ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.:	50-483
License No.:	NPF-30
Report No.:	50-483/98-12
Licensee:	Union Electric Company
Facility:	Callaway Plant
Location:	Junction Highway CC and Highway O Fulton, Missouri
Dates:	July 5 through August 15, 1998
Inspectors:	D. G. Passehl, Senior Resident Inspector F. L. Brush, Resident Inspector
Approved By:	W. D. Johnson, Chief, Project Branch B
ATTACHMENT:	Supplemental Information

EXECUTIVE SUMMARY

Callaway Plant
NRC Inspection Report 50-483/98-12

Operations

- In violation of Technical Specification 6.8.1, the licensee failed to establish a procedure requirement to isolate the reactor water makeup system during natural circulation shutdown, as a result of incomplete procedure reviews for an internal commitment. The licensee took corrective actions to address this issue. This was a noncited violation (Section O3).

- On July 22, 1998, the temperature of the ultimate heat sink pond approached the Technical Specification limit of 90°F. Operator knowledge of procedure steps associated with ultimate heat sink pond operating temperature limits was weak. Equipment operator logs had conflicting guidance between temperature limits stated in the logs and the normal operating procedure (Section O4).

Maintenance

- The Predictive Program Summary report provided a useful tool for licensee personnel to summarize predictive program results. Certain equipment problems were discussed; the licensee has either resolved the problems or defined a clear path to resolution. There were no operability or safety concerns (Section M2).

- Material condition was good based on the work backlog and plant tours. There were only 63 outstanding nonoutage corrective maintenance work requests. This was an improvement from the approximate 400 nonoutage corrective maintenance work requests that existed in early 1995. A small number of minor oil and water leaks were evident. The leaks were previously identified by the licensee and were included in the licensee's maintenance program (Section M2).

- Maintenance and health physics planning for an at-power reactor building entry was weak. There was confusion concerning the appropriate measures to minimize heat stress, and one person required assistance to leave the reactor building. Personnel did not know the exact location of equipment which contributed to longer stay times. The work scope for the entry had increased; however, planning and coordination were not thorough. Maintenance personnel were unsure of the sequence of work to be performed and how health physics coverage was to be provided. The licensee conducted a thorough critique and identified a number of suitable corrective actions (Section M4).

Plant Support

- A worker was unaware of radiological conditions near the pump suction line in residual heat removal pump Room A. The worker failed to review the radiological survey data prior to entering the work area. This was an additional example of previously cited Violation 50-483/98007-02 and is not being cited separately. The

licensee's corrective actions for the cited violation were incomplete at the time this current violation was identified. The licensee will include corrective actions for this event in conjunction with corrective actions for the previous violation (Section R1).

Report Details

Summary of Plant Status

The plant began the report period July 5, 1998, at 100 percent power. The plant operated at 100 percent power throughout the report 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. One exception is discussed in Section O4.1. 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 27553 - Emergency Diesel Generator A;
- Workman's Protection Assurance 27604 - Emergency Diesel Generator A Lube Oil Keep Warm Pump; and
- Workman's Protection Assurance 25730 - Essential Service Water Valve EFPDV0019.

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. All components were in the proper position for the required system lineup.

O2.2 Engineered Safety Feature System Walkdowns (71707)

The inspectors walked down accessible portions of the following engineered safety features and vital systems:

- Essential Service Water Train B;
- Auxiliary Feedwater Train T; and
- Emergency Diesel Generators A and B.

Equipment operability, material condition, and housekeeping were acceptable.

O3 Operations Procedures and Documentation

O3.1 Emergency Operating Procedure Change to Address Reactor Water Makeup System Isolation During Natural Recirculation Shutdown

a. Inspection Scope (71707)

The inspectors reviewed the reactor water makeup system lineup requirements during plant Modes 3, 4, and 5 with no reactor coolant pumps in operation.

The inspectors reviewed:

- Internal commitment 42975; and
- Emergency Operating Procedure ES-0.2, "Natural Circulation Shutdown," Revision 1B1.

b. Observations and Findings

The reactor water makeup system provides unborated dilution water for makeup to the reactor coolant system. The licensee stated in internal Commitment 42975 that dilution water from the makeup system would be isolated in Modes 3, 4, and 5 with no reactor coolant pumps running. The licensee made the commitment to support a revised analysis, by the reactor vendor, of the inadvertent boron dilution events discussed in Final Safety Analysis Report Section 15.4.6. The commitment was intended to ensure that the possibility of a positive reactivity insertion during a plant shutdown would be mitigated.

During Refueling Outage 9, the inspectors discussed the lineup of the reactor water makeup system with control room operators. The inspectors determined that the licensee implemented the commitment as required during the refueling outage. However, upon further review, the licensee determined that the commitment was not implemented in Emergency Operating Procedure ES-0.2, "Natural Circulation Shutdown," Revision 1B1. To correct the discrepancy, the licensee added a substep to Step 4 of Procedure ES-0.2. The substep directs operators to isolate the reactor water makeup system dilution flow path during natural circulation shutdown. The licensee determined that no other emergency operating procedures were affected.

Technical Specification 6.8.1.a requires, 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, Section 6.d., includes emergency procedures for loss of core coolant flow. The inspectors considered that the failure to establish a procedure requirement to isolate the reactor water makeup system during natural circulation shutdown, as a result of incomplete procedure reviews, was a violation or Technical

Specification 6.8.1.a. This nonrepetitive, licensee-identified and corrected violation is being treated as a noncited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (50-483/98012-01).

c. Conclusions

The inspectors concluded that the licensee failed to establish a procedure requirement to isolate the reactor water makeup system during natural circulation shutdown, as a result of incomplete procedure reviews for an internal commitment. The licensee took corrective actions to address this issue.

O4 Operator Knowledge and Performance

O4.1 Essential Service Water System Operation

a. Inspection Scope (71707)

The inspectors reviewed essential service water system operation during warm weather. The inspectors reviewed the following documents:

- Normal Operating Procedure OTN-EF-00001, "Essential Service Water System," Revision 19;
- Administrative Procedure ODP-ZZ-0016E, Attachment 3, "Equipment Operator Watchstanding Logs, Inside Watchstation," Revision 0; and
- Strip chart data for ultimate heat sink pond temperature.

The inspectors also discussed the essential service water system operation with operations department personnel.

b. Observations and Findings

On July 22, 1998, the inspectors observed that the temperature of essential service water returning to the ultimate heat sink pond was 91°F, as indicated on temperature Element EFTI0084. The inspectors also observed that the pond temperature was 87°F, as indicated on trend Recorder EFTR0113. The Technical Specification limit on pond temperature was 90°F. There was no Technical Specification limit on the return temperature. However, Procedure OTN-EF-00001, Step 5.2.8.6, stated that, if both the essential service water return and pond temperatures were greater than or equal to 85°F, then the ultimate heat sink cooling tower should be placed in service during "cooler hours of the day."

The inspectors discussed procedure Step 5.2.8.6 with control room operators. The operators did not remember that there was a specific step in Procedure OTN-EF-00001 to place the cooling tower in service. In addition, the control room operators were not informed of ultimate heat sink pond temperature

during the day. Although the "inside" equipment operator logged the pond temperature once per 8-hour shift, the value was only required to be reported to the control room during the 11 p.m. to 7 a.m. shift.

The equipment operator's log stated that the upper limit for the ultimate heat sink pond temperature was 88°F. There was no procedure step instructing the equipment operator to log or report the essential service water return temperature to the control room. The inspectors observed that the control room operators did not have remote indication of either the ultimate heat sink pond temperature or the essential service water return temperature.

At the time the inspectors made the above observations, operators had already diverted the essential service water return flow to the cooling tower, but had not started the associated fans. Operators were intending to start the fans later because of other considerations. There was an elevated reactor building ambient air temperature and a surveillance test of an emergency diesel generator had been performed earlier. The operators knew from past experience that the fans would have to be placed in service because of the additional heating of the ultimate heat sink pond from these sources in conjunction with warm outside ambient air temperature.

After the inspectors discussed the concerns with the control room operators, the operators reviewed the procedure steps and obtained current pond water temperature values. The operators then started the cooling tower fans.

The inspectors determined that several weaknesses existed:

- The control room operators did not remember the procedure step for starting the ultimate heat sink cooling tower in accordance with Procedure OTN-EF-00001, Step 5.2.8.6. The licensee added a note to the shift supervisor's turnover sheet to remind personnel of the procedure step.

- There were no instructions in the equipment operator's log to inform the control room operators when the 85°F temperature limit for starting the cooling tower fans was reached. The licensee revised the equipment operator's log to inform the control room supervisor when pond temperature rises toward 80°F.

- The procedure step to place the cooling tower fans into service during the "cooler hours of the day" was subjective. The licensee revised Procedure OTN-EF-00001 to direct that the cooling tower fans be started if the pond temperature was greater than or equal to 80°F. Also, the licensee initiated a revision to the emergency diesel generator operating procedures to require that the essential service water system be placed in operation if the temperature of service water was greater than 80°F.

The inspectors reviewed ultimate heat sink pond temperature data from

Recorder EFTR0113 for the last 30 days. The inspectors observed that the highest temperature occurred on July 22, 1998, at approximately 5 p.m. The temperature of the ultimate heat sink pond reached just below 90°F. The licensee initiated suggestion-occurrence-solution Report 98-3104 to evaluate the actual pond temperature and to document corrective actions. The licensee determined that the temperature of the pond did not exceed 90°F.

c. Conclusions

The inspectors concluded that, on July 22, 1998, the temperature of the ultimate heat sink pond approached the Technical Specification limit of 90°F. Operator knowledge of procedure steps associated with ultimate heat sink pond operating temperature limits was weak. Equipment operator logs had conflicting guidance between temperature limits stated in the logs and the normal operating procedure.

O8 Miscellaneous Operations Issues (92901)

O8.1 (Closed) Licensee Event Report (LER) 50-483/98-003-00: inadvertent actuation of the engineered safety features actuation system due to a high water level in Steam Generator A during refueling Outage 9.

The licensee was performing feedwater isolation signal engineered safety features actuation system Train A surveillance testing in Mode 5. At the same time, licensee personnel were adding nitrogen to Steam Generators A and D as part of surveillance Procedure OSP-AE-V003B, "Feedwater Supply Check Valve Closure Test," Revision 5.

While adding nitrogen, the level in Steam Generator A rose from 69 to 78 percent, the high level trip setpoint, causing a feedwater isolation signal. All equipment responded as required. The licensee suspended nitrogen addition which allowed level to stabilize below the trip setpoint.

Procedure OSP-AE-V003B stated that the potential existed for steam generator water level to swell, and a feedwater isolation signal actuation to occur, during nitrogen addition. However, because the procedure did not state that the actuation would definitely occur, the licensee reported this event in accordance with NUREG-1022, "Event Reporting Guidelines, 10 CFR 50.72 and 50.73," Revision 1.

The licensee's corrective actions included revising Procedure OSP-AE-V003B to remove the feedwater isolation signal during testing with the plant in Mode 5. The feedwater isolation signal was not required to be operable in Mode 5. The inspectors had no further concerns.

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 W185340 - Replace Cylinders 9 and 10 Cam Cover Gaskets on Emergency Diesel Generator A;
- Work Authorization P614627 - Sample and Change Oil on Auxiliary Feedwater Pump B Motor; and
- Work Authorization C589047 - Jumper Around Torque Switch on Operator for Service Water/Essential Service Water Crossconnect Valve EFHV0024.

b. Observations and Findings

With the exception of the maintenance described in Section M4.1, 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 all or portions of the following test activities:

- Test Procedure OSP-SB-0001B, "Reactor Trip Breaker B - Trip Actuating Device Operational Test," Revision 7;
- Procedure OSP-NB-00001, "Class 1E Electrical Source Verification," Revision 8;
- Procedure OSP-NE-0001B, "Standby Diesel Generator B Periodic Test," Revision 2; and
- Procedure OSP-AL-P001A, "Section XI Motor-Driven Auxiliary Feedwater Pump A Operability," Revision 21.

b. Observations and Findings

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

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Review of Material Condition - Predictive Performance Summary Report

a. Inspection Scope (62707)

The inspectors reviewed the licensee's Predictive Performance Program Summary report to evaluate the licensee's program for assessing plant material condition.

b. Observations and Findings

The inspectors reviewed the Predictive Performance Program Summary report for the first two quarters of 1998. The report provided component status based on results of various plant programs. These programs included:

- Rotating Equipment Predictive Performance;
- Emergency Diesel Generator Reliability;
- Secondary Thermal Performance;
- Infrared Thermography;
- Motor Testing;
- Transformer Testing;
- Oil Analysis;
- Heat Exchanger/Raw Water;
- Motor Operated Valves;
- Flow Accelerated Corrosion;
- Inservice Testing;
- Check Valve Testing;
- Local Leak Rate Testing; and
- Filter Testing.

Top Component Concerns

The top component concerns listed in the report included reactor coolant Pumps C and D regarding changes in vibration amplitude and phase angle. Although there were changes, the vibration of both pumps remained within the normal operating band. The licensee planned to replace reactor coolant Pump C during the next refueling outage. The licensee placed reactor coolant Pump D on an accelerated test frequency to verify that no unacceptable trend was developing. The inspectors reviewed the vibration data and determined that the licensee's actions were acceptable.

The inspectors identified additional component concerns in the report which are

discussed below.

Oil Analysis on Motor-Driven Auxiliary Feedwater Pump B

The oil analysis on motor-driven auxiliary feedwater Pump B indicated that babbitt material from the motor outboard bearing was present in the sample taken in January 1998. The licensee determined that the problem was not an operability concern, based on satisfactory vibration data, bearing temperatures, and other surveillance test results. However, the inspectors determined that the problem was an unresolved long-standing concern, first identified by the licensee in 1993.

The licensee determined that the problem was caused by light momentary contact of the motor shaft with the thrust collar of the outboard bearing upon motor startup. Momentary contact occurred due to electrical characteristics of the motor. During startup, the rotor shifted prior to reaching the electrically neutral position at running speed. Operators started the motor 39 times from January 1 through July 21, 1998.

The licensee determined that the problem could be resolved by moving the motor approximately 1/8 inch toward the motor outboard bearing. The licensee attempted to move the motor late in 1993, but the desired movement was not obtained because of clearance constraints between the motor hold down bolts and bolt holes. The licensee took no additional actions except to increase the frequency of sampling and oil changes.

Oil sample results since 1993 have periodically contained a very small amount of bearing material. The oil is completely changed after each sample. The licensee planned another alignment attempt to correct the problem during the next refueling outage. The inspectors determined that this proposed corrective action was satisfactory.

Flow Accelerated Corrosion

The licensee identified pipe wall loss in several balance-of-plant piping systems. The licensee determined that the pipe wall losses were consistent with predictions and no immediate action was required. One exception was the fifth stage extraction steam to high pressure feedwater Heater 6B. The total degradation of one section of pipe was in excess of the lifetime wear prediction. The licensee stated the cause was impingement damage in combination with flow accelerated corrosion. The licensee evaluated the wall thickness and wear rate and determined that sufficient margin existed to allow plant operation. The licensee planned to replace the affected section of pipe during the Fall 1999 refueling outage.

Other observations

The inspectors determined that the report was a very useful tool for documenting predictive program results. For example, the infrared thermography program was very beneficial. The licensee was very successful in identifying impending

component failures. The licensee identified a hot current tranformer lead on the control panel for Emergency Diesel Generator A. The licensee initiated a work document and repaired a bad wire crimp connection. The thermography section of the predictive performance summary report clearly identified the equipment, description of the problem, and corrective action taken. Work documents were listed providing good traceability.

c. Conclusions

The inspectors concluded that the Predictive Program Summary report provided a useful tool for licensee personnel to summarize predictive program results. Certain equipment problems were discussed; the licensee has either resolved the problems or defined a clear path to resolution. There were no operability or safety concerns.

M2.2 Review of Material Condition - Work Request Backlog

a. Inspection Scope (62707)

The inspectors discussed the work request backlog with the maintenance manager.

b. Observations and Findings

Although there was no formal definition of "corrective" maintenance in any plant procedure, the maintenance manager explained that corrective maintenance was work that needed to be performed on plant equipment to correct a problem identified by direct observation of system or component performance. Examples of items that would not be included were:

- Implementation of design change requests;
- Setpoint changes;
- Minor modifications;
- Replacement of components based on vendor recommendations; and
- Outage preparations.

The maintenance manager supplied data showing that, on August 6, 1998, there was a total of 63 outstanding nonoutage corrective maintenance work requests. Of this, 29 were greater than 6 months old. There were 26 corrective maintenance work requests scheduled for future refueling outages.

The maintenance manager stated that a goal on the number of outstanding corrective maintenance work requests was not established because the number had been consistently below 100 since early 1997. Instead, the licensee periodically reviews the data to identify any adverse trends. Additionally, the plant manager stated that a goal was not established because people may not write corrective maintenance work requests in order to remain below the goal. The plant manager stated there was a goal to plan an incoming work request within 5 days.

The inspectors observed that the licensee made progress in reducing the number of outstanding nonoutage corrective maintenance work requests. In early 1995, there were approximately 400 nonoutage corrective maintenance work requests.

The maintenance manager also supplied data showing that, on August 6, 1998, there was a total of 261 outstanding "plant equipment" work requests. Plant equipment work requests included corrective maintenance work requests and other work requests. The other work requests involved work to correct less significant material condition deficiencies that did not directly impact equipment reliability or safety. An example would be to repair a very slow packing leak that would not significantly degrade over time. Plant equipment work requests did not include work requests for preventive maintenance tasks, surveillances, modifications, and "generic" type items. An example of a generic work request would be to change light bulbs in the turbine building.

c. Conclusions

The inspectors concluded that material condition was good based on a review of the work backlog. There were only 33 outstanding nonoutage corrective maintenance work requests. This was an improvement from the approximate 400 nonoutage corrective maintenance work requests that existed in early 1995.

M2.3 Review of Material Condition - Plant Tours

a. Inspection Scope (62707)

The inspectors assessed material condition during routine tours of the plant.

b. Observations and Findings

The inspectors observed that material condition and housekeeping of accessible areas of the auxiliary building, reactor building, fuel building, essential service water pump house, control building, ultimate heat sink cooling tower, and most areas of the turbine building were good. A small number of minor oil and water leaks were present and were previously identified by the licensee. The leaks were included in the licensee's maintenance program.

c. Conclusions

The inspectors concluded that material condition was good based on plant tours. A small number of minor oil and water leaks were evident. The leaks were previously identified by the licensee and were included in the licensee's maintenance program.

M4 Maintenance Staff Knowledge and Performance

M4.1 At-Power Reactor Building Entry

a. Inspection Scope

The inspectors attended the prejob briefing and accompanied licensee personnel on an at-power reactor building entry. The purpose of the entry was to accomplish routine preventive maintenance tasks and to perform a walkdown.

b. Observations and Findings

The inspectors made the following observations during the briefing and subsequent reactor building entry:

- Maintenance personnel were unsure of the sequence of work to be performed and coordination with health physics technicians' coverage was weak;
- There appeared to be confusion concerning the appropriate measures to minimize heat stress since the reactor building temperature was elevated due to the hot weather;
- The work scope for the entry had increased; however, planning and coordination were not thorough prior to the brief.
- The ice vests used during the entry lost their effectiveness after a short time and contributed to heat stress;
- One licensee individual became dizzy and required assistance to exit the reactor building;
- Personnel did not know the exact location of equipment which contributed to longer stay times; and
- There was not enough bottled water for personnel exiting the reactor building to support rapid rehydration.

The licensee conducted a postjob critique and identified a number of recommendations and corrective actions which included:

- Creating a document that integrates all actions necessary to support at-power reactor building entries;
- Evaluating the use of the reactor building elevator's air conditioning system. The air conditioning was normally off since condensation dripped and made the elevator floor slippery;

- Investigating the optimal method for wearing ice vests and evaluating different ice vest designs;
- Reviewing the schedule for preventive maintenance tasks to determine if some tasks could be scheduled during cooler times of the year;
- Evaluating wearing scrubs instead of a full set of protective clothing for tasks that did not include working on potentially contaminated mechanical systems;
- Evaluating placing essential service water in service to help cool the reactor building ambient air temperature; and
- Performing radiological surveys before workers enter to decrease stay times.

The inspectors reviewed the licensee's critique and discussed the corrective actions with licensee personnel. The inspectors determined that the critique was thorough and the proposed corrective actions were acceptable.

c. Conclusions

The inspectors concluded that maintenance and health physics planning for an at-power reactor building entry was weak. There was confusion concerning the appropriate measures to minimize heat stress, and one person required assistance to leave the reactor building. Personnel did not know the exact location of equipment which contributed to longer stay times. The work scope for the entry had increased; however, planning and coordination were not thorough. Maintenance personnel were unsure of the sequence of work to be performed and how health physics coverage was to be provided. The licensee conducted a thorough critique and identified a number of suitable corrective actions.

M8 Miscellaneous Maintenance Issues (92902)

M8.1 (Closed) Violation 50-483/98008-02: inadvertent transfer of 600 gallons of water from the refueling cavity to the volume control tank.

During refueling Outage 9, the licensee inadvertently transferred approximately 600 gallons of refueling cavity water into the volume control tank. The licensee was refueling the reactor at the time. The licensee was also performing maintenance on valves in residual heat removal Train A. The maintenance included work on residual heat removal Train A charging pump supply isolation Valve EJHV8804A.

When electricians opened Valve EJHV8804A, a flow path from the refueling cavity to the chemical volume and control system was established. Control room operators immediately observed an increase in the volume control tank level. Operators also immediately noted that Valve EJHV8804A had opened. In response, operators closed the residual heat removal Train A loop suction isolation valves to isolate the flow path. In addition, operators suspended fuel movement.

The licensee completed the short-term corrective actions discussed in NRC Inspection Report 50-483/98-08. These actions included reviewing adequacy of protective tagging on similar jobs and revising the protective tagging procedure.

The licensee initiated the following long-term corrective actions:

- Revising Procedure MTM-ZZ- QA006, "Limitorque Actuator Electrical Rework and Adjustment," to ensure that operations personnel are aware of any valve manipulations by maintenance personnel;

- Providing training to maintenance personnel to ensure that personnel are knowledgeable of workman's protection program requirements; and

- Providing training to maintenance personnel to ensure that electrical supervision permission is obtained prior to manipulating valves.

The licensee scheduled the long-term corrective actions for completion by November 1, 1998. The actions were described in the licensee's "corrective action to prevent recurrence" tracking program. The inspectors had no further concerns.

III. Engineering

E8 Miscellaneous Engineering Issues (92903)

E8.1 (Closed) Violation 50-483/98001-02: core drill into 13.8kV cable.

On February 16, 1998, while performing a core drill in an auxiliary building concrete wall, licensee personnel drilled into a 13.8 kV cable. The ground fault protection devices for the cable tripped the feeder breaker which prevented any personnel injury. When the breaker tripped, a number of nonsafety-related load centers in the power block were deenergized.

The licensee replaced the damaged section of cable and restored the load centers to the normal electrical lineup. The licensee determined that the root cause of the event was personnel error. Responsible engineering personnel did not review electrical drawings while planning the work.

The licensee revised procedures to require electrical, mechanical, and civil engineering personnel to review drawings for core drill work. The licensee completed or planned to complete several corrective actions which included:

- Improving access to unscheduled conduit field sketches;

- Evaluating proper use of core drill machine ground fault devices and other safety equipment; and

- Training personnel on the corrective actions.

The inspectors had no further concerns.

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. Area surveys posted outside rooms in the auxiliary building were current. The inspectors checked a sample of doors, required to be locked for the purpose of radiation protection, and found no problems.

R1.2 Worker Unaware of Radiological Conditions

a. Inspection Scope (71750)

The inspectors toured radiological controlled areas and observed various work activities.

b. Observations and Findings

On July 8, 1998, the inspectors observed a worker in residual heat removal pump Room A near the pump suction line. The inspectors commented to the worker that the dose in the area of the suction line was the highest in the room. The dose rate near the pump suction line was approximately 20 to 30 mRem per hour.

Following completion of the work, the inspectors questioned the worker about the general radiological conditions in the work area. The worker was not aware of the radiological conditions. The worker did not review the area survey maps. Additionally, health physics personnel did not brief the worker on the radiological conditions in the room, even though health physics personnel had requested the work. The worker received a total dose of 2 millirem.

Section 3.0 of Procedure HTP-ZZ-01203, "RWP Access Control," Revision 24, requires, in part, that individual workers review work area radiological survey data to ensure awareness of radiological conditions. The failure of the worker to have an awareness of the work area radiological conditions constitutes an additional example of Violation 50-483/98-07-02 and is not being cited separately.

The licensee's corrective actions for this violation were incomplete at the time this current violation was identified (Reference ULNRC-3839 dated June 18, 1998). No additional response to this violation is required. Further, corrective actions for this additional example are expected to be taken in conjunction with corrective actions for the previously cited violation.

c. Conclusions

The inspectors concluded that a worker was unaware of radiological conditions near the pump suction line in residual heat removal pump Room A. The worker failed to review the radiological survey data prior to entering the work area. This was an additional example of previously cited Violation 50-483/9807-02 and is not being cited separately. The licensee's corrective actions for the cited violation were incomplete at the time this current violation was identified. The licensee will include corrective actions for this event in conjunction with corrective actions for the previous violation.

V. Management Meetings

X1 Exit Meeting Summary

The exit meeting was conducted on August 14, 1998. 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

R. D. Affolter, Manager, Callaway Plant
J. D. Blosser, Manager, Operations Support
H. D. Bono, Supervising Engineer, Regulatory Support
G. J. Czeschin, Superintendent, Training
A. H. Daume, Supervisor, Emergency Preparedness
J. W. Dowling, General Supervisor, Maintenance
D. S. Hollabaugh, Supervising Engineer, Nuclear Engineering-Performance Inservice Inspection
G. A. Hughes, Supervising Engineer, Nuclear Safety
J. V. Laux, Manager Quality Assurance
P. W. Mory, Shift Supervisor, Operations
J. T. Patterson, Shift Supervisor, Operations
G. L. Randolph, Vice President and Chief Nuclear Officer
M. A. Reidmeyer, Engineer, Quality Assurance Regulatory Support
R. R. Roselius, Superintendent, Radiation Protection and Chemistry
S. E. Sampson, Shift Supervisor, Operations
M. E. Taylor, Assistant Manager, Work Control
R. C. Wink, Engineer, Nuclear Engineering-Mechanical Systems

INSPECTION PROCEDURES USED

61726	Surveillance Observations
62707	Maintenance Observations
71707	Plant Operations
71750	Plant Support Activities
92901	Followup - Plant Operations
92902	Followup - Maintenance
92903	Followup - Engineering

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

98012-01	NCV	Failure to isolate reactor water makeup system isolation during natural recirculation shutdown (Section O3.1).

Closed

98012-01	NCV	Failure to isolate reactor water makeup system isolation during natural recirculation shutdown (Section O3.1).
98003-00	LER	Inadvertent actuation of engineered safety features actuation system due to a high water level in Steam Generator A (Section O8.1).
98008-02	VIO	Inadvertent transfer of 600 gallons of water from the refueling cavity to the volume control tank (Section M8.1).
98001-02	VIO	Core drill into 13.8kV cable (Section E8.1).

Discussed

98007-02	VIO	Worker unaware of radiological conditions (Section R1.2).