



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

October 18, 2001

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

**SUBJECT: CALLAWAY--NRC INSPECTION REPORT 50-483/01-05**

Dear Mr. Randolph:

On September 29, 2001, the NRC completed an inspection at the Callaway Plant. The enclosed report documents the inspection findings which were discussed with Mr. Ron Affolter and other members of your staff on September 28, 2001.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Since September 11, 2001, the Callaway Plant has assumed a heightened level of security based on a series of threat advisories issued by the NRC. Although the NRC is not aware of any specific threat against nuclear facilities, the heightened level of security was recommended for all nuclear power plants and is being maintained due to the uncertainty about the possibility of additional terrorist attacks. The steps recommended by the NRC include increased patrols, augmented security forces and capabilities, additional security posts, heightened coordination with local law enforcement and military authorities, and limited access of personnel and vehicles to the site.

The NRC continues to interact with the Intelligence Community and to communicate information to the Union Electric Company. In addition, the NRC has monitored maintenance and other activities which could relate to the site's security posture.

Based on the results of this inspection, the NRC has identified one issue that was evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that a violation is associated with this issue. This violation is being treated as a noncited violation (NCV), consistent with Section VI.A of the Enforcement Policy. This NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, 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 facility.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading 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

Docket: 50-483  
License: NPF-30

Enclosure:  
NRC Inspection Report  
50-483/01-05

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**ENCLOSURE**

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket: 50-483  
License: NPF-30  
Report: 50-483/01-05  
Licensee: Union Electric Company  
Facility: Callaway Plant  
Location: Junction Highway CC and Highway O  
Fulton, Missouri  
Dates: July 8 through September 29, 2001  
Inspectors: V. G. Gaddy, Senior Resident Inspector  
J. D. Hanna, Resident Inspector  
R. V. Azua, Project Engineer  
R. A. Kopriva, Senior Project Engineer  
D. R. Carter, Health Physicist  
J. B. Nicholas, PH.D., Senior Health Physicist  
M. P. Shannon, Senior Health Physicist  
Approved By: W. D. Johnson, Chief, Project Branch B  
ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUMMARY OF FINDINGS

### Callaway Plant NRC Inspection Report 50-483/01-05

IR 05000483-01-05; on 07/08-09/29/2001; Union Electric Co; Callaway Plant. Integrated Resident & Regional Report; Access Control to Radiologically Significant Areas

The inspection was conducted by resident inspectors, three region-based health physicists, and two region-based project inspectors. The inspection identified one Green finding which was a noncited violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process web site at <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.

#### A. Inspector Identified Findings

##### **Cornerstone: Occupational Radiation Safety**

- Green. On August 9, 2001, the inspectors determined that radiation levels on top of the Nukem solid collection system vessel increased from 60 to 180 millirem per hour after the vessel was drained due to a leak. The failure to perform a radiological survey of the vessel after it had been drained, to identify the increased dose rates, is a violation of 10 CFR 20.1501. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Callaway Action Request System Number 200104974.

The safety significance of this finding was determined to be very low by the occupational radiation safety significance determination process because there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. The issue was more than minor because the failure to perform a radiological survey has a credible impact on safety and has the potential for unplanned or unintended dose (Section 2OS1).

#### B. Licensee Identified Findings

A violation of very low safety significance which was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee appear reasonable. This violation is listed in Section 4OA7.

## Report Details

Summary of Plant Status: The plant operated at essentially 100 percent power for the entire report period.

### **1. REACTOR SAFETY**

#### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness**

#### 1R04 Equipment Alignment (71111.04)

##### a. Inspection Scope

The inspectors reviewed the equipment alignment of auxiliary feedwater Train B and, on July 31, 2001, performed a partial walkdown of the system while Train A was removed from service. This system was selected due to its importance in providing decay heat removal capability through the steam generators. The inspectors reviewed and evaluated the condition of the system using the criteria documented in Operations Procedure OTN-AL-00001, "Auxiliary Feedwater System," Revision 7, and Drawing M-22AL01(Q), "Piping and Instrumentation Diagram Auxiliary Feedwater System," Revision 17.

On August 7, 2001, the inspectors performed a partial walkdown of auxiliary building penetration room cooler Train A while Train B was out of service for maintenance. The inspectors compared the as-found condition of the room cooler with the requirements of the Updated Final Safety Analysis Report, Technical Specifications, and Drawing M-22GL01, "Piping and Instrumentation Diagram Auxiliary Building HVAC," Revision 22. The room cooler, support equipment, and components cooled by the room cooler were located in Room 1410 of the auxiliary building.

On August 21, 2001, the inspectors performed a partial walkdown of component cooling water system Train A to identify any discrepancies that could impact its operability. The inspectors compared the as-found condition of the component cooling system with the requirements of the Updated Final Safety Analysis Report, Technical Specifications, Drawing M-22EG01, "Component Cooling Water System," Revision 6, and Operations Procedure OSP-EG-0001A, "CCW Valve Alignment Surveillance," Revision 3.

On September 5, 2001, the inspectors performed a partial walkdown of residual heat removal Train A while Train B was out of service for maintenance. The inspectors compared the as-found condition of the residual heat removal system with the requirements of the Updated Final Safety Analysis Report, Technical Specifications, and Drawing M-22EJ01, "Piping and Instrumentation Diagram Residual Heat Removal System," Revision 43. Equipment comprising the residual heat removal system was located in various parts of the auxiliary building.

##### b. Findings

No findings of significance were identified.



1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors reviewed the following areas to determine if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capabilities, and maintained passive fire protection features in good material condition. The areas reviewed were:

- The 2047 foot elevation of the auxiliary building on July 17, 2001
- Main steam and main feedwater piping penetration room (Area 5) on July 26, 2001
- Auxiliary building lower cable spreading room on July 30, 2001
- Fire penetrations on the 2000 foot elevation of auxiliary building in July 31, 2001
- Open fire doors between engineering safety features switchgear rooms in August 2001
- Safety related battery rooms on September 15, 2001

The inspectors assessed these areas and verified that combustibles that were noted were being controlled in accordance with the following:

- Final Safety Analysis Report Appendix 9.5B, "Fire Hazards Analysis"
- Administrative Procedure APA-ZZ-00741, "Control of Combustible Materials," Revision 15
- Administrative Procedure APA-ZZ-00701, "Control of Fire Protection Impairments," Revision 8
- Administrative Procedure APA-ZZ-00742, "Control of Ignition Sources," Revision 14

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

In September 2001, the inspectors performed periodic flood protection walkdowns throughout the plant. The inspectors reviewed flood protection measures in place in the

auxiliary building, control building, and auxiliary feedwater pumps area. The inspectors evaluated flood protection features for protection of risk significant systems, structures, and components from flooding due to internal causes. The inspectors also verified that sump pumps and instrumentation designed to mitigate internal flooding were operable.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalifications (71111.11)

a. Inspection Scope

On July 31, 2001, the inspectors observed a licensed operator simulator exercise. The simulator exercise evaluated the operators' ability to recognize, diagnose, and respond to equipment problems resulting from a loss of offsite power and to cool down the plant using natural circulation. The inspectors evaluated operator performance using the following: Emergency Procedure EIP-ZZ-00101, "Classification of Emergencies," Revision 28, Emergency Procedure ES-0.1, "Reactor Trip Response," Revision 1B3, Procedure E0, "Reactor Trip or Safety Injection," Revision 1B5, and Technical Specifications.

On August 15, 2001, the inspectors observed a licensed operator simulator exercise. The simulator exercise evaluated operators' ability to recognize, diagnose, and respond to equipment problems in the essential service water system, main feedwater system, main steam system, and turbine generator. The inspectors evaluated operator performance using the following: Emergency Procedure EIP-ZZ-00101, "Classification of Emergencies," Revision 28, Procedure ES-0.1, "Reactor Trip Response," Revision 1B3, and Technical Specifications.

For each simulator exercise the inspectors evaluated crew communication, command and control, emergency plan usage, and fidelity of the simulator to the actual control room. In addition, the inspectors reviewed the evaluators' critiques of the training exercise.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

During the inspection period, the inspectors reviewed licensee implementation of the maintenance rule. The inspectors verified structure and component scoping, characterization, safety significance, performance criteria, and the appropriateness of goals and corrective actions. The inspectors compared the licensee's implementation of the maintenance rule to the requirements outlined in 10 CFR 50.65; Administrative

Procedure APA-ZZ-00303, "Classification of Systems," Revision 5; Engineering Procedure EDP-ZZ-01128, "Maintenance Rule and EPIX Programs," Revision 2; Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2; and meeting minutes from various expert technical panel meetings. The inspectors reviewed the following components:

- Containment closure equipment
- Service water Pump A
- Pressurizer safety Valve BB8010C
- Diesel fire Pump A
- Containment purge exhaust gas detector
- Equipment and floor drain check valves

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (71111.13)

.1 Routine Risk Assessments

a. Inspection Scope

The inspectors reviewed the licensee's assessment and management of selected maintenance activities to assess the effectiveness of risk management for planned and emergent activities. The inspectors compared the licensee's risk assessment and risk management activities against the requirements of 10 CFR 50.65(a)(4), the recommendations of NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2, and Engineering Procedure EDP-ZZ-01129, "Callaway Plant Risk Assessment," Revision 1. The inspectors evaluated the following risk assessments:

July 19, 2001	Component cooling water system
July 31, 2001	Motor-driven auxiliary feedwater system Train A
August 3, 2001	Pressurizer level control selector
August 7, 2001	Weekly risk assessment for scheduled maintenance and surveillance
September 11, 2001	Essential service water Train B and diesel generator Train B outage

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions and Events (71111.14)

a. Inspection Scope

On September 17, 2001, while placing two nonsafety-related 125 Vdc busses, PK01 and PK02, in parallel to take Battery PK11 out of service, one of the two bus crossties failed to properly close and power was lost to Bus PK01. This bus provided power to oil pressure switches on the main feedwater pump turbine. The oil pressure switches provided an input into the auxiliary feedwater actuation circuitry. With no oil pressure input, the auxiliary feedwater actuation circuitry responded as if the main feedwater pumps had tripped. As a result, both motor-driven auxiliary feedwater pumps started and injected into the steam generators.

The inspectors verified that operators properly responded to this plant transient and stabilized the plant in a timely manner. Abnormal operating procedures were properly utilized and command and control were good during the transient. Since the start of the motor-driven auxiliary feedwater pumps met reportability criteria, additional followup to this transient will be made when the licensee event report is submitted to the NRC.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the technical adequacy of several operability evaluations to verify that they were sufficient to justify continued operation of a system or component. The inspectors verified that, although equipment was degraded, the operability evaluation provided adequate justification that the equipment could still meet its Technical Specification, Updated Final Safety Analysis Report, and design basis requirements and that any risk increase attributed to the degraded equipment was thoroughly evaluated. The following evaluations were reviewed:

- |                    |  |
|--------------------|--|
| July 9, 2001       | Motor-driven auxiliary feedwater Pump B to steam Generator B valve |
| August 24, 2001    | Pinhole leak in essential service water piping                     |
| August 29, 2001    | Erratic operation of fuel rack for diesel Generator A              |
| September 26, 2001 | Excess letdown valve   |
| September 27, 2001 | Motor-driven auxiliary feedwater Pump A                            |

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors reviewed the cumulative effects of existing operator workarounds on the reliability, availability, and potential for misoperation of a system, the potential for increasing the frequency of an initiating event that could affect multiple mitigating systems, and the effects on the ability of operations personnel to respond in a correct and timely manner to plant transients and accidents. The reviews were performed on July 26 and 30 and August 1, 2001. The operator workarounds were evaluated using the guidance in NRC Inspection Manual Part 9900, "Resolution of Degraded and Non-Conforming Conditions."

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors verified that postmaintenance tests were adequate to verify system operability and functional capabilities. The inspectors verified that testing met design and licensing basis requirements, Technical Specifications, the Updated Final Safety Analysis Report, inservice testing, and licensee administrative procedures. The inspectors verified testing results for the following components:

July 9, 2001	Motor-driven auxiliary Pump B to steam Generator B valve
July 11, 2001	Refueling water storage tank to containment spray Pump B suction valve
July 31, 2001	Essential service water to motor-driven auxiliary feedwater Pump A check valve
August 29, 2001	Swing battery charger for 125 Vdc Groups 1 and 3
September 17, 2001	Motor-driven auxiliary feedwater Pump A
September 20, 2001	Turbine-driven auxiliary feedwater pump

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed or reviewed the following surveillance tests to ensure that the systems tested were capable of performing their safety function and to assess their operational readiness. Specifically, the inspectors verified that the following surveillance tests met Technical Specifications, ASME Section XI test requirements, the Updated Final Safety Analysis Report, and licensee procedural requirements:

July 10, 2001	Operations Procedure OSP-AL-P001B, "Motor Driven Auxiliary Feedwater Pump B Inservice Test," Revision 25
July 25, 2001	Operations Procedure OSP-BG-P005A, "Centrifugal Charging Pump 'A' Inservice Test," Revision 23
July 25, 2001	Operations Procedure OSP-KA-00218, "Containment Isolation Valve Leak Rate Test," Revision 0
August 1, 2001	Operations Procedure OSP-SA-0017A, "Train A SIS-CSAS Slave Relay Test," Revision 12
August 8, 2001	Operations Procedure OSP-BG-P005B, "CCP B Inservice Test," Revision 25
August 20, 2001	Operations Procedure OSP-EJ-P001A, "A RHR Pump Inservice Test," Revision 26
August 22, 2001	Operations Procedure OSP-EG-P01AC, "CCW Train 'A' Pump and Valve Inservice Test," Revision 19
August 22, 2001	Operations Procedure OSP-SB-0001A, "Reactor Trip Breaker 'A' Trip Actuating Device Operational Test," Revision 10.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed the simulator exercise conducted on July 11, 2001. The purpose of these observations was to evaluate operator performance, licensee event classification, notification of state and local authorities, and adequacy of protective action recommendations. The inspectors also reviewed the licensee's critiques of the exercises to determine if they were self-critical in the identification of strengths and performance issues.

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY**

**Cornerstone: Occupational Radiation Safety, Public Radiation Safety**

2OS1 Access Control to Radiological Significant Areas (71121.01)

a. Inspection Scope

The inspectors interviewed radiation workers and radiation protection personnel involved in high dose rate and high exposure jobs during routine operations. The inspectors also conducted plant walkdowns within the radiologically controlled area and conducted independent radiation surveys of selected work areas. The following items were reviewed and compared with regulatory requirements:

- Area posting and other controls for airborne radioactivity areas, radiation areas, high radiation areas, locked high radiation areas, and very high radiation areas
- Radiation work permits and radiological surveys involving airborne radioactivity areas and high radiation areas
- Access controls, surveys, and radiation work permits for the following three significant high dose work areas from Refueling Outage 11: steam generator eddy current testing (Radiation Work Permit 01-53323), steam generator nozzle dam installation and removal (Radiation Work Permit 01-53322), and reactor vessel disassembly/assembly (Radiation Work Permit 01-55220)
- Dosimetry placement when work involved a significant dose gradient
- Controls involved when handling highly radioactive items
- A summary of corrective action documents written since August 2000 that involved high radiation area and work practice incidents (specifically Callaway Action Request System Numbers 200101824, 200102099, 200102159, 200102445, 200102413, 200101469, 200103387, 200103509, and 200101642)
- Quality Assurance Reports AP00-06 and AP00-08 that involved high radiation area controls and work practices

b. Findings

A noncited violation with very low safety significance (Green) was identified for a failure to perform a radiological survey. On August 9, 2001, the inspectors identified an approximately 8-inch diameter opening on the top of the Nukem solid collection system

vessel that measured dose rates of 180 millirem per hour at the plane of the opening and 80 millirem per hour at 12 inches. An individual could reach into the opening and be exposed to this radiation field.

The licensee surveyed the unit on July 6, 2001, and identified dose rates of 60 millirem per hour at the opening. On August 1, 2001, the vessel developed a leak and was drained. The draining of the vessel removed water that had shielded the internal radioactivity.

The safety significance of this finding was determined to be very low by the occupational radiation safety significance determination process because there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. The issue was more than minor because the failure to perform the radiological survey had a credible impact on safety and had the potential for unplanned or unintended dose.

Part 10, Section 20.1501(a), of the Code of Federal Regulations requires that each licensee shall make, or cause to be made, surveys that are reasonable under the circumstances to evaluate radiation levels and the potential radiological hazards. The failure to perform a radiological survey of the solid collection system vessel after it had been drained, to identify the increased dose rates, is a violation of 10 CFR 20.1501. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Callaway Action Request System Number 200104974 (50-483/2001-05-01).

## 2OS2 ALARA Planning and Controls (71121.02)

### a. Inspection Scope

The inspectors interviewed radiation workers and radiation protection personnel throughout the radiologically controlled area and conducted independent radiation surveys of selected work areas. The following items were reviewed and compared with regulatory requirements to assess the licensee's program to maintain occupational exposure as low as is reasonably achievable (ALARA):

- ALARA program procedures
- Processes used to estimate and track exposures
- Plant collective exposure history for the past 3 years, current exposure trends, and 3-year rolling average dose information
- Three radiation work permit packages for refueling outage work activities which resulted in the highest personnel collective exposures during Refueling Outage 11 (Radiation Work Permit Number 01-50903, "Scaffolding Work in the Reactor Building," Radiation Work Permit Number 01-52520, "Reactor Coolant Pump Seal Work," and Radiation Work Permit Number 01-53323, "Eddy Current")



- Use of engineering controls to achieve dose reductions
- Hot spot tracking and reduction program
- Radiological work planning
- A summary of ALARA and radiological worker performance-related corrective action reports written since August 1, 2000 (14 Callaway Action Request System items were reviewed in detail: 200001937, 200001963, 200002598, 200002046, 200002364, 200002808, 200002811, 200002825, 200002864, 200002902, 200002908, 200002951, 200003002, and 200003038)
- Declared pregnant worker dose monitoring controls
- ALARA program controls portion of Quality Assurance Audit AP01-001

No work was performed in high exposure or high radiation areas during this inspection. Therefore, this aspect of the above procedure could not be evaluated.

b. Findings

No findings of significance were identified.

2PS3 Radiological Environmental Monitoring Program and Radioactive Material Control Program (71122.03)

a. Inspection Scope

The inspectors interviewed members of the radiation protection staff responsible for implementing the radiological environmental and meteorological monitoring programs and inspected 21 environmental monitoring stations. These stations included five environmental air sampler stations (A1, A7, A8, A9, and B3), two surface water sampling stations (S01 and S02), two ground water wells (F05 and F15), two milk sampling stations (M6 and M8), one broadleaf vegetation sampling station (V11), and nine thermoluminescent dosimeter locations (1a, 5, 6, 45, 46, 47, 48, 49, and 51a). The inspectors observed the preparation for shipment and analysis of a broadleaf vegetation sample and two milk samples. The inspectors also observed the collection and preparation for shipment and analysis of two surface water samples and five airborne particulate and charcoal samples. The inspectors visited and inspected the primary and secondary meteorological towers and verified the meteorological instrument data displays in the control room, technical support center, and emergency offsite facility. The inspectors also observed the licensee survey materials for release from the radiologically controlled area.

The inspectors reviewed and compared the following items with regulatory requirements to verify the impact of radioactive effluent releases to the environment and to ensure that the licensee performed surveys and established controls to prevent the inadvertent release of licensed materials into the public domain:

- Implementing procedures for the radiological environmental monitoring program, as described in the Offsite Dose Calculation Manual
- Number and location descriptions of the environmental sampling stations to determine that the environmental sampling program was representative of the effluent release pathways
- Environmental sampling schedules for 2000 and 2001
- Sample collection and analysis data records to determine any missed samples, inoperable samplers, and lost thermoluminescent dosimeters
- Environmental sample analytical results to determine proper analysis detection sensitivities and any positive sample analysis results
- 1999 and 2000 annual land use census reports and any resulting changes to the radiological environmental monitoring program
- Calibration and maintenance records for six air samplers
- The vendor environmental laboratory's performance in the interlaboratory comparison program for 1999 and 2000
- Meteorological monitoring instrumentation calibration procedures and records of completed instrument semiannual calibrations for 2000 and the first half of 2001
- Meteorological instrument operability, reliability, and annual meteorological data recovery
- 1999 and 2000 Annual Radiological Environmental Operating Reports
- 1999 and 2000 Annual Radioactive Effluent Release Reports
- "Offsite Dose Calculation Manual," Procedure APA-ZZ-01003, Revision 12, issued December 2000
- Procedures, methods, criteria, and instruments used to survey, control, and release materials from the radiologically controlled area
- Calibration procedures and records for instruments used to perform material release radiological surveys
- Detection sensitivities of radiation survey instruments used for contamination measurements prior to release of materials from the radiologically controlled areas, including screening levels for commonly found site-specific surface contamination radionuclides

- Quality Assurance Audit Report AP00-004, "Radiological and Non Radiological Environmental Monitoring Plan and Process Control Program," performed May 29 through August 7, 2000
- Quality Assurance Surveillance Reports SP00-003, "Annual Average X/Q," performed April 10 through June 6, 2000, and SP00-004, "Land Use Census Results," performed May 10 through June 6, 2000
- Radiation Protection Department Self-Assessments SA00-HP-002, "TLD Processing and Dose Determinations at NVLAP Laboratory 100502-2," performed September 11-14, 2000, and SA00-HP-003, "Effluents and Radiological Environmental Monitoring Program," performed October 2-6, 2000
- Nuclear Procurement Issues Committee (NUPIC) Joint Audit Report Number NJ Audit #16864 of Teledyne Brown Engineering - Environmental Services, Northbrook, Illinois, performed April 26-29, 1999
- Summary of Callaway Action Request System items related to the radiological environmental monitoring program, meteorological monitoring program, and release of licensed radioactive material written since the previous inspection conducted in March 2000 (18 of these Callaway Action Request System items were reviewed in detail: 200000170, 200000316, 200000365, 200000381, 200000611, 200000888, 200001024, 200001026, 200001059, 200001465, 200001607, 200001823, 200002312, 200002765, 200100164, 200101012, 200101267, and 200101347)

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems and Barrier Integrity Cornerstones

a. Inspection Scope

The inspectors reviewed the licensee's second quarter 2001 performance indicator data submittal to verify its accuracy and completeness. The inspectors reviewed control room logs, maintenance documents, surveillance tests, and corrective action reports to

verify that the data was properly collected and reported in accordance with NEI 99-02, "Regulatory Assessment Performance Indicator Guidelines," Revision 2. The following performance indicators were reviewed:

- Safety system functional failures
- Emergency ac power safety system unavailability
- Reactor coolant system identified leak rate

b. Findings

No findings of significance were identified.

.2 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors reviewed corrective action program records for Technical Specification required locked high radiation areas, very high radiation areas, and unplanned exposure occurrences since August 2000, to confirm that these occurrences were properly recorded as performance indicators. Radiologically controlled area entries with exposures greater than 100 millirems were reviewed, and selected examples were examined to determine whether they were within the dose projections of the governing radiation work permits. Whole-body counts or dose estimates were reviewed if the radiation worker received a committed effective dose equivalent of more than 100 millirems. The inspectors also verified that the data was reported in accordance with NEI 99-02 "Regulatory Assessment Performance Indicator Guideline," Revision 2.

b. Findings

No findings of significance were identified.

.3 Radiological Effluent Technical Specification/Offsite Dose Calculation Manual  
Radiological Effluent Occurrences

a. Inspection Scope

The inspectors reviewed radiological effluent release program corrective action records, licensee event reports, and annual effluent release reports documented since August 2000 to determine if any events exceeded the performance indicator thresholds. The inspectors also verified that the data was reported in accordance with NEI 99-02, Regulatory Assessment Performance Indicator Guideline," Revision 2.

b. Findings

No findings of significance were identified.

.4 (Closed) Unresolved Item 50-483/0012-02: Guidance for classifying two reactor scrams

This issue was left open in NRC Inspection Report 50-483/00-12 pending resolution of feedback forms requesting interpretation of a performance indicator. Specifically, the inspectors requested guidance on whether operation of the steam generator power-operated relief valves for approximately 4 minutes following a reactor scram in November 1999 should have been reported as a scram with loss of normal heat removal. The inspectors also requested guidance on whether closing the main steam isolation valves following a reactor scram in August 1999 should also have been reported.

Feedback to the inspectors was that closing the main steam isolation valves following the reactor scram should have been reported as a scram with loss normal heat removal. However, operation of the steam generator power-operated relief valves for approximately 4 minutes did not have to be reported as a reactor scram with loss of normal heat removal. Since one additional scram with a loss of normal heat removal did not cause the licensee to exceed a reporting threshold, this issue is closed.

40A3 Event Followup (71153)

(Closed) Licensee Event Report 50-483/9903-01: Manual reactor trip due to heater drain system pipe rupture caused by flow accelerated corrosion. The inspectors reviewed the licensee's revision to the original licensee event report. Based on this review, the inspectors determined that the issue warrants no additional inspection.

40A6 Management Meetings

Exit Meeting Summary

The health physics inspector presented his inspection results to Mr. R. Affolter, Vice President, Nuclear, and other members of licensee management at the conclusion of the inspection on August 10, 2001.

The health physics inspectors presented their inspection results to Mr. G. Randolph, Senior Vice President and Chief Nuclear Officer, and other members of licensee management at the conclusion of the inspection on August 17, 2001.

The resident inspectors presented their inspection results to Mr. R. Affolter, Vice President, Nuclear, and other members of licensee management on September 28, 2001.

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

40A7 Licensee Identified Violations

50-483/2001-05-02      10 CFR 20.1902(b) requires that the licensee shall post each high radiation area with a conspicuous sign or signs bearing the radiation

symbol and the words "Caution High Radiation Area." On May 27, 2001, the licensee identified that a high radiation area located outside in the radwaste yard was not posted. This event is described in the licensee's corrective action program, reference Callaway Action Report System Number 200103509. This violation is being treated as a noncited violation.

The safety significance of this finding was determined to be very low by the Occupational Radiation Safety Significance Determination Process because there was no overexposure or substantial potential for an overexposure and the ability to assess dose was not compromised.

ATTACHMENT

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

R. Affolter, Vice President, Nuclear  
J. Blosser, Manager, Regulatory Affairs  
M. Evans, Manager, Operations Support  
R. Farnam, Supervisor, Health Physics Operations  
K. Gilliam, Supervisor, Radiation/Chemistry  
L. Graessle, Superintendent, Protective Services  
J. Hiller, Engineer, Regional Regulatory Affairs  
J. Laux, Manager, Quality Assurance  
G. Randolph, Vice President and Chief Nuclear Officer  
M. Reidmeyer, Supervisor, Regional Regulatory Affairs  
R. Roselius, Superintendent, Health Physics  
W. Witt, Plant Manager

NRC

G. Good, Chief, Plant Support Branch

ITEMS OPENED AND CLOSED

Opened

50-483/0105-01	NCV	Failure to perform a radiological survey (Section 2OS1)
50-483/0105-02	NCV	Failure to post a high radiation area (Section 4OA7)

Closed

50-483/0105-01	NCV	Failure to perform a radiological survey (Section 2OS1)
50-483/0012-02	URI	Guidance for classifying two reactor scrams (Section 4OA2)
50-483/9903-01	LER	Manual reactor trip due to heater drain system pipe rupture caused by flow accelerated corrosion (Section 4OA3)
50-483/0105-02	NCV	Failure to post a high radiation area (Section 4OA7)