



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

April 17, 2000

Randal K. Edington, Vice President - Operations
River Bend Station
Entergy Operations, Inc.
P.O. Box 220
St. Francisville, Louisiana 70775

SUBJECT: NRC INSPECTION REPORT NO. 50-458/00-01

Dear Mr. Edington:

This refers to the inspection conducted on February 13 through April 1, 2000, at the River Bend Station facility. The enclosed report presents the results of this inspection.

Based on the results of this inspection, the NRC has determined that five Severity Level IV violations of NRC requirements occurred. These violations are being treated as noncited Violations (NCVs), consistent with Section VII.B.1.a of the Enforcement Policy. These NCVs are described in the subject inspection report. If you contest the violation or severity level of these NCVs, 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 River Bend Station facility.

In accordance with 10 CFR 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 (PDR).

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 No.: 50-458
License No.: NPF-47

Entergy Operations, Inc.

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NRC Inspection Report No.
50-458/00-01

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.: 50-458
License No.: NPF-47
Report No.: 50-458/00-01
Licensee: Entergy Operations, Inc.
Facility: River Bend Station
Location: 5485 U.S. Highway 61
St. Francisville, Louisiana
Dates: February 13 through April 1, 2000
Inspectors: T. W. Pruett, Senior Resident Inspector
S. M. Schneider, Resident Inspector
R. A. Kopriva, Senior Project Engineer
Approved By: William D. Johnson, Chief, Project Branch B
Division of Reactor Projects

Attachment: Supplemental Information

EXECUTIVE SUMMARY

River Bend Station NRC Inspection Report No. 50-458/00-01

This routine announced inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a 7-week period of resident inspection.

Operations

- The inspectors observed the plant shutdown and transition to shutdown cooling and determined that operations personnel used approved procedures, provided frequent peer checks, and used three-way communication techniques. Distractions in the main control room were minimized during both evolutions. No deficiencies were identified by the inspectors (Section O1.1).
- The inspectors determined that personnel in the containment and fuel building followed procedures, used three-way communications, conducted frequent peer checks, and met training requirements during refueling activities (Section O1.2).
- The inspectors identified that refueling personnel installed an operator aid to assist in locating the correct bridge coordinates above the spent fuel pool which did not meet the requirements of Procedure OSP-0001, "Control of Operator Aids." This issue was treated as an additional example of a violation of Technical Specification 5.4.1.a which was described in NRC Inspection Report 50-458/99-13. This item was entered in the licensee's corrective action program as Condition Report 2000-0785 (Section O1.2).
- The inspectors identified that operations personnel did not maintain residual heat removal heat exchanger upstream vent Valve 1E12-074A in the closed position as required by Procedure SOP-0031, "Residual Heat Removal." Specifically, operations personnel did not close Valve 1E12-0074A following the completion of rejecting water from the reactor vessel on March 28, 2000. This Severity Level IV violation of Technical Specification 5.4.1.a is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was entered in the licensee's corrective action program as Condition Report 2000-0869 (Section O2.1).
- The inspectors determined that the licensee failed to make a required notification to the NRC on December 27, 1999. Specifically, the Division II annulus radiation monitor sensed a radiation source and developed an engineered safety features actuation signal which automatically started the annulus mixing system and standby gas treatment system. However, the licensee did not report the automatic engineered safety features actuation. This Severity Level IV violation of 10 CFR 50.72(b)(2)(ii) is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was entered in the licensee's corrective action program as Condition Report 1999-2010 (Section O2.2)

Maintenance

- Two examples of failure to follow procedures were identified:
 1. Test personnel qualifications were not properly verified in accordance with Procedure STP-052-3701, "Control Rod Scram Testing." Specifically, equipment operators assigned to conduct control rod scram testing were not reactor building qualified.
 2. An Instrumentation and Controls technician failed to lift a lead to prevent an inadvertent reactor core cooling isolation system isolation, as required by Procedure STP-207-4538, "Reactor Core Isolation Cooling Isolation - Reactor Core Isolation Cooling Steam Supply Pressure - Low Channel Functional Test."

These two examples of a Severity Level VI violation of Technical Specification 5.4.1.a are being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. These items were entered in the licensee's corrective action program as Condition Reports 2000-0133 and -0855, Sections M1.2 and M8.1).

Engineering

- The inspectors determined that engineering personnel performed a detailed investigation of the cause of the Division II residual heat removal heat exchanger degradation, sufficiently documented the results of the investigation in Condition Report 2000-0505 and implemented appropriate corrective actions (Section E1.1).

Plant Support

- The inspectors identified that two nonlicensed operators did not follow the requirements of a radiation work permit in accordance with Procedure RBNP-024, "Radiation Protection Plan." Specifically, the nonlicensed operators entered the drywell without wearing an anticontamination hood. Additionally, radiation protection personnel at the drywell control point missed an opportunity to identify the lack of compliance with radiation work permit requirements. This Severity Level IV violation of Technical Specification 5.4.1.a in the plant support functional area is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was entered in the licensee's corrective action program as Condition Report 2000-0748 (Section R1.1).
- The licensee identified that an individual entered a locked high radiation area without logging onto a radiation work permit. Specifically, on March 23, 2000, a maintenance technician entered a locked high radiation area in the radwaste building while under continuous coverage by radiation protection personnel without logging onto any radiation work permit. This Severity Level IV violation of Technical Specification 5.7.2 is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was entered in the licensee's corrective action program as Condition Report 1999-0762 (Section R1.2).

- The inspectors determined that the licensee maintained protected area lighting, implemented compensatory measures for devitalized areas, and staged equipment away from vital structures and the security fence (Section S1.1).

Report Details

Summary of Plant Status

On March 3, 2000, the plant was shut down for Refueling Outage 9. Major work activities during the outage included fuel inspections, chemical cleaning of the residual heat removal heat exchangers, and inservice testing. The plant was in MODE 4 at the end of the inspection period.

I. Operations

O1 Conduct of Operations

O1.1 Observation of Plant Shutdown and Shutdown Cooling Transition (71707)

The inspectors observed operator performance in the main control room during portions of the plant shutdown and during the transition to the shut down cooling mode of residual heat removal (RHR) system operation. Operations personnel were observed using approved procedures, providing frequent peer checks, and using three-way communication techniques. Distractions in the main control room were minimized during both evolutions. No deficiencies were identified by the inspectors.

O1.2 Observations of Fuel Movement

a. Inspection Scope (71707)

The inspectors observed refueling personnel move fuel in the reactor vessel and spent fuel pool. The inspectors also reviewed the application of an unauthorized operator aid used by refueling personnel in the fuel building.

b. Observations and Findings

Observations of Fuel Movements

The inspectors observed refueling activities from the containment refueling bridge and the spent fuel pool bridge. Refueling personnel were observed performing frequent peer checks, using three-way communications, and independently verifying the movement of new and spent fuel.

On March 22, 2000, the inspectors identified that the list of qualified individuals maintained on the containment refueling bridge was out-of-date and did not include the individual moving fuel in the reactor vessel. Following the observation, the refueling supervisor provided an updated list of qualified personnel which included the name of the individual observed moving fuel in the reactor vessel. The inspectors also reviewed the training records associated with individuals observed moving fuel and determined that they had completed the required training before Refueling Outage 9 started.

Refueling Bridge Unauthorized Operator Aid

Technical Specification 5.4.1.a requires, in part, that written procedures be established, implemented, and maintained, covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Section 1.d of Appendix A of Regulatory Guide 1.33 requires the licensee to have administrative procedures for authorities and responsibilities for safe operation and shutdown. Section 5.7.3 of Procedure ADM-0022, "Conduct of Operations," specified that no unauthorized, uncontrolled notes, pictures, graphs, prints, etc. shall be used as operator aids for the operation of permanent plant equipment. Section 3.4 of Procedure OSP-0001, "Control of Operator Aids," allowed the use of permanently attached instruction labels provided they were controlled as an operator aid or until the label was attached as part of a plant modification. Section 6.5 of Procedure OSP-0001 also specified that the operator aid log will include a copy of each posted operator aid, in either the caution log or information log.

NRC Inspection Report 50-458/99-13 documented the failure to control operator aids as one example of noncited Violation 50-468/9913-01. Specifically, the inspectors had identified more than 25 permanently attached instructional and warning labels in the main control room and in the plant, that were not controlled as required by Procedure ADM-0022, "Conduct of Operations," and Procedure OSP-0001, "Control of Operator Aids." The licensee entered the issue in the corrective action program as Condition Report (CR) 1999-1646. The inspectors reviewed CR 1999-1646 and determined that the licensee had developed corrective actions to be implemented during May 2000.

On March 22, 2000, during refueling activities, the inspectors observed refueling personnel position the refueling bridge above the spent fuel pool by aligning a laser light with coordinates that had been handwritten on duct tape on the wall of the spent fuel building. The inspectors questioned refueling personnel to determine if the operator aid (laser light, duct tape, and handwritten coordinates) had been installed in accordance with an approved procedure or maintenance document. In response, the licensee stated that the laser light, duct tape, and handwritten coordinates were installed before refueling commenced, that it would be removed following refueling activities, and that it had not been installed in accordance with an approved procedure or maintenance document.

The inspectors determined that the failure to install an operator aid as required by Procedure OSP-0001 was an additional example of the noncited violation of Technical Specification 5.4.1.a. described in NRC Inspection Report 50-458/99-13. This additional example of the violation was entered into the licensee's corrective action program as CR 2000-0785. In response to the inspectors' observation, the licensee removed the unauthorized operator aid.

c. Conclusions

The inspectors determined that personnel in the containment and fuel building followed procedures, used three-way communications, conducted frequent peer checks, and met training requirements during refueling activities.

The inspectors identified that refueling personnel installed an operator aid to assist in locating the correct bridge coordinates above the spent fuel pool which did not meet the requirements of Procedure OSP-0001, "Control of Operator Aids." This issue was treated as an additional example of a violation of Technical Specification 5.4.1.a which was described in NRC Inspection Report 50-458/99-13. This item was entered in the licensee's corrective action program as Condition Report 2000-0785.

O2 Operational Status of Facilities and Equipment

O2.1 Shutdown Cooling System Alignment

b. Inspection Scope (71707)

The inspectors conducted periodic equipment alignment verifications while the RHR system was operating in the shutdown cooling mode of operation.

c. Observations and Findings

Technical Specification 5.4.1.a requires, in part, that written procedures be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Section 4 of Appendix A of Regulatory Guide 1.33 requires the licensee to have procedures for operation of the shutdown cooling system. Attachment 1A, "Valve Lineup - Residual Heat Removal A System (Safety Related)," of Procedure SOP-0031, "Residual Heat Removal," required that RHR heat exchanger upstream vent Valve 1E12-074A be in the closed position. Additionally, Section 4.10, "Reactor Pressure Vessel Reject to Suppression Pool Using Residual Heat Removal Heat Exchanger Vents," of Procedure SOP-0031 specified that Valve 1E12-074A was to be closed when reactor pressure vessel level reached the desired level.

On March 28, 2000, at approximately 10:30 a.m., the inspectors identified that Valve 1E12-074A was open. Operations personnel stated that the valve had been left open to aid in periodically rejecting water from the reactor vessel to the suppression pool in order to maintain reactor vessel level within the prescribed band.

The inspectors determined that, at approximately 9:30 a.m., operations personnel secured rejecting water from the reactor vessel in order to raise reactor vessel level by approximately 15 inches. The fill rate to the reactor vessel was approximately 10-15 gpm, which corresponded to approximately 3 hours before the desired level would be reached. The inspectors determined that operations personnel were no longer rejecting water from the reactor vessel and that Valve 1E12-074A should have been

closed as required by Procedure SOP-0031. This Severity Level IV violation of Technical Specification 5.4.1.a is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy (NCV 50-458/0001-01). This item was entered in the licensee's corrective action program as CR 2000-0869.

d. Conclusions

The inspectors identified that operations personnel did not maintain residual heat removal heat exchanger upstream vent Valve 1E12-074A in the closed position as required by Procedure SOP-0031, "Residual Heat Removal." Specifically, operations personnel did not close Valve 1E12-074A following the completion of rejecting water from the reactor vessel on March 28, 2000. This Severity Level IV violation of Technical Specification 5.4.1.a is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was entered in the licensee's corrective action program as CR 2000-0869.

O2.2 Failure to Report Automatic Engineered Safety Features Actuation

a. Inspection Scope (71707)

The inspectors reviewed the reporting requirements associated with an unplanned automatic actuation of the annulus mixing system and standby gas treatment system on December 27, 1999.

b. Observations and Findings

10 CFR 50.72(b)(2)(ii) required that the licensee shall notify the NRC as soon as practical and, in all cases, within 4 hours following any event or condition that results in a manual or automatic actuation of any engineered safety feature. Updated Safety Analysis Report Section 7.3.1.1.4, "Standby Gas Treatment System," described the high radiation signal from the annulus radiation monitors as an engineered safety feature signal which automatically diverted annulus air through the standby gas treatment system. Updated Safety Analysis Report Section 7.3.1.1.6, "Reactor Plant Ventilation System," also described the annulus mixing system as an engineered safety features subsystem.

On December 27, 1999, Division II annulus radiation Monitor RMS-RE11B went into ALERT at 7:23 p.m. and then ALARM at 7:26 p.m. At 7:29 p.m. the detector indication started to decrease and returned to normal at 7:42 p.m. The increase in radioactivity resulted in a trip of annulus pressure control Fan HVR-FN16B, isolation of annulus pressure control system dampers, an automatic start of annulus mixing Fans HVR-FN11A and HVR-FN11B, and an automatic start of standby gas treatment exhaust Fans GTS-FN1A and GTS-FN1B.

The licensee stated that the review of the detector response was inconclusive in terms of identifying if radioactive material actually caused the automatic actuation; however, the most probable cause was that radioactive material caused the actuation and not a malfunction of the radiation monitor. Even though the licensee suspected that the

automatic engineered safety features actuation was due to the annulus radiation monitor sensing radioactive material, they determined that the actuation of standby gas treatment and annulus mixing was not reportable. Specifically:

- The licensee believed that an invalid radiation monitor signal existed because a loss-of-coolant-accident condition did not exist (e.g., high drywell pressure, low reactor vessel level, or high radiation) and because the redundant Division I radiation monitor did not respond during the 20-minute period in which the Division II monitor increased to the alarm setpoint and returned to normal.
- Because the licensee believed the radiation monitor signal was invalid and because they considered the standby gas system and annulus mixing system as components within the scope of reactor building ventilation, the licensee believed that they did not have to report the invalid actuation consistent with NUREG 1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," and 10 CFR 50.72. Specifically, the actuation was invalid and involved the reactor building ventilation system.

The inspectors consulted with personnel in the NRC Office of Nuclear Reactor Regulation. It was determined that a valid actuation signal existed since no malfunction of the radiation monitor was identified, and because the most probable cause of the actuation was due to a radiation source. Consequently, the licensee should have reported the automatic actuation of the annulus mixing system and standby gas treatment system which occurred on December 27, 1999. The inspectors determined that the failure to make a required notification to the NRC 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 (NCV 50-458/0001-02). This item was entered in the licensee's corrective action program as CR 1999-2010.

c. Conclusions

The inspectors determined that the licensee failed to make a required notification to the NRC on December 27, 1999. Specifically, the Division II annulus radiation monitor sensed a radiation source and developed an engineered safety features actuation signal which automatically started the annulus mixing system and standby gas treatment system. However, the licensee did not report the automatic engineered safety features actuation. This Severity Level IV violation of 10 CFR 50.72(b)(2)(ii) is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was entered in the licensee's corrective action program as CR 1999-2010.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (61726 and 62707)

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

- STP-050-0702 Refueling Outage Reactor Pressure Vessel Inservice Leakage Test
- STP-052-3701 Control Rod Scram Testing
- STP-256-3828 Service Water Return Valve Leak Rate Test
- STP-205-6301 Low Pressure Core Spray Quarterly Pump and Valve Operability Test
- STP-205-6601 Low Pressure Core Spray System Eighteen Month Position Indication Verification Test
- MAI 332606 Calibration of Transmitter B21-LTN080D

b. Observations and Findings

The inspectors determined that maintenance and surveillance activities were completed with the procedure in active use. In general, tasks were completed by qualified personnel. When applicable, personnel were following the appropriate radiation work permit (RWP) and were aware of radiological conditions.

M1.2 Control Rod Scram Testing

a. Inspection Scope (61726)

The inspectors observed the performance of control rod scram testing.

b. Observations and Findings

Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Section 8 of Appendix A of Regulatory Guide 1.33 requires the licensee to have procedures for surveillance tests. Section 6.6 of STP-052-3701, "Control Rod Scram

Testing," specified that test personnel be verified to be one of the following: a qualified member of the reactor engineering staff, licensed operator, reactor building qualified equipment operator, or a qualified shift technical advisor.

On March 30, 2000, during a review of control rod scram testing procedural prerequisites, the inspectors identified that test personnel did not meet the qualification requirements of Section 6.6 of Procedure STP-052-3701. Specifically, engineering personnel did not verify that the equipment operators assigned to the test were reactor building qualified as required by Procedure STP-052-3701. This Severity Level IV violation of TS 5.4.1.a is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy (50-458/0001-03). This violation is in the licensee's corrective action program as CR 2000-0855.

c. Conclusions

The inspectors identified that test personnel qualifications were not properly verified in accordance with Procedure STP-052-3701, "Control Rod Scram Testing." Specifically, equipment operators assigned to conduct control rod scram testing were not reactor building qualified. This Severity Level IV violation of Technical Specification 5.4.1.a is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was entered in the licensee's corrective action program as Condition Report 2000-0855.

M8 Miscellaneous Maintenance Issues (92700 and 92902)

- M8.1 (Closed) Licensee Event Report (LER) 50-458/00-01: Automatic isolation of reactor core isolation cooling system during surveillance testing due to procedural implementation error.

Technical Specification 5.4.1.a requires, in part, that written procedures be established, implemented, and maintained, covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Section 8 of Appendix A of Regulatory Guide 1.33 requires the licensee to have procedures for surveillance tests. Section 7.1.4 of Procedure STP-207-4538, "Reactor Core Isolation Cooling Isolation - Reactor Core Isolation Cooling Steam Supply Pressure - Low Channel Functional Test," specified that technicians were to lift and tape the left-hand side lead at TB0036-9. Lifting of the lead at TB0036-9 disabled the reactor core isolation cooling system isolation signal input.

On January 22, 2000, during a reactor core isolation cooling system surveillance test, an automatic isolation of the reactor core isolation system occurred. The licensee determined that the isolation of the reactor core isolation cooling system was caused by human error. Specifically, an instrument and control technician misread Section 7.1.3 of Procedure STP-207-4538 which resulted in Section 7.1.4 being omitted. Consequently, the lead at TB0036-9 was not lifted and an inadvertent reactor core isolation cooling system isolation occurred. The licensee also determined that a second instrument and control technician did not perform a peer check of the procedural steps. The inspectors

determined that instrument and control technicians did not lift a lead to prevent an inadvertent reactor core cooling isolation system isolation as required by Procedure STP-207-4538. This Severity Level IV violation of Technical Specification 5.4.1.a met the criteria for a noncited violation and was entered in the licensee's corrective action program as CR 2000-0133. This noncited violation was added as a second example to Non Cited Violation 50-458/0001-03.

Corrective actions involved removing the qualifications to perform surveillance tests for the two technicians. Additionally, the technicians performed remedial training in procedural usage, independent verification, and conduct of maintenance. The inspectors determined that the licensee's corrective actions were appropriate.

M8.2 (Closed) LER 50-458/99-01 Revision 01: Inadequate drywell air and suppression pool average water temperature surveillance during a plant modification of control room recorders due to communications failure and inadequate procedures. This issue was closed in NRC Inspection Report 50-458/99-13. This revision removed a licensee commitment which was an enhancement that did not directly address the root cause of the event. No new information was obtained during the review of this LER revision.

M8.3 Closure of Inspection Followup Item (IFI)

Inspectors reviewed the following IFI and determined that no further action is required. This item is closed.

- IFI 50-458/9718-01: Review of licensee evaluation if pressure Valve RHS-V240 should be in the Technical Specifications.

III. Engineering

E1 Conduct of Engineering

E1.1 RHR Heat Exchanger Chemical Cleaning

a. Inspection Scope (37551)

The inspectors reviewed the results of chemical cleaning of the Divisions I and II RHR system heat exchangers.

b. Observations and Findings

The Division I RHR heat exchanger was tested during Refueling Outage 7 and determined to have a heat removal capacity of 136.1 Mbtu/hr. During Refueling Outage 9, the Division I RHR heat exchanger was determined to have a heat removal capacity of 132 Mbtu/hr. The Division II RHR heat exchanger was tested during Refueling Outage 7 and determined to have a heat removal capacity of 121.8 Mbtu/hr. As a result, the shell side was chemically cleaned during Refueling Outage 7. During Refueling Outage 8, the Division II RHR heat exchanger was determined to have a heat

removal capacity of 137 Mbtu/hr. During Refueling Outage 9, the Division II RHR heat exchanger was determined to have a heat removal capacity of 126.46 Mbtu/hr. The unexpected degradation of the Division II RHR heat exchanger was of concern because the heat exchanger had been chemically cleaned during Refueling Outage 7.

The licensee initiated CR 2000-0505 to investigate the cause of the degradation of the Division II RHR heat exchanger. Engineering personnel determined that the Division I RHR heat exchanger trend, inspection of other service water heat exchangers, and a boroscopic examination of the service water side of the Division II RHR heat exchanger did not support fouling of the service water side of the Division II RHR heat exchanger as a contributing cause to the Division II RHR heat exchanger performance degradation.

Engineering personnel also determined that the degradation of the Division II RHR heat exchanger occurred after the start of Refueling Outage 8. The licensee's investigation determined that, during the Division II RHR heat exchanger chemical cleaning, copper oxalate had formed and an ammonium hydroxide rinse was used to remove the copper oxalate. The ammonium hydroxide rinse activated the surface of the copper-nickel tubes and caused some of the surface copper to leach out of the tubes. In this condition, soluble and insoluble metalloids in the fluid stream were attracted to the tube surface and created a coarse morphology. The coarse morphology allowed additional metalloids to cling to the surface layer and caused additional fouling.

Following the Refueling Outage 9 results, the licensee hydrolized and chemically cleaned the Division II RHR heat exchanger. The licensee did not use an ammonium hydroxide rinse and performed additional system flushes to remove chemical residues. The licensee also removed a tube from the heat exchanger and collected hydrolizing effluents for additional analysis.

c. Conclusions

The inspectors determined that engineering personnel performed a detailed investigation of the cause of the Division II residual heat removal heat exchanger degradation, sufficiently documented the results of the investigation in Condition Report 2000-0505, and implemented appropriate corrective actions.

E8 Miscellaneous Engineering Issues (92903)

E8.1 Closure of IFI

Inspectors reviewed the following IFI and determined that no further action is required. This item is closed.

- IFI 50-458/9816-03: Containment temperature issues.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 External Exposure Controls

a. Inspection Scope (71750)

The inspectors observed personnel compliance with protective clothing requirements specified in RWPs. Additional issues concerning external exposure controls during Refueling Outage 9 were documented in NRC Inspection Report 50-458/00-07.

b. Observations and Findings

Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Section 7 of Appendix A of Regulatory Guide 1.33 requires the licensee to have procedures for the control of radioactivity. Section 7.2.2 of RBNP-024, "Radiation Protection Plan," specified that adherence to the requirements of the RWP is mandatory and ensures that work in posted areas is performed in a radiologically safe manner. RWP 00-1902-00 specified anticontamination clothing requirements as singles for a contaminated area, doubles for a highly contaminated area, or as directed by radiation protection.

During a tour of the drywell on March 22, 2000, the inspectors observed two nonlicensed operators not wearing hoods as part of their anticontamination clothing. The inspectors questioned the individuals who stated that hard hat covers met the requirement for wearing a hood. Subsequent discussions with radiation protection personnel indicated that substituting a hard hat cover for a hood was incorrect and that both hoods and hard hat covers were required for drywell entry under RWP 00-1902-00. The inspectors determined that two nonlicensed operators did not wear anti-contamination clothing as required by RWP 00-1902-00. This Severity Level IV violation of Technical Specification 5.4.1.a in the plant support functional area is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy (50-458/0001-04). This violation is in the licensee's corrective action program as Condition Report 2000-0748.

The inspectors also determined that the nonlicensed operators had entered through the lower drywell access point where radiation protection personnel were posted to observe and question personnel entering the drywell. This included overseeing the implementation of protective clothing requirements. The inspectors determined that radiation protection personnel missed an opportunity to identify the lack of compliance with RWP requirements at the entry point into the drywell.

c. Conclusions

The inspectors identified that two nonlicensed operators did not follow the requirements of a radiation work permit in accordance with Procedure RBNP-024, "Radiation Protection Plan." Specifically, the nonlicensed operators entered the drywell without wearing an anticontamination hood. Additionally, radiation protection personnel at the drywell control point missed an opportunity to identify the lack of compliance with RWP requirements. This Severity Level IV violation of Technical Specification 5.4.1.a in the plant support functional area is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was entered in the licensee's corrective action program as Condition Report 2000-0748.

R1.2 Unauthorized Entry Into Locked High Radiation Area

a. Inspection Scope (71750)

The inspectors reviewed the licensee's identification of an individual who entered a locked high radiation area without logging onto an RWP. Additional issues concerning entry into high radiation areas during Refueling Outage 9 were documented in NRC Inspection Report 50-458/00-07.

b. Observations and Findings

Technical Specification 5.7.2 required, in part, that access to locked high radiation areas shall be by personnel under an approved RWP. On March 23, 2000, a maintenance technician entered a locked high radiation area in the radwaste building without logging onto a RWP. In addition, a radiation protection technician, who was providing continuous coverage, did not notice that the individual had failed to log onto a RWP. The inspectors determined that the licensee's identification of the failure of an individual to enter a locked high radiation area under an approved RWP was a violation of Technical Specification 5.7.2. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy (NCV 50-458/0001-05). This item was entered in the licensee's corrective action program as CR 2000-0762.

c. Conclusions

The licensee identified that an individual entered a locked high radiation area without logging onto any radiation work permits. Specifically, on March 23, 2000, a maintenance technician entered a locked high radiation area in the radwaste building while under continuous coverage by radiation protection personnel without logging onto a radiation work permit. This Severity Level IV violation of Technical Specification 5.7.2 is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was entered in the licensee's corrective action program as CR 1999-0762.

P8 Miscellaneous EP Issues (92904)

P8.1 Closure of IFI

Inspectors reviewed the following IFI and determined that no further action is required. This item is closed.

- IFI 50-458/9801-01: Exercise weakness for prompt dispatch of in-plant response teams.

S1 Conduct of Security and Safeguards Activities

S1.1 Outage Security Observations

a. Inspection Scope (71750)

The inspectors conducted observations of security activities during Refueling Outage 9.

b. Observations and Findings

The inspectors completed tours of the protected area and determined that illumination levels were maintained during Refueling Outage 9. The inspectors toured devitalized areas and ensured that appropriate compensatory measures were implemented. The inspectors also determined that the licensee staged refueling outage materials a sufficient distance from vital structures and the security fence.

c. Conclusions

The inspectors determined that the licensee maintained protected area lighting, implemented compensatory measures for devitalized areas, and staged equipment away from vital structures and the security fence.

V. Management Meetings

X1 Exit Meeting Summary

The exit meeting was conducted on April 3, 2000. The licensee did not express a position on any 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.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

E. Bush, Superintendent Operations
R. Edington, Vice President-Operations
T. Hildebrandt, Manager, Maintenance
J. Holmes, Manager, Radiation Protection and Chemistry
R. King, Director, Nuclear Safety and Regulatory Affairs
W. Mashburn, Components Management
D. Mims, General Manager, Plant Operations
J. McGhee, Manager, Operations
D. Pace, Director, Engineering

INSPECTION PROCEDURES USED

IP 37551:	Onsite Engineering
IP 61726:	Surveillance Observations
IP 62707:	Maintenance Observations
IP 71707:	Plant Operations
IP 71750:	Plant Support
IP 92700	Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
IP 92902	Followup - Maintenance
IP92903	Followup - Engineering
IP 92904	Followup - Plant Support

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

50-458/0001-01	NCV	Failure to isolate reject flow path (Section O2.1)
50-458/0001-02	NCV	Failure to make required 10 CFR Part 50.72 report for actuation of an engineered safety feature system (Section O2.2)
50-458/0001-03	NCV	Two examples of a failure to follow procedures involving qualifications and an inadvertent isolation of the reactor core isolation cooling system (Sections M1.2 and M8.1)
50-458/0001-04	NCV	Failure to adhere to RWP requirements (Section R1.1)
50-458/0001-05	NCV	Failure to log on to RWP before entry into a locked high radiation area (Section R1.2)

Closed

50-458/0001-00	LER	Automatic isolation of reactor core isolation cooling system during surveillance testing (Section M8.1)
50-458/9901-01	LER	Inadequate drywell air and suppression pool average water temperature surveillance during plant modification (Section M8.2)
50-458/9816-03	IFI	Containment temperature issues (Section E8.1)
50-458/9801-01	IFI	Exercise weakness failure for prompt dispatch of in-plant response teams (Section P8.1)
50-458/9718-01	IFI	Review of licensee evaluation if pressure Valve RHS-V240 should be in the Technical Specification (Section M8.3)

Discussed

50-458/9913-01	NCV	Additional example of unauthorized operator aid involving the fuel building refueling bridge (Section o1.2)
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LIST OF ACRONYMS USED

CR	condition report
LER	licensee event report
NCV	noncited violation
PDR	Public Document Room
RHR	residual heat removal
RWP	radiation work permit