



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-8064**

April 21, 2000

Garry L. Randolph, Vice President and  
Chief Nuclear Officer  
Union Electric Company  
P.O. Box 620  
Fulton, Missouri 65251

**SUBJECT: NRC INSPECTION REPORT NO. 50-483/00-02**

Dear Mr. Randolph:

This refers to the inspection conducted on February 20 through April 1, 2000, at the Callaway Plant. The enclosed report presents the results of this inspection.

Based on the results of this inspection, the NRC has determined that two Severity Level IV violations of NRC requirements occurred. These violations are being treated as noncited violations, consistent with Section VII.B.1.a of the Enforcement Policy. These noncited violations are described in the subject inspection report. If you contest the violation or severity level of these noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Callaway Plant.

In accordance with 10 CFR Part 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if requested, will be placed in the NRC Public Document Room.

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

**/RA/**

William D. Johnson, Chief  
Project Branch B  
Division of Reactor Projects

Union Electric Company

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Docket No.: 50-483

License No.: NPF-30

Enclosure:

NRC Inspection Report No.

50-483/00-02

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**ENCLOSURE**

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket No.: 50-483  
License No.: NPF-30  
Report No.: 50-483/00-02  
Licensee: Union Electric Company  
Facility: Callaway Plant  
Location: Junction Highway CC and Highway O  
Fulton, Missouri  
Dates: February 20 through April 1, 2000  
Inspectors: V. G. Gaddy, Senior Resident Inspector  
J. D. Hanna, Resident Inspector  
R. A. Kopriva, Senior Project Engineer  
Approved By: W. D. Johnson, Chief, Project Branch B

ATTACHMENT: Supplemental Information

## EXECUTIVE SUMMARY

### Callaway Plant NRC Inspection Report No. 50-483/00-02

#### Operations

- Portions of the containment isolation valve system were verified to be in the required configuration. The material condition of the system was found to be in a good state as shown by the general appearance of the components, lack of boron or oil leakage, and properly aligned support systems (Section O2.2).
- The failure of the licensee to report the manual start of the auxiliary feedwater pumps as an engineered safety feature actuation was a violation of 10 CFR 50.72 (b)(2)(ii). This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Suggestion-Occurrence-Solution Report 99-1636 (Section O4.1).

#### Maintenance

- The inspectors identified an embedded operator work-around in the surveillance procedure for testing the fuel/auxiliary building emergency exhaust system. Following the monthly 10-hour run, the procedure directed operators to open the heater coil breaker and allow the emergency exhaust fan to run for an additional 15 minutes to remove any residual heat buildup that could cause the heater thermal cutout to trip the heater coil. This item has existed for several years and had become a procedurally accepted, permanent operator work-around that had not been evaluated to determine its impact on plant operations as required for operator work-arounds (Section M3.1).
- The inspectors determined that the failure of operations personnel to properly verify workman's protection assurance isolation was a violation. This caused the startup feedwater pump to trip, which required operators to manually start both motor-driven auxiliary feedwater pumps. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Suggestion-Occurrence-Solution Report 99-1636 (50-483/0002-02) (Section M8.1).

#### Engineering

- The temporary modification package to encapsulate the main low pressure Turbine A 9<sup>th</sup> stage extraction thermocouple thermowell was thorough and properly prepared (Section E1.1).
- The licensee's design and administrative controls established for the emergency core cooling system were adequate to preclude common mode failures similar to those discussed in Generic Letter 98-02. Although adequate, the inspector noted deficiencies with the licensee's initial response to the generic letter. The file containing the generic letter response did not contain the supporting documentation as described in the

licensee's response. Also, the initial review had not requested an evaluation for draining the reactor coolant system and common cause susceptibility with the residual heat removal and emergency core cooling systems in hot shutdown. The licensee's self-assessment team identified deficiencies in the quality assurance features evaluation, noting that, during the last refueling outage, several issues occurred that continued to challenge the conservative preplanned outage schedule. The inspectors reviewed the final self-assessment and concluded it was thorough and had captured the deficiencies identified in the initial Generic Letter 98-02 response. All issues were entered into the licensee's corrective action system (Section E8.1).

#### Plant Support

- Inspected areas of the fire protection system were found to be operable and well maintained. Fire protection systems and controls were in conformance with the licensee's governing procedures (Section F2.1).

## Report Details

### Summary of Plant Status

The plant operated at 100 percent power throughout the inspection period.

## I. Operations

### **O1 Conduct of Operations**

#### **O1.1 General Comments (71707)**

The inspectors conducted frequent reviews of ongoing plant operations. In general, the conduct of operations was professional and safety conscious. Plant status, operating problems, and work plans were appropriately addressed during daily turnover and plan-of-the-day meetings. Plant testing and maintenance requiring control room coordination were properly controlled. The inspectors observed several shift turnovers and noted no problems.

### **O2 Operational Status of Facilities and Equipment**

#### **O2.1 Review of Equipment Tagouts (71707)**

The inspectors walked down the following tagouts:

- Workman's Protection Assurance 34769, centrifugal charging Pump B discharge miniflow isolation valve.
- Workman's Protection Assurance 34920, security diesel generator.

The inspectors did not identify any discrepancies. The tagouts were properly prepared and authorized. All tags were on the correct devices and the devices were in the position prescribed by the tags. The inspector also performed a walkdown after the tagouts were cleared. All components were in the proper position for the required system lineup.

#### **O2.2 Containment Isolation Valve Walkdown**

##### **a. Inspection Scope (71707)**

The inspectors reviewed a portion of the containment isolation system lineup for conformance with the licensee's procedures, system drawings, and the Final Safety Analysis Report.

##### **b. Observations and Findings**

The inspectors verified that portions of the containment isolation system lineup were properly aligned in accordance with Procedure OSP-GP-00001, "Containment Integrity Verification," Revision 9, and Final Safety Analysis Report Containment Penetration

Figure 6.2.4-1. Accessible valves were in their correct positions, including being locked, as appropriate. Electrical penetration boxes were found to be in good material condition and pressurized with nitrogen to the required value. Pipe hangers and supports were adequate. The inspectors did not identify any conditions that challenged the operability of the containment isolation valves (e.g., excessive boron or oil leakage). A minor discrepancy (e.g., an unbolted lagging cover on a portion of the feedwater line supplying steam Generator D) was referred to the licensee and was promptly corrected.

c. Conclusions

Portions of the containment isolation valve system were verified to be in the required configuration. The material condition of the system was found to be in a good state as shown by the general appearance of the components, lack of boron or oil leakage, and properly aligned support systems.

**O4 Operator Knowledge and Performance**

**O4.1 Failure to Report the Manual Actuation of Engineered Safety Feature Components**

a. Inspection Scope (71707)

On August 13, 1999, while in Mode 3, the startup feedwater pump tripped, necessitating the start of auxiliary feedwater pumps to maintain steam generator levels. The inspectors reviewed the licensee's reporting of this manual actuation of engineered safety feature components. Additional details of this event are discussed in Section M8.1 of this report.

b. Observations and Findings

On August 13, 1999, the plant was in Mode 3 at normal operating pressure and temperature following the rupture of a moisture separator reheater drain line on August 11. Steam generator levels were maintained by the startup feedwater pump. At 5:19 p.m., the startup feedwater pump tripped when its suction isolation valve was inadvertently shut. This occurred as a result of a work isolation error. Reactor operators properly responded to the event in accordance with off-normal Procedure OTO-AE-00001, "Feedwater System Malfunction," Revision 3. At 5:24 p.m., operators started both motor-driven auxiliary feedwater pumps to maintain steam generator levels within an acceptable range.

The inspectors found that Licensee Event Report 99-006-00, documenting the engineered safety feature actuation, was appropriately made. However, the inspectors identified that the notification to the NRC Operations Center was not made. The inspectors found that this occurred because operations personnel did not recognize that starting the auxiliary feedwater pumps was an engineered safety feature actuation. Additionally, Procedure APA-ZZ-00520, "Reporting Requirements and Responsibilities," Revision 14, was inadequate. Specifically the procedure did not provide explicit

guidance regarding the reportability of manual engineered safety feature actuations. The timeliness of the licensee's corrective action regarding this deficient procedure was addressed in NRC Inspection Report 50-483/00-03.

An event or condition that resulted in a manual or automatic actuation of any engineered safety feature was to be reported to the NRC as soon as practical and, in all cases, within 4 hours of the occurrence as required by 10 CFR 50.72 (b)(2)(ii). Failing to report the start of the auxiliary feedwater system was a violation. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Suggestion-Occurrence-Solution Report 99-1636 (50-483/0002-01).

c. Conclusions

The failure of the licensee to report the manual start of the auxiliary feedwater pumps as an engineered safety feature actuation was a violation of 10 CFR 50.72 (b)(2)(ii). This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Suggestion-Occurrence-Solution Report 99-1636.

## II. Maintenance

### **M1 Conduct of Maintenance**

#### M1.1 General Comments - Maintenance

a. Inspection Scope (62707)

The inspectors observed or reviewed portions of the following work activities:

- Work Authorization W190767, replace limiter torque actuator on Valve EFHV0060, essential service water Train B from component cooling water heat exchanger bypass isolation valve,
- Maintenance Procedure MDE-ZZ-QY133, operational test sequence of motor control center Transformer XNG08 air circuit Breaker 152NB0217, and
- Work Authorization P587389, change bearing oil for centrifugal charging Pump B motor.

b. Observations and Findings

With the exception of the maintenance described in Sections M3.1 and M8.1, the inspectors identified no substantive concerns. All work observed was performed with

the work packages present and in active use. The inspectors frequently observed supervisors and system engineers monitoring job progress, and quality control personnel were present when required.

#### M1.2 General Comments - Surveillance

##### a. Inspection Scope (61726)

The inspectors observed or reviewed portions of the following test activities:

- Surveillance Procedure OSP-KC-00001, "Fire Pump Starting and Fire Water Storage Tank Inspection," Revision 9,
- Surveillance Procedure OSP-BG-V001B, "Chemical and Volume Control Train B Valve Operability," Revision 20,
- Maintenance Procedure MTE-ZZ-QA010, "Packing Force Testing of Motor Operated Rising Stem Valves," Revision 0 , and
- Surveillance Procedure OSP-NE-0001B, "Standby Diesel Generator B Periodic Tests," Revision 5.

##### b. Observations and Findings

The surveillance testing was conducted satisfactorily in accordance with the licensee's approved programs and the Technical Specifications.

#### M3 **Maintenance Procedures and Documentation**

##### M3.1 Operator Work Around Embedded in Surveillance Procedure

##### a. Inspection Scope (71707 and 62707)

The inspectors followed up to determine why the licensee had not identified a longstanding operator work-around.

##### b. Observations and Findings

On February 29, 2000, while reviewing Procedure OSP-GG-0001B, "'B' Train Emergency Exhaust System Operability Test," the inspectors identified an operator work-around embedded in the procedure. The procedure fulfilled the monthly surveillance requirement for the fuel/auxiliary building emergency exhaust system.

At the beginning of the procedure, the fuel/auxiliary building emergency exhaust fan was started. The emergency exhaust heater coil circuit was interlocked with the start of the emergency exhaust fan. The emergency exhaust fan was then run for 10 hours. After 10 hours, the procedure directed operations personnel to open the heater coil breaker

and run the emergency exhaust fan for an additional 15 minutes. Following 15 minutes, the heater coil breaker was closed and the emergency exhaust fan was stopped. The inspectors asked why the heater coil breaker was opened and the fan run an additional 15 minutes without heating. The licensee stated that running the fan without the heater energized assisted in the removal of residual heat that was generated following the 10-hour run. The licensee stated that residual heat buildup could cause the thermal cutout to actuate and deenergize the heater. If the thermal cutout did actuate and deenergize the heater, it would not be annunciated. The only way operations personnel would know the heater was deenergized was during their routine plant tours.

Energizing the heater ensured that the relative humidity of the forced air was less than 70 percent to prevent loading the charcoal bed with moisture which decreased its ability to remove radionuclides from the air stream.

Direction to open the heater coil breaker was added following an incident in 1993 when the heater coil breaker was found open following a 10-hour run.

The inspectors reviewed the licensee's nuclear division policy and noted that it defined an operator work around as an item that required operators to take a contingency action on a repetitive basis. The procedure direction to open the heater coil breaker to prevent the thermal cutout from tripping appeared to meet this definition. Although the safety significance of this item was low, this item has existed for several years and has become a procedurally accepted, permanent operator work-around that has not been evaluated to determine its impact on plant operations as required for operator work-arounds.

The inspectors reviewed Procedure OSP-GK-0001A, "A Train Control Room Filtration and Pressurization System Monthly Operability Verification," and noted a similar testing methodology. The licensee indicated that surveillance procedures would be reviewed to determine if other embedded operator work-arounds existed. This issue was entered into the licensee's corrective action program as Suggestion-Occurrence-Solution Report 00-0703.

c. Conclusions

The inspectors identified an embedded operator work-around in the surveillance procedure for testing the fuel/auxiliary building emergency exhaust system. Following the monthly 10-hour run, the procedure directed operators to open the heater coil breaker and allow the emergency exhaust fan to run for an additional 15 minutes to remove any residual heat buildup that could cause the heater thermal cutout to trip the heater coil. This item has existed for several years and had become a procedurally accepted, permanent operator work-around that had not been evaluated to determine its impact on plant operations as required for operator work-arounds.

## **M8 Miscellaneous Maintenance Issues (92902)**

M8.1 (Closed) Licensee Event Report 50-483/99-006-00: manual actuation of engineered safety feature components due to personnel error.

On August 13, 1999, the plant was in Mode 3 and at normal operating temperature and pressure. Steam generator levels were being maintained by the startup feedwater pump. Reactor operators were in the process of placing Workman's Protection Assurance 31838 to isolate high pressure feedwater Heater 6B.

At 5:19 p.m., the startup feedwater pump tripped isolating all feedwater flow to the steam generators. Reactor operators responded to the event in accordance with off-normal Procedure OTO-AE-00001, "Feedwater System Malfunction," Revision 3. At 5:24 p.m., reactor operators started both motor-driven auxiliary feedwater pumps to maintain steam generator levels. The lowest steam generator level during the event was approximately 84 percent of the wide-range level. Decay heat removal was not adversely affected during the event as water levels remained above the steam generator tubes. The top of the steam generator tubes is approximately 60 percent wide-range level. Steam generator levels were stabilized approximately 7 hours after the event.

Subsequent investigation revealed that the startup feedwater pump tripped due to a loss of pump suction from the inadvertent closure of Valve ADV0405, condensate rejection to steam generator blow-down regenerative heat exchanger isolation valve. This component was isolated instead of Valve AFV0405, feedwater high pressure Heater 6A shell side to condensate vent valve, due to an error by the reactor operator who wrote the isolation. The isolation had been reviewed by a second reactor operator and the shift supervisor for concurrence prior to placing the isolation.

The inspectors found the following were contributors to the event:

- The reactor operator, reviewer, shift supervisor, and equipment operator demonstrated inattention to detail while preparing, reviewing, and authorizing the isolation. Specifically, the individuals did not properly follow Procedure APA-ZZ-00310, "Workman's Protection Assurance and Caution Tagging," Revision 14. This procedure required the preparer and reviewers to verify the isolation using self-checking techniques.
- The descriptive name associated with Valve ADV0405 and associated labeling was poor. The descriptive name did not refer to the function of the component as inlet to the startup feedwater pump.

The inspectors concluded that the safety significance of this event was low because operators quickly started the motor-driven auxiliary feedwater pumps which maintained steam generator levels.

This actuation unnecessarily challenged the auxiliary feedwater system. Additionally, several operators did not identify errors in the workman's protection assurance. This work control issue represents a continued negative trend in the licensee's work control process. Other work control issues are discussed in NRC Inspection Reports 50-483/99-09 and 50-483/99-14.

Technical Specification 6.8.1 states, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Regulatory Guide 1.33, Appendix A, 1.c, requires, in part, that administrative procedures be written for equipment control tagging. Step 3.5.3, of Procedure ODP-ZZ-00310, "Workman's Protection Assurance and Caution Tagging," Revision 14, requires that each individual verify that the proper component is being tagged.

The inspectors determined that the failure of operations personnel to properly verify workman's protection assurance isolation was a violation. This caused the startup feedwater pump to trip, which required operators to manually start both motor-driven auxiliary feedwater pumps. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Suggestion-Occurrence-Solution Report 99-1636 (50-483/0002-02).

#### M8.2 Open Item Closure

Inspectors reviewed the following violation and determined that no further action is required. This violation has been entered in the licensee's corrective action program, as indicated, and is closed.

- Violation 50-483/9711-03: Inadequate measures to evaluate preventive maintenance. Suggestion-Occurrence-Solution Report 98-0006.

### **III. Engineering**

#### **E1 Conduct of Engineering**

##### E1.1 Review of Temporary Modification Package to Encapsulate the Guard Pipe to the Thermowell Leading to Temperature Element ACTE5072

###### a. Inspection Scope (37551)

The inspectors reviewed the temporary modification package prepared to encapsulate a steam leak on an instrumentation line from main low pressure Turbine A.

b. Observations and Findings

On March 20, 2000, the licensee discovered a steam leak on an instrumentation line from the main low pressure Turbine A. The leak was from the external weld on the guard pipe to the thermowell tube leading to Temperature Element ACTE5072. Instrumentation that could cause a reactor trip was adjacent to the steam leak. Since the leak could not be isolated, the licensee initiated Temporary Modification 00-0003. This temporary modification installed an encapsulation on the main low pressure Turbine A 9<sup>th</sup> stage extraction thermocouple thermowell. The thermocouple provided data for secondary plant thermal performance analysis. Other thermocouples were available to provide the same secondary plant thermal performance analysis data.

The inspectors reviewed the temporary modification, the 10 CFR 50.59 applicability screen, and the formal safety evaluation and concluded that these documents were thorough and adequately evaluated installation of the temporary modification.

c. Conclusions

The temporary modification package to encapsulate the main low pressure Turbine A 9<sup>th</sup> stage extraction thermocouple thermowell was thorough and properly prepared.

**E8 Miscellaneous Engineering Issues (92903)**

E8.1 Temporary Instruction 2515/142: Draindown During Shutdown and Common Mode Failure (NRC Generic Letter 98-02)

a. Inspection Scope (TI 2515/142)

The inspectors performed Temporary Instruction 2515/142 to determine if surveillance, maintenance, modification, or operational activities performed during shutdown conditions could potentially drain the reactor coolant system and cause voids in the suction piping for the high pressure safety injection, low pressure safety injection, and containment spray systems. These issues were reported to the industry using Generic Letter 98-02, "Loss of Reactor Coolant Inventory and Associated Potential for Loss of Emergency Mitigation Functions while in a Shutdown Condition." The inspectors reviewed the licensee's internal response to this generic letter, interviewed licensee personnel, and reviewed pertinent piping and instrument drawings.

b. Observations and Findings

As requested by Generic Letter 98-02, the licensee conducted an assessment to determine the susceptibility of the emergency core cooling system to common mode failures which could drain the reactor coolant system while in a hot shutdown condition.

The licensee's plant design includes a common suction header for residual heat removal system and emergency core cooling system pump suction lines. This design feature

made the residual heat removal system and the emergency core cooling system susceptible to a common cause failure. A similar design contributed to draining the reactor coolant system at another nuclear plant.

In January 2000 the licensee performed a self-assessment of their response to Generic Letter 98-02. File A160.0412, which was supposed to contain all of the supporting documentation for Generic Letter 98-02 response, only contained a copy of licensee's response to Generic Letter 98-02. The file was expected to contain: (1) a review for susceptibility to draindown and common-cause failures in Hot Shutdown other than what occurred at Wolf Creek, (2) reviews to support the four Appendix B quality assurance features, and (3) corrective actions documentation. The assessment team reviewed the supporting documentation used in response to the generic letter and concluded that the response was weak.

A review of the request for resolution system, by the self-assessment team, revealed no request to perform a review for draining the reactor coolant system and common-cause failure susceptibility with the residual heat removal system and emergency core cooling in hot shutdown. The assessment team initiated Request-for-Resolution 020405 requesting this review. The inspector reviewed Request-for-Resolution 020405 and noted that it did request the appropriate information needed to satisfy the requirements of Generic Letter 98-02.

The licensee's initial response to Generic Letter 98-02, SEGR 98-12-001, dated December 1, 1998, indicated that four 10 CFR Part 50, Appendix B, quality assurance features were reviewed with satisfactory results. However, the self-assessment team and the inspectors identified deficiencies with those results. The four features reviewed were:

- Valve positions - SEGR 98-12-001 stated that the NRC had previously identified mispositioned valves as a concern. The licensee had formed a mispositioning task team to implement an Institute of Nuclear Power Operation derived action plan; however, the incidence of mispositioning of valves shows that this 10 CFR Part 50, Appendix B, quality assurance feature remains a concern.
- Compliance with procedures - SEGR 98-12-001 identified three surveillance procedures that required updating with cautions when manipulating applicable emergency core cooling system valves. The self-assessment team reviewed the procedures and found one of the three procedures not to be applicable, and the other two had not been revised to include the needed cautions. The self-assessment team also identified three additional procedures that needed enhancement concerning the event. Temporary change notices were generated to add appropriate notes or cautions with references.
- Adequacy of operator training - inspectors found that training had been conducted for the current operations personnel to ensure awareness of the issues covered in Generic Letter 98-02. The licensee noted that future control room operators would need to become familiar with the generic letter; however,

no mechanism was in place to provide the training. Suggestion-Occurrence-Solution Report 00-0383 was generated to accomplish the training.

- Adequacy of safety-related activities that ensure the residual heat removal/emergency core cooling systems during hot shutdown are not adversely affected - licensee's response to the generic letter stated "Our outage scheduling during Mode 4 is extremely conservative. We spend a very limited time at Mode 4 and normally do not schedule ECCS work activities during this mode. There is very little risk that our scheduled activities during Mode 4 would adversely affect ECCS systems." However, the self-assessment team noted that during the last refueling outage, completed in November 1999, several issues occurred that challenged the conservative preplanned outage schedule. These issues were as follows:
  - Incompatible work activities - while defueled, residual heat removal Train B in recirculation while stroke testing residual heat removal Train A.
  - Balance of plant operator did not take time for procedure or print review, nor perform an adequate brief before initiating residual heat removal Train B recirculation while defueled.
  - Inadequate brief for the equipment operator before opening Valve BNV8717 (return line to the refueling water storage tank from the residual heat removal discharge cross-connect header).
  - Inadequate system knowledge by control room operators.

Similar issues contributed to the event discussed in Generic Letter 98-02. This demonstrated Callaway's vulnerability to a similar event.

c. Conclusion

The licensee's design and administrative controls established for the emergency core cooling system were adequate to preclude common mode failures similar to those discussed in Generic Letter 98-02. Although adequate, the inspector noted deficiencies with the licensee's initial response to the generic letter. The file containing the generic letter response did not contain the supporting documentation as described in the licensee's response. Also, the initial review had not requested an evaluation for draining the reactor coolant system and common cause susceptibility with the residual heat removal and emergency core cooling systems in hot shutdown. The licensee's self-assessment team identified deficiencies in the quality assurance features evaluation, noting that, during the last refueling outage, several issues occurred that continued to challenge the conservative preplanned outage schedule. The inspectors reviewed the final documentation compiled by the licensee's self-assessment team and concluded it was thorough and had captured the deficiencies identified in the initial Generic Letter 98-02 response. All issues were entered into the licensee's corrective action system.

## E8.2 Open Item Closure

The inspectors reviewed the following inspection followup items and determined that no further action is required. These items are closed.

- Inspection Followup Item 50-483/9705-03: Review licensee efforts to resolve Final Safety Analysis Report deficiencies.
- Inspection Followup Item 50-483/9904-01: Several issues involving motor operated valve thrust and torquing requirements.
- Inspection Followup Item 50-483/9818-04: Essential Service Water System Health (refer to Unresolved Item 50-483/0003-01)

## **IV. Plant Support**

### **R1 Radiological Protection and Chemistry Controls**

#### R1.1 General Comments (71750)

The inspectors observed health physics personnel, including supervisors, routinely touring the radiologically controlled areas. Licensee personnel working in radiologically controlled areas exhibited good radiation worker practices.

Contaminated areas and high radiation areas were properly posted. Step-off pads were conspicuous and well placed. The inspectors checked a sample of doors, required to be locked for the purpose of radiation protection, and found no problems.

### **F2 Status of Fire Protection Facilities and Equipment**

#### F2.1 General Walkdown of Fire Protection Facilities and Equipment

##### a. Inspection Scope (71750)

The inspectors performed a general walkdown of the licensee's fire protection facilities and equipment in order to verify system operability. The inspectors also evaluated conformance with the licensee's governing fire protection procedures.

##### b. Observations and Findings

The inspectors selected various emergency lighting boxes and found all of them to be fully charged as evident by exterior indicating lights. The inspectors also observed that randomly selected fire protection doors in the auxiliary building, when opened, swung shut and remained closed. Portable fire protection equipment (e.g., fire extinguishers, hoses) was clearly labeled for visibility and was properly stowed in designated locations. The inspectors reviewed required actions for alarm and trouble lights that were lit on fire

protection Control Panel KC08. The inspectors found that the licensee had taken appropriate actions as required by Procedure OTA-KC-00008, "Annunciator Response Procedure for Pyrotronics Panel," Revision 9.

The inspectors also found the material condition of wet and deluge piping and valves to be sound. The inspectors noted a general absence of leakage (oil or system) or corrosion. Pressurized fire protection systems (e.g., halon suppression system for the electrical penetration rooms) were found to be within required pressure limits. The inspectors also found that the licensee was meeting the fire loading limits for transient combustibles in inspected rooms.

c. Conclusions

Inspected areas of the fire protection system were found to be operable and well maintained. Fire protection systems and controls were in conformance with the licensee's governing procedures.

## **V. Management Meetings**

### **X1 Exit Meeting Summary**

The exit meeting was conducted on March 31, 2000. The licensee did not express a position on any of the findings in the report.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. L. Anderson, Supervisor, Radiological/Chemistry Training  
G. N. Belchik, Supervising Engineer, Operations  
J. D. Blosser, Manager, Operations Support  
J. W. Cruickshank, Supervisor, Radwaste  
R. E. Farnam, Supervisor, Health Physics, Operations  
M. R. Faulkner, Assistant Superintendent, Security  
P. R. Heiberger, Superintendent, Instrumentation and Controls  
J. W. Hiller, Engineer, Quality Assurance Regulatory Support  
G. A. Hughes, Supervising Engineer, Nuclear Safety  
J. P. Kovar, Senior Engineer, Quality Assurance  
R. T. Lamb, Superintendent, Work Control  
J. V. Laux, Manager Quality Assurance  
D. J. Maxwell, Supervising Engineer, Design Engineering  
J. A. McGraw, Superintendent, Technical Support Engineering  
R. D. Miller, Supervisor, Radiological Waste and Environmental  
A. C. Passwater, Manager, Corporate Nuclear Services  
M. A. Reidmeyer, Regional Regulatory Affairs Supervisor  
R. R. Roselius, Superintendent, Radiation Protection and Chemistry  
L. S. Sandbothe, Superintendent, Operations  
J. D. Schnack, Supervising Engineer, Quality Assurance Corrective Action  
K. C. Schoolcraft, Senior Engineer, Quality Assurance Regulatory Support  
T. P. Sharkey, Supervising Engineer, Safety Related Mechanical Systems  
C. E. Slizewski, Supervising Engineer, Quality Assurance  
M. E. Taylor, Manager, Nuclear Engineering  
W. A. Witt, Assistant Manager, Callaway Plant

NRC

J. S. Dodson, Radiation Specialist

INSPECTION PROCEDURES USED

37551	Onsite Engineering
61726	Surveillance Observations
62707	Maintenance Observations
71707	Plant Operations
71750	Plant Support Activities

92700	Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
92902	Followup - Maintenance
92903	Followup - Engineering
92904	Followup - Plant Support

ITEMS OPENED AND CLOSED

Opened

00002-01	NCV	Failure to report a manual engineered safety feature actuation (Section O4.1).
00002-02	NCV	Failure to follow procedure resulting in a manual engineered safety feature actuation (Section M8.1).

Closed

00002-01	NCV	Failure to report a manual engineered safety feature actuation (Section O4.1).
00002-02	NCV	Failure to follow procedure resulting a manual engineered safety feature actuation (Section M8.1).
99-006-00	LER	Manual actuation of engineered safety components due to personnel error (Section M8.1).
97011-03	VIO	Inadequate measures to evaluate preventive maintenance (Section M8.2).
97005-03	IFI	Review licensee efforts to resolve Final Safety Analysis Report deficiencies (Section E8.2).
99004-01	IFI	Several issues involving motor-operated valve thrust and torquing requirements (Section E8.2).
98018-04	IFI	Essential Service Water System health (Section E8.2).