant Operating License (NPF-25).

- d. (Closed) Open Item (483/84-09-01(DE)): Containment ECCS recirculation sump suction line filling and venting. This item was not adequately addressed in the licensee's program and is now considered an item of noncompliance. (See Paragraph 7 of this report.) Hence, this open item is considered closed.
- e. (Open) Open Item (483/82-11-07(DE)): Verification of electrical power independence. The inspector reviewed a test technique proposed by the licensee to resolve this item. The proposal included verifying the proper assignment of vital AC power to the appropriate instrument cabinets by observing that frequency differences at the 120V vital AC inverters are also observed at the associated loads. No problems were identified with the testing proposed. Closure of this item is pending testing completion by the licensee and subsequent review by the inspector.
- f. (Closed) Open Item (483/84-09-03(DE)): Motor Driven Startup Feedwater Pump test results discrepancies. The Joint Test Group (JTG) met and issued a clarification of the potentially misleading Minor Change Notice justification. The inspector reviewed the clarification and is satisfied that it resolves the question raised.
- g. (Closed) Noncompliance (483/84-19-01(DE)): Temporary Modification Control. Union Electric adequately addressed this item as indicated in its letter to NRC dated July 13, 1984. The inspector verified completion of corrective action during the inspection period covered by report 50-483/84-31(DE).
- h. (Closed) Noncompliance (483/84-19-02(DE)): Bypassing Required Testing. Union Electric adequately addressed this item as indicated in its letter to NRC dated July 13, 1984. The inspector verified completion of corrective action during the inspection period covered by report 50-483/84-31(DE).
- i. (Closed) Noncompliance (483/84-19-03(DE)): Inadequate Equipment Protection. Union Electric adequately addressed this item as indicated in its letter to NRC dated July 13, 1984. The inspector verified completion of corrective action during the inspection period covered by report 50-483/84-31(DE).

### 3. Preoperational Test Results Package Reviews

The inspector reviewed the following preoperational test results package during this period:

CS-03NF02, R0, LOCA Sequencer

The package was reviewed to ensure that test results are being adequately evaluated, test data meets acceptance criteria, deviations are properly identified and resolved, review procedures are being followed, and administrative practices are adequate with respect to test execution and data evaluation. Below are inspector review comments related to the results package:

During the review of CS-03NF02, RO "LOCA Sequencer", a possible problem was identified in the test log on February 2, 1984 at 0200. The entry states, "Shift personnel pointed out that there was a substantial water hammer or check valve "slam" when service water was restarted after step 7.1.4.5. I have witnessed this on other occasions but don't really know if it is "normal" under the conditions. Needs to be evaluated." The inspector has determined that no evaluation has been initiated as required by SAI-12, "Test Program Problem Resolution" and SAI-5 "Preoperational Test Procedure Development, Test Conduct and Results Approval." This is considered an example of an item of noncompliance (483/84-34-01a(DRS)).

No other items of noncompliance or deviations were identified.

#### 4. Preoperational Test Results Verification

The inspector reviewed the following preoperational test procedures and verified that results were reviewed against approved acceptance criteria and an evaluation of the test results has been performed in accordance with Regulatory Guide 1.68 and the licensee's Startup Administrative Instructions.

CS-03AB02, RO Main Steam Safety Valve Test  
CS-03BB06, RO RCS Thermal Expansion  
CS-03BB14, RO RCS Dynamic  
CS-03GN01, RO Containment Cooling System  
CS-03SA03, RO ESF Annunciators  
CS-03SA04, RO ESF Matrix  
CS-030002, RO Local Leak Rate Test  
CS-430004, RO Power Conversion and ECCS Thermal Expansion  
CS-430005, RO Power Conversion and ECCS Dynamic  
CS-030009, RO Compressed Gas Accumulator

The inspector had the following concerns with CS-030009, RO "Compressed Gas Accumulator".

- a. A minor change notice altered the Acceptance Criteria and test objectives contrary to the SAI-5 definition of Minor Change Notice.
- b. There was inadequate review of the Minor Change Notice (MCN) before approval signature since the MCN violated criteria for MCNs per SAI-5. (SAI-5 requires either procedure revision or Joint Test Group approval to change acceptance criteria or test objectives.)

These concerns are considered an unresolved item (483/84-34-02(DRS)) and will be further evaluated pending the completion of the technical review of the preoperation test results to determine the impact on the acceptability of the test.

No items of noncompliance or deviations were identified.

5. Startup Test Procedure Reviews

Below is a list of startup tests for which the inspectors have completed their review:

ETT-ZZ-07110, Rev. 0 Plant Trip from 100% Power  
ETT-SF-07092, Rev. 1 Pseudo Rod Drop at 50% Power  
ETT-AL-03020, Rev. 0 Turbine Driven Auxiliary Feedwater Pump PAL02  
Start Time and Trip & Throttle Valve FCHV312 Reliability Test

The procedures were reviewed against the Final Safety Analysis Report (FSAR), Safety Evaluation Report (SER), applicable Regulatory Guides and Standards, and portions of 10 CFR 50. The inspectors had the following comments with respect to the review of:

a. ETT-ZZ-07110, Rev. 0, Plant Trip from 100% Power

- (1) Emergency Procedure E-0, Rev. 1, "Reactor Trip or Safety Injection", is utilized to perform a portion of the Plant Trip from 100% Power startup test. Procedure E-0 contains steps to verify expected plant conditions and steps involving actions to take if expected conditions are not met. One of the objectives of the Plant Trip from 100% Power test, as stated in FSAR Section 14.2.12.3.11.1, is "to verify the ability of the plant automatic control systems to sustain a trip from 100 percent and to bring the plant to stable conditions following the transient". Therefore, it is important to know whether or not operator intervention was required as a result of an unexpected condition because such intervention would constitute a deficiency against the test. Since steps performed in the emergency procedure do not require sign off, it may be difficult to determine, after the test is complete, which steps of the emergency procedure were followed.

The licensee was requested to ensure that a means exists to identify and record any deficiencies against a startup procedure that occur during the time that a referenced emergency procedure is being followed.

- (2) Procedure ETT-ZZ-07110, Rev. 0 needs to be revised so that it addresses the objective in FSAR Section 14.2.12.3.11.1 which is "to evaluate the data resulting from the trip to determine if changes in the control system setpoints are warranted to improve transient response based on actual plant operations".
- (3) Either in Procedure ETT-ZZ-07110, or somewhere else in the startup program, the nuclear instrumentation performance during a plant trip needs to be checked.

b. ETT-SF-07092, Rev. 1, Pseudo Rod Drop at 50% Power

During review of Procedure ETT-SF-07092, the inspector noted that interfaces between this procedure and the procedure utilized for flux mapping were confusing. The licensee was requested, on a

generic basis, to ensure that interfaces between the flux mapping procedure (ETT-SR-07010) and the procedures which reference the flux mapping procedure are clearly defined.

Resolution of the comments concerning startup procedures as discussed in paragraphs 5.a.(1), 5.a.(2), 5.a.(3) and 5.b above, is considered an open item (483/84-34-03(DRS)).

Except as noted above, the inspectors have no questions on these procedures.

No items of noncompliance or deviations were identified.

6. Inservice Testing of Pumps and Valves

The inspector reviewed selected inservice testing test procedures and data sheets acquired during reference value setting testing. Initial implementation of the inservice testing program appears to comply with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, Subsections IWP and IWV for pumps and valves, respectively. During the review, the inspector noted that the method for vibration measurement required taking data at points "next to the Accelerometer Mounting Studs which have been attached to the pump and motor bearing housings." It is not clear whether these locations are appropriate for the purposes of meeting the requirements of the Code. Region III staff will initiate a request for technical assistance from the Division of Nuclear Reactor Regulation regarding the Commission's interpretation of the vibration measurement requirements as stated by the ASME Code. No action or response by the licensee is required. Resolution of the method of obtaining vibration data for the inservice testing program will be tracked as an unresolved item (483/84-34-04(DRS)).

No items of noncompliance or deviations were identified.

7. Containment ECCS Recirculation Sump Suction Line Filling and Venting

The subject of filling and venting the containment emergency sump suction lines was discussed with Union Electric Nuclear Operations which (as documented in Inspection Report 50-483/83-17(DE), Paragraph 12) "noted the inspector's comments and agreed to put the necessary fill and vent requirements in the appropriate system operating procedures...". Subsequent to bringing attention to this area, air binding appeared to have occurred in the Residual Heat Removal (RHR) pump during flow testing from the sump as documented in the licensee's test log for the system. Hence, after successful testing was ultimately performed, the inspector raised the fill and vent question again as documented in Inspection Report 50-483/84-09(DE), Subparagraph 4b.

During the current inspection period, the inspector reviewed approved surveillance procedures, OTN-EN-00001, R0, "Containment Spray System," and OTN-EJ-00001, R1, "Residual Heat Removal System", for inclusion of the steps necessary to fill the sump suction lines. It was determined that neither procedure was adequate in this area. Failure to include the necessary fill and vent requirements is considered an example of an item of noncompliance (483/84-34-01b(DRS)).

Prior to the inspector leaving the site, the licensee initiated revisions to both surveillance procedures that appeared to suitably correct them. Hence, the inspector has no immediate plant safety concern for this item.

No other items of noncompliance or deviations were identified.

8. Reactor Coolant Leak Rate Testing

The inspector reviewed the licensee's procedure OSP-BB-00009, R0, "RCS Inventory Balance," for adequacy in determining RCS identified and unidentified leakage per the requirements of Callaway Plant Technical Specifications 3.4.6.2.b and d. Problems identified during the review were discussed with the licensee and it was determined that the procedure did not properly account for water mass and density changes with temperature. The licensee understands the problems identified and is developing a new revision of the procedure. This will be reviewed and verified by independent calculation by the inspector when appropriate test data becomes available.

The test, as written and approved as Revision 0, could have disguised a RCS leak depending on the trend of test parameters during an actual test. The fact that the test procedure was technically invalid as written and approved, and could have masked a RCS leak, is considered an example of an item of noncompliance (483/84-34-01c(DRS)).

No other items of noncompliance or deviations were identified.

9. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 4 and 6.

10. 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, the licensee or both. An open item disclosed during the inspection is discussed in Paragraph 5.

11. Exit Interview

The inspectors met with licensee representatives on August 3, 1984 and August 30, 1984 to discuss the scope and findings of the inspection. The licensee acknowledged the statements made by the inspectors with respect to items discussed in the report.