UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

May 12, 2011

Eric W. Olson
Site Vice President
Entergy Operations, Inc.
River Bend Station
5485 US Highway 61
St. Francisville, LA 70775

Subject: RIVER BEND STATION - NRC INTEGRATED INSPECTION REPORT NUMBER 05000458/2011002

Dear Mr. Olson:

On March 31, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your River Bend Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on April 7, 2011, with you and other members of your staff.

The inspections 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. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The NRC has also identified seven issues that were evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has determined that five of these findings have violations associated with these issues. However, because these violations are of very low safety significance and because they were entered into your corrective action program, the NRC is treating these violations as noncited violations, consistent with Section 2.3.2 of the NRC Enforcement Policy. Additionally, one licensee-identified violation, which was determined to be of very low safety significance, is listed in this report.

If you contest the violations or the significance of the noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the River Bend Station facility. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within

30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV, and the NRC Resident Inspector at River Bend Station. In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one for cases where a response is not required, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy or proprietary, information so that it can be made available to the public without redaction.

Sincerely,

/RA/

Vincent G. Gaddy, Chief
Project Branch C
Division of Reactor Projects

Docket: 50-458
License: NPF-47

Enclosure:
NRC Inspection Report 05000458/2011002
w/Attachment: Supplemental Information

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SUNSI Rev Compl.	☒ Yes ☐ No	ADAMS	☒ Yes ☐ No	Reviewer Initials	VGG
Publicly Avail	☒ Yes ☐ No	Sensitive	☐ Yes ☒ No	Sens. Type Initials	VGG

SRI:DRP/C	RI:DRP/C	SPE:DRP/C	C:DRS/EB1	C:DRS/EB2
GFLarkin	AJBarrett	RCHagar	TRFarnholtz	NFO'Keefe
/RA/E-Gaddy	**/RA/E-VGG**	**/RA/**	**/RA/**	**/RA/**
5/12/2011	5/6/11	5/4/11	5/4/11	5/5/11
C:DRS/OB	C:DRS/PSB1	C:DRS/PSB2	C:DRS/TSB	SAC:ACES
MCHaire	MPShannon	GEWerner	MCHay	NHTaylor
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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000458
License:	NPF-47
Report:	05000458/2011002
Licensee:	Entergy Operations, Inc.
Facility:	River Bend Station
Location:	5485 U.S. Highway 61 St. Francisville, LA
Dates:	January 1 through March 31, 2011
Inspectors:	G. Larkin, Senior Resident Inspector, Project Branch C A. Barrett, Resident Inspector, Project Branch C J. Drake, Senior Reactor Inspector P. Elkmann, Sr. Emergency Preparedness Inspector, Plant Support Branch 1 L. Ricketson, P.E., Senior Health Physicist, Plant Support Branch 2 R. Kopriva, Senior Reactor Inspector, Engineering Branch 1 D. Stearns, Health Physicist, Plant Support Branch 2 D. Strickland, Operations Engineer B. Tharakan, CHP, Resident Inspector, South Texas Project T. Farina, Operations Engineer, Operations Branch
Approved By:	Vincent G. Gaddy, Chief, Project Branch C Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000458/2011002; 01/01/2011 – 03/31/2011; River Bend Station; Integrated Resident and Regional Report; Equipment Alignments; Refueling and Other Outage Activities; Emergency Action Level and Emergency Plan Changes; Radiological Hazard Assessment and Exposure Controls

The report covered a 3-month period of inspection by resident inspectors and announced baseline inspections by region-based inspectors. Six Green noncited violations and two Green findings of significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." The cross-cutting aspect is determined using Inspection Manual Chapter 0310, "Components Within the Cross Cutting Areas." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. The inspectors reviewed a self-revealing finding involving failure to take adequate corrective actions on a degraded feedwater flow controller push-button, causing a recirculation flow control valve runback, reactor vessel level transient, and a resulting reactor power transient. On September 24, 2008, operations documented a deficiency in the function of the push-button, however station maintenance personnel failed to adequately address the identified deficiency. The push button was subsequently repaired and this issue was entered into the licensee's corrective action program as Condition Report CR-RBS-2011-00300.

  The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone, and it affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors evaluated this finding using Phase 1 of Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined it to be of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The inspectors determined that the apparent cause of the performance deficiency was the failure to thoroughly evaluate the cause of the defective push-button's stickiness. Consequently, this finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee failed to adequately review the results of the work order to ensure that the cause and extent of

condition of the defective push-button was resolved in a timely manner [P.1(c)] (Section 1R20).

Cornerstone: Mitigating Systems

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly identify and correct adverse service water chemistry conditions to resolve repetitive service water pressure control valves diaphragm failures that affected operability of the control building chillers. Specifically, station personnel failed to address excessive internal corrosion in the pressure control valves, which resulted in loss of service water pressure control to the control building chillers. As immediate corrective action, the licensee replaced the damaged pressure control valve and is currently evaluating methods to preclude corrosion around the diaphragm. The licensee placed this issue into their corrective action program as Condition Report CR-RBS-2011-02126.

  The finding was more than minor because it was associated with the equipment performance attribute of the reactor safety Mitigating Systems (MS) Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to be of very low safety significance (Green), because it did not result in a loss of system safety function. The inspectors determined that the apparent cause of the performance deficiency was the repetitive failure of 1SWP-PVY32 diaphragm from rust barnacles that formed on the valve internal steel parts during low flow conditions. The apparent cause of the performance deficiency was the station's failure to thoroughly evaluate the cause of the corrosion build up mechanism because the station treated diaphragm failures as a broke/fix maintenance item. Consequently, this finding has a crosscutting aspect in the area of human performance associated with the resources component because the licensee failed to minimize long-standing equipment issues [H.2(a)] (Section 1R04).

- Green. The inspectors reviewed a self-revealing noncited violation of Technical Specification 5.4.1 for the licensee's failure to determine the appropriate preventive maintenance strategy and task frequency for the reactor core isolation cooling system turbine lube oil cooler inlet pressure control valve (E51-PCVF015). The vendor manual for the pressure control valve recommends that non-metallic parts (including diaphragms) be replaced after 5 years in service. On October 13, 2010, after being in service for more than ten years without diaphragm replacement, the valve developed a leak that rendered the reactor core isolation cooling system inoperable. The licensee replaced the damaged diaphragm and created a preventive maintenance activity for its periodically replacement. This issue was entered into the licensee's corrective action program as Condition Report CR-RBS-2010-05224.

  This finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the associated cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the subject performance deficiency allowed a failure to occur that rendered the reactor core isolation cooling system inoperable for approximately 14 hours. Because this finding occurred while the unit was operating at full power, the inspectors used Inspection Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," to assess its risk significance. The reactor core isolation cooling diaphragm failure was determined to have occurred when the pump was secured; that is, the pump could have operated for 24 hours if it had not been shut down at that time. Therefore, the exposure time was equal to the repair time, which was 15.5 hours. The finding involved a loss of safety system function and therefore did not screen in Phase 1, requiring a Phase 2 evaluation. The inspectors used the Phase 2 pre-solved spreadsheet with a duration of 0-3 days to determine that the issue had very low significance (Green). The inspectors concurred with the licensee's determination that a "lack of technical rigor" had been the reason why the preventive maintenance evaluation of valve E51-PCVF015 had been incorrect, and was therefore the major contributor to the finding. The inspectors considered that this contributor does not reflect current licensee performance because this contributor is a human performance error that occurred in September 2006, and because in 2007, the licensee developed corrective actions to address a substantive crosscutting issue in human performance. Those actions are described in Condition Report CR-RBS-2007-00835 and included activities that changed the licensee's human performance program such that the human performance error that occurred in September of 2006 is not likely to re-occur. This finding therefore does not have a crosscutting aspect (Section 1R12).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," involving an inadequate control rod inspection procedure. Specifically, the station's procedures only required inspection of a only 20 percent of the control rods that

exceeded the inspection criteria, instead of all of them. The station currently has 18 CR 82M control rods in the reactor core in shutdown locations that have exceeded Westinghouse's inspection threshold exposure limits. In response to the inspectors' inquries, the licensee reviewed their water chemistry and concluded the current tritium and boron levels indicated there was margin for control rod operability. The licensee intends to monitor the reactor coolant for increasing boron and tritium levels throughout this operating cycle. The licensee placed this issue into their corrective action program as Condition Report CR-RBS-2011-01704.

The finding is more than minor because it is associated with the equipment performance attribute of the reactor safety Mitigating Systems Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to be of very low safety significance (Green) because it did not result in a loss of system safety function. The inspectors determined that the apparent cause of the performance deficiency was River Bend Station's failure to communicate relevant operating experience to affected internal and external stakeholders. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the operating experience component because the licensee failed to appropriately apply all the CR 82M control rod inspection requirements provided by the control rod vendor [P.2(b)] (Section 1R20).

Cornerstone: Barrier Integrity

- Green. The inspector identified a Green noncited violation of Technical Specification 5.4.1.a, "Procedures" for River Bend Station fuel handling personnel failing to follow AOP-0027, "Fuel Handling Mishaps," when an actual fuel handling event occurred. Instead of entering the AOP, fuel handling personnel continued to move a fuel assembly after equipment damage and potential fuel damage. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2011-03692.

  This failure to follow procedures is a performance deficiency. The performance deficiency is more that minor, and therefore a finding, because it adversely impacted the human performance attribute of the barrier integrity cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding) protect the public from radionuclide releases caused by accidents or events. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, the inspector determined the finding had very low safety significance (Green) because the fuel cladding barrier was potentially degraded but there was no release of radionuclides. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the operating experience component because the licensee failed to implement and

institutionalize operating experience through changes to station procedures and training programs [P.2(b)] (Section 4OA3).

- Green. The inspector identified a finding for failure to follow River Bend Station's "Fuel Handling Guideline." A fuel handling event occurred at River Bend Station on January 21, 2011, when a fuel assembly was grappled and raised approximately one foot rather than fully withdrawn from the core. With the fuel assembly only partially withdrawn from the core, the refuel platform was erroneously moved horizontally approximately five feet. This inappropriate stop at one foot followed by inappropriate horizontal movement of the refuel platform with the fuel partially inserted into the core resulted in equipment damage and potential fuel damage. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2011-03693.

  This failure to follow the guideline is a performance deficiency. The performance deficiency is more that minor, and therefore a finding, because it adversely impacted the human performance attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding) protect the public from radionuclide releases caused by accidents or events. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, the inspector determined the finding had very low safety significance (Green) because the fuel cladding barrier was potentially degraded but there was no release of radionuclides. This finding has a crosscutting aspect in the area of human performance associated with the decision making component because the licensee made a safety-significant decision without verifying the validity of underlying assumptions [H.1(b)] (Section 4OA3).

Cornerstone: Emergency Preparedness

- Green. The inspector identified a Severity Level IV noncited violation of 10 CFR 50.54(q) for changes to the licensee's emergency plans that decreased the effectiveness of those plans without NRC approval. Specifically, the effectiveness of River Bend Station Emergency Plan, Revision 36, was reduced by removal of the Health Physics Communicator position from the emergency response organization. The licensee's failure to recognize that Revision 36 decreased the effectiveness of licensee emergency plans was a performance deficiency. The licensee has entered this issue into their corrective action system as CR-RBS-2011-02366 (Section 1EP4).

  This finding is more than minor because it has a potential effect on the licensee's emergency response capabilities and because the licensee may not be capable of implementing adequate measures to protect the health and safety of the public when the effectiveness of its emergency response organization has been reduced. The finding was evaluated using the NRC Enforcement Policy because it impeded the regulatory process as defined by Manual Chapter 0609, Appendix B, Section 2.2(e). The finding was determined to be Severity Level IV

because it decreased the licensee's ability to meet or implement a regulatory requirement not related to assessment or notification.

Cornerstone: Occupational Radiation Safety

- Green. The inspectors identified a noncited violation of Technical Specification 5.7.2 for failure to properly control and guard a high radiation area with dose rates greater than or equal to 1000 mrem/hr. Specifically, on January 25, 2011, while touring the outside area between the auxiliary building and the radioactive waste building, the inspectors noted that the access gate to a locked high radiation area was open. A guard for the locked high radiation area was positioned in a tent enclosure to the right of the gate, but was not in a position to maintain "line-of-sight" control of the access to the locked high radiation area. The licensee immediately repositioned the guard and enhanced the tent construction to provide the necessary control for access to the area. The licensee placed this issue into their corrective action program as CR 2011-01154.

  The finding was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute (exposure control) of program and process and affected the cornerstone objective, in that, the failure to properly control access to a high radiation area with dose rates in excess of 1000 mrem/hr had the potential to increase personnel dose. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding to have very low safety significance because it was not associated with ALARA planning or work controls, there was no overexposure, there was no substantial potential for an overexposure, and the ability to assess dose was not compromised. The finding has a human performance crosscutting aspect associated with work control, work planning activities, because the individuals failed to consider job site conditions which would impact the ability of the guard to adequately observe the entrance to the locked high radiation area [H.3(a)] (Section 2RS01).

B. Licensee-Identified Violations

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 have been entered into the licensee's corrective action program. This violation and corrective action tracking numbers (condition report numbers) are listed in Section 4OA7.

REPORT DETAILS

Summary of Plant Status

River Bend Station began the inspection period at 100 percent thermal power. On January 15, 2011, the plant came off line to begin Refueling Outage 16. The plant returned to full power on February 16, 2011. On March 12, 2011, the plant reduced reactor power to 90 percent to exercise partially withdrawn control rods and perform turbine bypass valve testing. The plant returned to full power on March 13, 2011, and remained at full power for the rest of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignments (71111.04)

.1 Partial Walkdown

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- High pressure core spray system following system maintenance
- Division 1 control building chiller system walkdown during Division 2 outage
- Division 1 standby service water system walkdown during Division 2 outage

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Safety Analysis Report, technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also inspected accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three partial system walkdown samples as defined in Inspection Procedure 71111.04-05. Also, additional activities were performed

during this system walkdown that were associated with TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems." These activities are described in bullet .3 of this section.

b. Findings

Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly identify and correct adverse service water chemistry conditions to resolve repetitive service water pressure control valves diaphragm failures that affected operability of the control building chillers.

Description. On January 18, 2011, the inspectors performed a walk down of the control building chillers. During the walk down, the inspectors identified that control building chiller condenser A service water pressure control valve, 1SWP-PVY32A, had failed open allowing condenser pressure to decrease low out of specification. Plant operators subsequently declared control building chiller A inoperable. Control building chiller condenser A service water pressure control valves automatically limit cooling water flow through their respective control building chiller condenser to maintain refrigerant temperature and pressure within a preset design range for chiller operability.

The station replaced pressure control valve 1SWP-PVY32A which was recently rebuilt by the original manufacturer, and installed in the system less than two months earlier. When disassembled, the station found that the diaphragm had been breached by a hole 1.5 inches long that was located in the same general area as previous diaphragm failures. Inspection of the valve's internal surfaces revealed that the valve surfaces were very rough from "rust barnacles" in the upper and lower diaphragm cavities. Previous diaphragm failures had also been attributed to rust adhesion and abrasion in the upper and lower diaphragm cavities. The chemistry department asserted that the normal service water chemistry is adequate to prevent rust formation in an operating system. However, when the chillers are out of service, no water flows through 1SWP-PVY32A, so during constant chiller load conditions, service water can stagnate at the diaphragm pressure boundary and contribute to rust formation.

The inspectors reviewed corrective action program documents and noted similar 1SWP-PVY32A diaphragm failures as early as 1999. From 1999 to present, the inspectors found 13 examples of control building chiller pressure control valve failures that were likely due to diaphragm failures. The inspectors found that the licensee had not completed apparent-cause evaluations for the diaphragm failures documented in 2010, and had not taken actions to increase system monitoring by operations. In response to the inspectors' inquiries, station personnel completed an apparent cause evaluation of the 1SWP-PVY32 diaphragm failure. That evaluation, documented in CR-RBS-2011-02126, determined that vendor reports in 2001 and 2010 had identified that corrosion on 1SWP-PVY32 internal mating surfaces had accelerated the rate of valve diaphragm failures. According to the vendor, as 1SWP-PVY32A adjusts position to control service water flow to the chiller, the rubber diaphragm changes shape as the diaphragm piston position in the valve raises or lowers. Rust barnacles inhibit diaphragm movement and result in diaphragm fabric wear, which creates holes in the diaphragm and ultimately can lead to loss of control of service water flow to the chiller.

To improve diaphragm reliability, the vendor recommended replacing steel body, cover, and internals with stainless steel. In January 2003, the licensee had initiated engineering request ER-RB-2003-0009, "SWP-PVY32A/B/C/D Improvements," to upgrade the valve and piston to stainless steel per the manufacturer's recommendation. This modification was later cancelled. Afterwards, the station operated until 2010 with these valves often gagged open due to the valve not controlling condenser pressure. Recently, station management implemented corrective actions to consider replacing the carbon steel valves with stainless steel models to preclude corrosion around the diaphragm, allowing the piston to move freely without damaging the diaphragm.

Analysis. The failure to promptly identify and correct adverse service water chemistry conditions, permitted rust barnacle build up in SWP*PVY32A, a condition that resulted in valve diaphragm failures and is a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the reactor safety Mitigating Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, in that this finding caused unplanned unavailability of control building chillers. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the inspectors determined that the finding was of very low safety significance (Green), because it did not result in a loss of system safety function. The inspectors determined that the apparent cause of the performance deficiency was the repetitive failure of 1SWP-PVY32 diaphragm from rust barnacles that formed during low flow conditions on the valve internal steel parts. The apparent cause of the performance deficiency was the station's failure to thoroughly evaluate the cause of the corrosion build up mechanism because the station treated diaphragm failures as a broke/fix maintenance item. This finding has a crosscutting aspect in the area of human performance associated with the resource component because the licensee failed to minimize long-standing equipment issues [H.2(a)].

Enforcement. Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion XVI, "Corrective Action," states that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. Contrary to the above, from 1999 to 2011, station management failed to control service water chemistry to prevent excessive internal corrosion product valves, 1SWP-PVY32A, B, C, and D, which resulted in repetitive diaphragm failures that adversely affected operability of the control building chillers. Because this finding was of very low safety significance and was entered into the licensee's corrective action program as Condition Report CR-RBS-2011-02126, this violation is being treated as a noncited violation consistent with the NRC Enforcement Policy: NCV 05000458/2011002-01, "Repetitive Service Water Pressure Control Valves Diaphragm Failures Affecting Control Building Chillers Operability."

.2 Complete Walkdown

a. Inspection Scope

On January 21, 2011, the inspectors performed a complete system alignment inspection of the Division 2 residual heat removal system to verify the functional capability of the

system. The inspectors selected this system because it was considered both safety and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment configurations, electrical power availability, system pressure and temperature indications, component labeling, component lubrication, component and equipment cooling, hangers and supports, and operability of support systems, as appropriate. The inspectors also verified that ancillary equipment or debris did not interfere with equipment operation. The inspectors reviewed a sample of past and outstanding work orders to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program database to ensure that system equipment alignment problems were being identified and appropriately resolved. Specific documents reviewed during this inspection are listed in the attachment.

Also, additional activities were performed during this system walkdown that were associated with TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems." These activities are described following bullet .3 of this section.

These activities constitute completion of one complete system walkdown sample as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

.3 System Walkdown associated with Temporary Instruction (TI) 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"

a. Inspection Scope

On January 21, 2011, the inspectors conducted a walkdown of the Division 2 residual heat removal system in sufficient detail to reasonably assure the acceptability of the licensee's walkdowns (TI 2515/177, Section 04.02.d).

In addition, the inspectors verified that the licensee had isometric drawings that describe the Division 2 residual heat removal system configurations and had acceptably confirmed the accuracy of the drawings (TI 2515/177, Section 04.02.a). The inspectors verified the following related to the isometric drawings:

- High point vents were identified.
- High points that do not have vents were acceptably recognizable.
- Other areas where gas can accumulate and potentially impact subject system operability, such as at orifices in horizontal pipes, isolated branch lines, heat

exchangers, improperly sloped piping, and under closed valves, were acceptably described in the drawings or in referenced documentation.

- Horizontal pipe centerline elevation deviations and pipe slopes in nominally horizontal lines that exceed specified criteria were identified.

- All pipes and fittings were clearly shown.

- The drawings were up-to-date with respect to recent hardware changes and that any discrepancies between as-built configurations and the drawings were documented and entered into the corrective action program for resolution.

The inspectors verified that Piping and Instrumentation Diagrams (P&IDs) accurately described the subject systems, that they were up-to-date with respect to recent hardware changes, and any discrepancies between as-built configurations, the isometric drawings, and the P&IDs were documented and entered into the corrective action program for resolution (TI 2515/177, Section 04.02.b).

Specific documents reviewed during this inspection are listed in the attachment.

This inspection effort counts towards the completion of TI 2515/177, which will be closed in a later inspection report.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- January 18, 2011, drywell walkdown during refueling outage16, fire area RDW-1
- February 2, 2011, annulus, fire area RC-6
- February 2, 2011, containment inspection, fire area RC-3/Z-3
- February 2, 2011, containment inspection, fire area RC-4/Z-3
- February 2, 2011, containment inspection, fire area RC-4/Z-5

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented

adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of five quarterly fire-protection inspection samples as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors reviewed the Updated Safety Analysis Report, the flooding analysis, and plant procedures to assess susceptibilities involving internal flooding; reviewed the corrective action program to determine if licensee personnel identified and corrected flooding problems; inspected underground bunkers/manholes to verify the adequacy of sump pumps, level alarm circuits, cable splices subject to submergence, and drainage for bunkers/manholes; and verified that operator actions for coping with flooding can reasonably achieve the desired outcomes. The inspectors also inspected the areas listed below to verify the adequacy of equipment seals located below the flood line, floor and wall penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, control circuits, and temporary or removable flood barriers. Specific documents reviewed during this inspection are listed in the attachment.

- January 13, 2011, underground vaults

These activities constitute completion of one bunker/manhole sample as defined in Inspection Procedure 71111.06-05.

b. Findings

No findings were identified.

1R07 Triennial Heat Sink Performance (71111.07)

.1 Performance Testing, Maintenance, and Inspection Activities

a. Inspection Scope

Inspection Module 71111.07, "Heat Sink Performance," requires that two to three safety-related heat exchangers, either directly or indirectly connected to the safety-related service water system, be reviewed to ensure they are either tested or inspected and cleaned. The inspectors selected the following three heat exchangers that were ranked high in the plant specific risk assessment and are connected to the safety-related service water system:

- Residual Heat Removal Heat Exchanger B (E12-EB001B)
- Reactor Core Isolation Cooling Turbine Lube Oil Cooler (E51-EC002)
- Residual Heat Removal Room Cooler "B" (HVR-UC9 BLOWER)

For the heat exchangers directly connected to the safety-related service water system, the inspectors reviewed whether testing, inspection and cleaning, maintenance, and the fouling monitoring program provided sufficient controls to ensure proper heat transfer. The inspectors reviewed chemical controls used to avoid fouling, heat exchanger testing results, and inspection and cleaning results. The inspectors reviewed the method used to ensure that the ultimate heat sink had sufficient water at all times. In addition, the inspectors reviewed other sources of water that could be used to fill the heat sink during emergency conditions.

For the chosen heat exchangers, the inspectors verified the proper extrapolation of test conditions to design conditions, appropriate use of test instrumentation, and appropriate accounting for instrument inaccuracies. The inspectors reviewed the methods and results of heat exchanger inspection and cleaning, verified that the methods used to inspect and clean were consistent with industry standards, and ensured that the as-found results were appropriately assessed, such that the final conditions were within acceptable operating limits. The inspectors reviewed trends of heat exchangers performance data. Additionally, the inspectors verified that the licensee appropriately trended these inspection and cleaning results, assessed the causes of the trends, and took necessary actions for any step changes in these trends.

b. Findings

No findings were identified.

.2 Verification of Conditions and Operations Consistent with Design Bases

a. Inspection Scope

For the selected heat exchangers, the inspectors verified that the licensee established heat sink and heat exchanger conditions and operation that were consistent with the design assumptions. Specifically, the inspectors reviewed the applicable calculations to ensure that the thermal performance test acceptance criteria for the heat exchangers were being applied consistently throughout the calculations. In addition, the inspectors reviewed test data for the heat exchangers and design and vendor-supplied information to ensure that the heat exchangers were within their design bases limits.

b. Findings

No findings were identified.

.3 Identification and Resolution of Problems

a. Inspection Scope

The inspectors verified that the licensee had entered significant heat exchanger/heat sink performance problems into the corrective action program. The inspectors reviewed approximately 50 condition reports, which are listed in the attachment.

b. Findings

No findings were identified.

These activities constitute completion of three heat sink inspection samples as defined in Inspection Procedure 71111.07-05.

1R08 Inservice Inspection Activities (71111.08)

.1 Inspection Activities Other Than Steam Generator Tube Inspection, Pressurized Water Reactor Vessel Upper Head Penetration Inspections, and Boric Acid Corrosion Control (71111.08-02.01)

a. Inspection Scope

The inspectors observed four nondestructive examination activities and reviewed four nondestructive examination activities that included four types of examinations. The licensee did not identify any relevant indications accepted for continued service during the nondestructive examinations.

The inspectors directly observed the following nondestructive examinations:

SYSTEM	WELD IDENTIFICATION	EXAMINATION TYPE
Core Spray	CSS-A-S3a.b	Electronic Visual Testing 1
Reactor Coolant	B13-D001-AG	Magnetic Particle Testing
Feedwater	FWS-E1B	Visual Testing 1
Feedwater	FWS-E1B	Dye Penetrant Testing

The inspectors reviewed records for the following nondestructive examinations:

SYSTEM	WELD IDENTIFICATION	EXAMINATION TYPE
Reactor Coolant	RCS-900c-FWB14	Ultrasonic Testing
Reactor Coolant	RCS-900CX-SW024	Ultrasonic Testing
Reactor Coolant	RCS-PSSH-3037-A1	Visual Testing 3
Reactor Coolant	RCS-900CX-SW014CA	Ultrasonic Testing

During the review and observation of each examination, the inspectors verified that activities were performed in accordance with the ASME Code requirements and applicable procedures. The inspectors compared any indications identified in previous examinations and verified that licensee personnel dispositioned the indications in accordance with the ASME Code and approved procedures. The inspectors also verified the qualifications of all nondestructive examination technicians performing the inspections were current.

No welding was completed on the reactor coolant system pressure boundary during the inspection period, so the inspectors observed on weld repair on the feedwater system.

The inspectors directly observed a portion of the following welding activity:

SYSTEM	WELD IDENTIFICATION	EXAMINATION TYPE
Feedwater	FWS-E1B	Shielded Metal Arc Welding

The inspectors reviewed records for the following welding activity:

SYSTEM	WELD IDENTIFICATION	EXAMINATION TYPE
Feedwater	FWS-E1B	Shielded Metal Arc Welding

The inspectors verified, by review, that the welding procedure specifications and the welders had been properly qualified in accordance with ASME Code, Section IX, requirements. Through observation and record review, the inspectors also verified that essential variables for the welding process had been identified, recorded in the procedure qualification record, and formed the bases for qualification of the welding procedure specifications. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements for Section 02.01.

b. Findings

No findings were identified.

.5 Identification and Resolution of Problems (71111.08-02.05)

a. Inspection scope

The inspectors reviewed 32 condition reports which dealt with inservice inspection activities and found the corrective actions for inservice inspection issues were appropriate. The specific condition reports reviewed are listed in the documents reviewed section. From this review, the inspectors concluded that the licensee has an appropriate threshold for entering issues inservice inspection issues into the corrective action program and has procedures that direct a root cause evaluation when necessary. The licensee also has an effective program for applying industry inservice inspection operating experience. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements of Section 02.05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On March 8, 2011, the inspectors observed a crew of licensed operators in the plant's simulator to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms
- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors

- Crew's ability to identify and implement appropriate technical specification actions and emergency plan actions and notifications

The inspectors compared the crew's performance in these areas to pre-established operator action expectations and successful critical task completion requirements. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one quarterly licensed-operator requalification program sample as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk significant system:

- Spent fuel pool cooling and cleanup system
- Reactor core isolation cooling system

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65(b)
- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65
- Verifying appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65(a)(2), or as

requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65(a)(1)

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified that maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

Introduction. The inspectors reviewed a green self-revealing noncited violation of Technical Specification 5.4.1 for the licensee's failure to determine the appropriate preventive maintenance strategy and task frequency for the reactor core isolation cooling system turbine lube oil cooler inlet pressure control valve (E51-PCVF015).

Description. On July 7, 2000, the licensee installed a diaphragm in the reactor core isolation cooling system turbine lube oil cooler inlet pressure control valve (E51-PCVF015), while rebuilding that valve. Between that time and October 13, 2010, the diaphragm was not replaced. On September 25, 2006, the licensee had completed a preventive maintenance evaluation of valve E51-PCVF015. That evaluation stated that a review of Vendor Manual T020-0127 found that no specific maintenance was required for this valve. Consequently, because that evaluation found no information that indicated that preventive maintenance was desirable, the licensee did not develop a preventive maintenance schedule to specify inspection or replacement of the diaphragm.

On October 13, 2010, a few months more than 10 years after the diaphragm on valve E51-PCVF015 had been installed, it developed a leak that rendered the valve inoperable. The licensee replaced the diaphragm and returned the valve to service approximately 14 hours after the leak was discovered. The licensee's investigation of the cause of this leak was documented in Condition Report CR-RBS-2010-05224. That investigation determined, in part, that Vendor Manual T020-0127 had recommended that non-metallic parts (including diaphragms) be replaced after 5 years in service. The investigation also determined that a "lack of technical rigor" had been the reason why the preventive maintenance evaluation of valve E51-PCVF015 had been incorrect.

In Condition Report CR-RBS-2010-05224, corrective action #8 corrected the preventive maintenance evaluation of valve E51-PCVF015 and corrective action #9 created a preventive maintenance activity to periodically replace the diaphragm on that valve.

Analysis. The licensee's failure to determine the appropriate preventive maintenance strategy and task frequency for the reactor core isolation cooling system turbine lube oil cooler inlet pressure control valve was a performance deficiency. This performance deficiency was more than minor and was therefore a finding because it was associated

with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the associated cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, in that the subject performance deficiency allowed a failure to occur that rendered the reactor core isolation cooling system inoperable for approximately 14 hours. Because this finding occurred while the unit was operating at full power, the inspectors used Inspection Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," to assess its risk significance. The reactor core isolation cooling diaphragm failure was determined to have occurred when the pump was secured; that is, the pump could have operated for 24 hours if it had not been shut down at that time. Therefore, the exposure time was equal to the repair time, which was 15.5 hours. The finding involved a loss of safety system function and therefore did not screen in Phase 1, requiring a Phase 2 evaluation. Using the Phase 2 pre-solved spreadsheet, for 0-3 days, the issue screened as having very low significance (Green). The inspectors concurred with the licensee's determination that a "lack of technical rigor" had been the reason why the preventive maintenance evaluation of valve E51-PCVF015 had been incorrect, and was therefore the major contributor to the finding. The inspectors considered that this contributor does not reflect current licensee performance because this contributor is a human performance error that occurred in September 2006, and because in 2007, the licensee developed corrective actions to address a substantive crosscutting issue in human performance. Those actions are described in Condition Report CR-RBS-2007-00835 and included activities that changed the licensee's human performance program such that the human performance error that occurred in September of 2006 is not likely to re-occur. This finding therefore does not have a crosscutting aspect.

Enforcement. Technical Specification 5.4.1 requires, in part, that written procedures shall be implemented covering the procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Section 9, requires that preventive maintenance schedules should be developed to specify, in part, inspection or replacement of parts that have a specific lifetime. Procedure EN-DC-335, "[Preventive Maintenance] Basis Template," Revision 2, required the licensee, in part, to evaluate industry experience, including relevant information from vendors, to determine the appropriate preventive maintenance strategy and task frequency for the component being evaluated. Contrary to the above, on September 25, 2006, the licensee did not implement EN-DC-335, a written procedure for developing preventive maintenance schedules for inspection or replacement of parts that have a specific lifetime, in that the licensee did not evaluate relevant information from vendors to determine the appropriate preventive maintenance strategy and task frequency for valve E51-PCVF015. Specifically, in the preventive maintenance evaluation completed on that date, the licensee determined that Vendor Manual T020-0127 for the subject valve required no specific maintenance for this model valve, when in fact, Section 5.11 of that manual recommended that non-metallic parts be replaced after five years in service. This violation is addressed in the licensee's corrective action program as Condition Report CR-RBS-2010-05224. Because this violation was of very low safety significance and was entered into the licensee's corrective action program, this violation is being treated as a noncited violation consistent with the NRC Enforcement Policy:

NCV 05000458/2011002-02, “Failure to Determine the Appropriate Preventive Maintenance Strategy and Task Frequency for the Reactor Core Isolation Cooling System Turbine Lube Oil Cooler Inlet Pressure Control Valve.”

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

a. Inspection Scope

The inspectors reviewed licensee personnel's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Diesel availability during fuel oil transfer surveillance, January 4, 2011
- Transformer yard scaffolding, January 11, 2011
- Evaluation of outage risk with single source of service water available, January 20, 2011
- Non-divisional work week, March 7, 2011
- Fancy Point meter and relay calibration, and channel integrity testing, March 8 and 9, 2011
- Feed pump oil leak, March 14, 2011

The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of six maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- CR-RBS-2011-00053, leakage from RCIC thermal relief valve, reviewed on January 3, 2011
- CR-RBS-2011-00075, electrical separation requirements for B tunnel north end of cable tray, reviewed on January 10, 2011
- CR-RBS-2011-00630, oil in SWP-P3C control building chiller recirc pump, reviewed on January 21, 2011
- CR-RBS-2011-01700 & CR-RBS-2011-01704, control blade cracking, reviewed on February 3, 2011
- CR-RBS-2011-00072, RHR door seal degraded, reviewed on March 4, 2011
- CR-RBS-2011-00346, drywell unit cooler operation during a LOCA, reviewed on March 7, 2011
- CR-RBS-2011-02883, oil addition log process failure, reviewed on March 15, 2011

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and Updated Safety Analysis Report to the licensee personnel's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of seven operability evaluations inspection sample(s) as defined in Inspection Procedure 71111.15-04

b. Findings

No findings were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following postmaintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- WO-00259388, “Field Flash Relay Failure and Replacement Div 1 EDG,” reviewed on February 3, 2011
- WO-00067592, “MSIV Retest,” reviewed on February 19, 2011
- WO-00261966, “B33-PC001A TRIPPED TO OFF ON RECIRC PUMP DOWNSHIFT,” reviewed on March 2, 2011
- WO-00261953, “C33-R601A “Close” Pushbutton Was Stuck In Manual,” reviewed on February 28, 2011
- WO-00263143, “SWP-PVY32A IS CONTROLLING PRESSURE IN HVK-CHL1A,” reviewed on March 18, 2011
- WO-00264682, “HVK-CHL1C PERFORM OFFLINE TEST (RF16) PORTION OF CR 11-1650,” reviewed on February 28, 2011

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated these activities for the following (as applicable):

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed
- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

The inspectors evaluated the activities against the technical specifications, the Updated Safety Analysis Report, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with postmaintenance tests to

determine whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of six postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the outage safety plan and contingency plans for Refueling Outage 16, conducted January 14, 2011, through February 11, 2011, to confirm that licensee personnel had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense in depth. During the refueling outage, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below.

- Configuration management, including maintenance of defense in depth, is commensurate with the outage safety plan for key safety functions and compliance with the applicable technical specifications when taking equipment out of service.
- Clearance activities, including confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing.
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error.
- Status and configuration of electrical systems to ensure that technical specifications and outage safety-plan requirements were met, and controls over switchyard activities.
- Monitoring of decay heat removal processes, systems, and components.
- Verification that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system.
- Reactor water inventory controls, including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss.
- Controls over activities that could affect reactivity.

- Maintenance of secondary containment as required by the technical specifications.

- Refueling activities, including fuel handling and sipping to detect fuel assembly leakage.

- Startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing.

- Licensee identification and resolution of problems related to refueling outage activities.

Specific documents reviewed during this inspection are listed in the attachment.

This inspection activity represents a review of Operating Experience Smart Sample FY2007-03 Revision 2, related to issues associated with control of heavy loads and crane lifts.

These activities constitute completion of one refueling outage and other outage inspection sample as defined in Inspection Procedure 71111.20-05.

b. Findings

.1 Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," involving an inadequate control rod inspection procedure.

Description. On February 2, 2011, plant personnel discovered two cracks in a Westinghouse CR 82M control rod. The inspectors reviewed the vendor's control rod inspection requirements and acceptance criteria provided in the Westinghouse document "Inspection Guidelines and Operating Experience of CR 82, CR 82M, and CR 82M-1 Westinghouse BWR Control Rods."

The document states that the guidelines increase the operational margin for safe control rod operation ensuring that decreased reactivity worth, due to boron carbide loss through control rod cracking, will not become an operability issue, and ensures the ability to scram and maintain control rod structural integrity. The inspectors also reviewed reactor engineering procedure REP-0053, "Control Rod Visual Inspection," and Entergy corporate procedure EN-RE-211, "Control Blade Lifetime," to determine if the procedures complied with the Westinghouse inspection criteria. The inspectors found that the station's procedures contained the updated inspection criteria based on control rod exposures, but did not require inspection of each control rod that met the threshold exposure limits. Specifically, the station's procedures required inspection of only a representative 20% sample control rods, instead of all of the control rods that exceeded the inspection criteria. The Westinghouse inspection document, Section 9.2.1.2.1,

requires that any CR 82M control rod which has reached the exposure threshold and has been moved to a shutdown location (typically on the core periphery) must be inspected within four years. Eighteen CR 82M control rods in the reactor core have exceeded Westinghouse's inspection threshold exposure limits. Four of the eighteen control rods had been previously inspected in November of 2004 (RF-12) with no cracks identified. A fifth control rod, which was inspected during the most recent refueling outage (RF-16), had two cracks identified on two different control blade faces. Plant personnel contacted Westinghouse to review the images of the cracks and plant chemistry data. Westinghouse provided a report which detailed the failure mechanism as irradiation assisted stress corrosion cracking. In addition, the inspectors found that REP-0053 inspected only 4 of 8 cruciform control rod sides that exceeded the Westinghouse, Section 9.2.1.2.1 inspection criteria. The inspection criteria provided by the Westinghouse guidelines did not address partial inspection of the control rods. Station management performed a review of reactor water chemistry specifically for tritium and boron trends during the last two cycles, and concluded that no new control rod cracks had occurred and that the current tritium and boron levels indicate that there is margin for control rod operability. The station will continue to monitor the reactor coolant for increasing boron and tritium levels in the reactor coolant through the next cycle. In addition, corrective actions have been issued to revise the control rod inspection procedure to include the appropriate inspection criteria and complete control rod inspections in the next refuelling outage (RF-17).

Analysis. The failure to develop adequate procedure instructions to inspect Westinghouse CR 82M control rods is a performance deficiency. The finding is more than minor because it is associated with the equipment performance attribute of the reactor safety Mitigating Systems Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to be of very low safety significance (Green) because it did not result in a loss of system safety function. The inspectors determined that the apparent cause of the performance deficiency was River Bend Station's failure to communicate relevant Operating Experience to affected internal and external stake holders. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the operating experience component because the licensee failed to appropriately apply all of the CR 82M control rod inspection requirements provided by the control rod vendor [P.2(b)].

Enforcement. Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. The Westinghouse control blade inspection document, "Inspection Guidelines and Operating Experience of CR 82, CR 82M, and CR 82M-1 Westinghouse BWR Control Rods," Section 9.2.1.2.1, requires that any CR 82M control rod which has reached the exposure threshold and has been

moved to a shutdown location must be inspected within four years. Contrary to the above, on or above February 2, 2011, the control blade inspection procedure, REP-0053, "Control Rod Visual Inspection," Revision 3, failed to include the appropriate qualitative acceptance criteria that all control rods that had exceeded the exposure threshold be inspected. Because this violation was of very low safety significance and was entered into the licensee's corrective action program as Condition Report CR-RBS-2011-01704, this violation is being treated as a noncited violation consistent with the NRC Enforcement Policy: NCV 05000458/2011002-03, "Inadequate Control Rod Inspection Procedure."

.2 Introduction. The inspectors reviewed a self-revealing finding involving failure to take adequate corrective actions on a degraded feedwater flow controller push-button, causing a recirculation flow control valve runback, reactor vessel level transient, and a resulting reactor power transient.

Description. On January 14, 2011, the plant began reducing power to enter Refuelling Outage 16. Plant operators placed the A feedwater level control valve into manual control, per the shutdown operations procedure. The at-the-controls operator pressed and released the close push-button associated with the A feedwater level controller (C33-R601A) and observed reactor water level decrease as expected. However, unknown to the operator, the push-button had stuck in the closed position. The operator continued to monitor level, and noted that reactor water level continued to decrease. The operator responded by pressing the open push-button to bring reactor water level back to normal. Reactor vessel level did not increase as expected, and prior to releasing the open push-button, reactor vessel level reached the reactor recirculation flow control valve runback setpoint, initiating a runback and decreasing power from 67 percent to 54 percent. The operator observed and tapped the feedwater regulating valve demand meter (which is above the push-buttons) and observed the A feedwater level controller push-button pop out from a depressed position.

The event investigation found that the controller push-button became stuck in a depressed position due to dust and dirt accumulating on the internal mechanisms in the push-button and switch. Further investigation found that in 2008, CR-RBS-2008-05672 had identified a problem with the close push-button. Work Order 166807, "C33-R601A FWREG Valve A Flow [Controller] Slow Detent Not [Functioning]," was closed, stating that the condition was not repeatable, with a closing statement noting a friction difference between the operation of this push-button versus the other feedwater level control valve push-button controls. No actions were taken to address the identified deficiency. An opportunity to identify the need to lubricate or clean the push-button was missed during the performance of Work Order 166807.

Analysis. Corporate procedure EN-LI-102, "Corrective Action Process," Revision 10, requires, in part, that corrective actions address the cause or resolve the deficiency. The performance deficiency was the failure to adequately inspect, clean, and test the defective feedwater level controller push-button to resolve the stated deficiency (identified in a 2008 condition report), resulting in an unplanned power reduction. The inspectors determined that this finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone, and it

impacted the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors evaluated this finding using Phase 1 of Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined it to be of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The inspectors determined that the apparent cause of the performance deficiency was the failure to thoroughly evaluate the cause of the defective push-button's stickiness. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee failed to adequately review the results of the work order to ensure that the cause and extent of condition of the defective push-button was resolved in a timely manner [P.1(c)].

Enforcement. No violation of regulatory requirements occurred because corrective action issues related to the feedwater system are outside of the scope of 10 CFR Part 50, Appendix B. Because this finding does not involve a violation and has very low safety significance, it is identified as FIN 05000458/2011002-04, "Feedwater Control System Inadequate Corrective Actions Results in Power Transient."

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

The inspectors reviewed the Updated Safety Analysis Report, procedure requirements, and technical specifications to ensure that the surveillance activities listed below demonstrated that the systems, structures, and/or components tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Jumper/lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability

- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the surveillance testing.

- STP-309-0201, “Division I Diesel Generator Operability Test,” performed on January 5, 2011
- STP-209-0201, “RCIC Discharge Piping Fill and Valve Lineup Verification,” performed on January 12, 2011
- STP-204-6603, “RHR System Refuel Pressure Isolation Valve Test,” performed on January 30, 2011 (LLRT)
- STP-204-6501, “Div I ECCS Check Valve Operability Test,” performed on February 2, 2011
- STP-203-0201, HPCS Piping Water Fill and Valve Position Verification,” performed on February 4, 2011 (TI 2515/177 Effort)
- STP-203-6603, “HPCS System Refuel Pressure Isolation Valve Test,” performed on March 7, 2011 (IST)

Also, additional activities were performed during the review of the HPCS Piping Water Fill and Valve Position Verification surveillance that were associated with TI 2515/177, “Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems.” These activities are described in bullet .2 of this section.

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of six surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings were identified.

.2 Surveillance Testing Associated with Temporary Instruction (TI) 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"

a. Inspection Scope

When reviewing STP-203-0201, "HPCS Piping Water Fill and Valve Position Verification," the inspectors verified that the procedure was acceptable for (1) testing high pressure core spray with power operation, shutdown operation, maintenance, and subject system modifications, (2) void determination and elimination methods, and (3) post-event evaluation.

The inspectors reviewed procedures used for conducting surveillances and determination of void volumes to ensure that the void criteria was satisfied and will be reasonably ensured to be satisfied until the next scheduled void surveillance (TI 2515/177, Section 04.03.a). Also, the inspectors reviewed procedures used for filling and venting the following conditions which may have introduced voids into the subject systems to verify that the procedures acceptably addressed testing for such voids and provided acceptable processes for their reduction or elimination (TI 2515/177, Section 04.03.b). Specifically, the inspectors verified that:

- Gas intrusion prevention, refill, venting, monitoring, trending, evaluation, and void correction activities were acceptably controlled by approved operating procedures (TI 2515/177, Section 04.03.c.1).

- Procedures ensured the system did not contain voids that may jeopardize operability (TI 2515/177, Section 04.03.c.2).

- Procedures established that void criteria were satisfied and will be reasonably ensured to be satisfied until the next scheduled void surveillance (TI 2515/177, Section 04.03.c.3).

- The licensee entered changes into the corrective action program as needed to ensure acceptable response to issues. In addition, the inspectors confirmed that a clear schedule for completion is included for corrective action program entries that have not been completed (TI 2515/177, Section 04.03.c.5).

- Procedures included independent verification that critical steps were completed (TI 2515/177, Section 04.03.c.6).

The inspectors verified the following with respect to surveillance and void detection:

- Specified surveillance frequencies were consistent with technical specification surveillance requirements (TI 2515/177, Section 04.03.d.1).

- Surveillance frequencies were stated or, when conducted more often than required by technical specifications, the process for their determination was described (TI 2515/177, Section 04.03.d.2).

- Surveillances methods were acceptably established to achieve the needed accuracy (TI 2515/177, Section 04.03.d.3).

- Surveillance procedures included up-to-date acceptance criteria (TI 2515/177, Section 04.03.d.4).

- Procedures included effective follow-up actions when acceptance criteria are exceeded or when trending indicates that criteria may be approached before the next scheduled surveillance (TI 2515/177, Section 04.03.d.5).

- Measured void volume uncertainty was considered when comparing test data to acceptance criteria (TI 2515/177, Section 04.03.d.6).

- Venting procedures and practices utilized criteria such as adequate venting durations and observing a steady stream of water (TI 2515/177, Section 04.03.d.7).

- An effective sequencing of void removal steps was followed to ensure that gas does not move into previously filled system volumes (TI 2515/177, Section 04.03.d.8).

- Qualitative void assessment methods included expectations that the void will be significantly less that allowed by acceptance criteria (TI 2515/177, Section 04.03.d.9).

- Venting results were trended periodically to confirm that the systems are sufficiently full of water and that the venting frequencies are adequate. The inspectors also verified that records on the quantity of gas at each location are maintained and trended as a means of preemptively identifying degrading gas accumulations (TI 2515/177, Section 04.03.d.10).

- Surveillances were conducted at any location where a void may form, including high points, dead legs, and locations under closed valves in vertical pipes (TI 2515/177, Section 04.03.d.11).

- The licensee ensure that systems were not pre-conditioned by other procedures that may cause a system to be filled, such as by testing, prior to the void surveillance (TI 2515/177, Section 04.03.d.12).

- Procedures included gas sampling for unexpected void increases if the source of the void is unknown and sampling is needed to assist in determining the source (TI 2515/177, Section 04.03.d.13).

The inspectors verified the following with respect to filling and venting:

- Revisions to fill and vent procedures to address new vents or different venting sequences were acceptably accomplished (TI 2515/177, Section 04.03.e.1).

- Fill and vent procedures provided instructions to modify restoration guidance to address changes in maintenance work scope or to reflect different boundaries from those assumed in the procedure (TI 2515/177, Section 04.03.e.2).

The inspectors verified the following with respect to void control:

- Void removal methods were acceptably addressed by approved procedures (TI 2515/177, Section 04.03.f.1).

- The licensee had reasonably ensured that the "HPCS Piping Water Fill and Valve Position Verification" pump is free of damage following a gas-related event in which pump acceptance criteria was exceeded (TI 2515/177, Section 04.03.f.2).

Documents reviewed are listed in the attachment to this report.

This inspection effort counts towards the completion of TI 2515/177 which will be closed in a later inspection report.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert Notification System Testing (71114.02)

a. Inspection Scope

The inspectors discussed with licensee staff the status of offsite siren systems to determine the adequacy of licensee methods for testing the alert and notification system in accordance with 10 CFR Part 50, Appendix E. The licensee's alert and notification system testing program was compared with criteria in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1; FEMA Report REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants"; and the licensee's FEMA-approved alert and notification system design report, "River Bend Station Prompt Notification System Design Report," Revision 1, dated December 2001. The inspectors also observed a silent test of the alert and notification system

performed March 15, 2011. The specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.02-05.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Augmentation Testing (71114.03)

a. Inspection Scope

The inspectors discussed with licensee staff the status of primary and backup systems for augmenting the on-shift emergency response staff to determine the adequacy of licensee methods for staffing emergency response facilities in accordance with their emergency plan. The inspectors reviewed the documents and references listed in the attachment to this report to evaluate the licensee's ability to staff emergency response facilities in accordance with the licensee's emergency plan and the requirements of 10 CFR Part 50, Appendix E.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.03-05.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspectors performed in-office and on-site reviews of River Bend Station Emergency Plan, Revisions 35 and 36, and Procedure EIP-2-002, "Classification Actions," Revision 30. These revisions,

- Reassigned responsibility for making emergency classifications from the Emergency Director (TSC) to the Emergency Director (EOF);

- Replaced the security emergency action levels HG1, HS1, HA1, and HU1, and their associated technical bases, with the corresponding emergency action levels and associated technical bases from NEI 99-01, "Emergency Action Level Methodology," Revision 5;

- Revised the process for authorizing potassium iodide and emergency radiation exposures to permit the Emergency Plant Manager (TSC) and Emergency

Director (EOF) to authorize potassium iodide and emergency exposures for personnel in their facilities;

- Clarified that either the Emergency Plant Manager (TSC) or Emergency Director (EOF) may relieve the Shift Manager (Control Room) of command-and-control responsibilities;

- Revised requirements for the two required on-shift maintenance staff to permit any combination of mechanical, electrical, or instrument and control maintenance to fill the positions. This change was approved by the NRC by letter dated October 21, 2010 (RBS License Amendment 169);

- Revised the number of instrument and control maintenance staff required to augment the Operations Support Center from one to two, in accordance with RBS License Amendment 169;

- Revised the duties of Nuclear Control Operators and Nuclear Equipment Operators to allow either position to fill the Fire Brigade Leader position when required and to allow a Nuclear Equipment Operator to be a Fire Brigade member;

- Added three emergency response organization positions,

    - Operations Support (OSC);
    - Information Coordinator (JIC); and,
    - Log Keeper (JIC);

- Moved the Lead Offsite Liaison and Offsite Liaison positions from the Joint Information Center to the Emergency Operations Facility;

- Eliminated eight emergency response organization positions,

    - Administrative Support (OSC, TSC, EOF);
    - TSC Data Facility Coordinator;
    - TSC Administrative Coordinator;
    - TSC Habitability Technician;
    - Radiological Assessment Coordinator;
    - HPN Communicator;
    - Telecommunications Specialist; and,
    - EOF Registration;

- Revised the position titles of forty emergency response organization positions; and,

- Made other minor editorial changes and corrections.

These revisions were compared to their previous revisions, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, to Nuclear Energy Institute Report 99-01, "Emergency Action Level Methodology," Revisions 4 and 5, and to the standards in 10 CFR 50.47(b) to determine if the revisions adequately implemented the requirements of 10 CFR 50.54(q). These reviews were not documented in safety evaluation reports and did not constitute approval of licensee-generated changes; therefore, these revisions are subject to future inspection. The specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three samples as defined in Inspection Procedure 71114.04-05.

b. Findings

Introduction. A Severity Level IV noncited violation was identified for the licensee having decreased the effectiveness of their emergency plan without having obtained prior approval from the Commission, as required by 10 CFR 50.54(q).

Description. The NRC identified the licensee's decreasing the effectiveness of their emergency plan without NRC approval as a performance deficiency. Specifically, the effectiveness of the River Bend Station Emergency Plan, Revision 36, was reduced by removal of the Health Physics Network Communicator position from the emergency response organization.

The inspector determined that River Bend Station Emergency Plan, Revision 36, removed the Health Physics Network Communicator position from the emergency response organization and transferred the communication function to the Radiological Assessment Coordinator. The revised Radiological Assessment Coordinator duties included acting as Emergency Operations Facility group leader for radiation protection, oversight and approval of dose assessment, development of protective action recommendations for the public, and communication to the NRC. The inspector concluded that due to the increased responsibilities during an emergency the Radiological Assessment Coordinator would be unable to simultaneously perform all of the duties assigned by Emergency Plan Revision 36. Procedure EIP-2-020, "Emergency Operations Facility," Revision 34, allowed for the ad hoc staffing of the Health Physics Network to relieve the Radiological Assessment Coordinator of communicator duties but did not require a communicator be assigned. The inspector concluded the procedure did not ensure the Radiological Assessment Coordinator would delegate communication duties or that that a person knowledgeable about emergency response, plant health physics, and dose assessment would be assigned as ad hoc Communicator.

The inspectors concluded that the licensee could reasonably foresee the need for continuous staffing of the Health Physics Network based on Generic Letter 91-14, "Emergency Telecommunications," dated September 23, 1991, which in part, defines the Health Physics Network as an essential emergency communication function. Therefore, the inspectors determined removal of the Health Physics Communicator position from

the licensee's emergency response organization decreased the effectiveness of their emergency plan.

Analysis. A licensee making changes to its emergency plan that decreased the effectiveness of those plans without prior Commission approval is a performance deficiency within the licensee's ability to foresee and correct. This finding is more than minor because it has a potential effect on the licensee's emergency response capabilities and because the licensee may not be capable of implementing adequate measures to protect the health and safety of the public when the effectiveness of its emergency response organization has been reduced. The finding was associated with a violation of NRC requirements. This finding was evaluated using the NRC Enforcement Policy because it impeded the regulatory process as defined by Manual Chapter 0609, Appendix B, Section 2.2(e). The finding was determined to be Severity Level IV because it decreased the licensee's ability to meet or implement a regulatory requirement not related to assessment or notification. Although the Health Physics Network Communicator position could have been staffed during an emergency, staffing could have been inappropriately delayed, and procedures did not ensure a knowledgeable person would be assigned as ad hoc communicator.

Enforcement. Title 10 of the Code of Federal Regulations, Part 50.54(q) states in part, "the…licensee may make changes to these plans without Commission approval only if the changes do not decrease the effectiveness of the plans and the plans, as changed, continue to meet the standards of Sec. 50.47(b) and the requirements of Appendix E to this part.." Contrary to the above between December 7, 2010, and March 10, 2011, the licensee made changes to their emergency plan without Commission approval that decreased the effectiveness of that plan. Specifically, the effectiveness of the licensee's emergency plan was reduced by removal of the Health Physics Network Communicator position from the emergency response organization. Because this failure is Severity Level IV and has been entered into the licensee's corrective action program as Condition Report CR-RBS-2011-02366, this violation is being treated as a noncited violation consistent with the NRC Enforcement Policy: NCV 05000485/2011002-05, "Reduction in ERO Staffing Decreased Emergency Plan Effectiveness."

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

a. Inspection Scope

The inspectors reviewed the licensee's corrective action program requirements in Procedure EN-LI-102, "Corrective Action Process," Revision 16. The inspectors reviewed summaries of 197 corrective action program documents (Condition Reports) assigned to the emergency preparedness department and emergency response organization between March 1, 2009, and March 4, 2011, and selected fourteen for detailed review against the program requirements. The inspectors evaluated the response to the corrective action requests to determine the licensee's ability to identify, evaluate, and correct problems in accordance with the licensee program requirements, planning standard 10 CFR 50.47(b)(14), and 10 CFR Part 50, Appendix E. The specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.05-05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS01 Radiological Hazard Assessment and Exposure Controls (71124.01)

a. Inspection Scope

This area was inspected to: (1) review and assess licensee's performance in assessing the radiological hazards in the workplace associated with licensed activities and the implementation of appropriate radiation monitoring and exposure control measures for both individual and collective exposures, (2) verify the licensee is properly identifying and reporting Occupational Radiation Safety Cornerstone performance indicators, and (3) identify those performance deficiencies that were reportable as a performance indicator and which may have represented a substantial potential for overexposure of the worker.

The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors performed walkdowns of various portions of the plant, performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation reported by the licensee in the Occupational Radiation Safety Cornerstone
- The hazard assessment program, including a review of the license's evaluations of changes in plant operations and radiological surveys to detect dose rates, airborne radioactivity, and surface contamination levels
- Instructions and notices to workers, including labeling or marking containers of radioactive material, radiation work permits, actions for electronic dosimeter alarms, and changes to radiological conditions
- Programs and processes for control of sealed sources and release of potentially contaminated material from the radiologically controlled area, including survey performance, instrument sensitivity, release criteria, procedural guidance, and sealed source accountability

- Radiological hazards control and work coverage, including the adequacy of surveys, radiation protection job coverage, and contamination controls; the use of electronic dosimeters in high noise areas; dosimetry placement; airborne radioactivity monitoring; controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools; and posting and physical controls for high radiation areas and very high radiation areas

- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements

- Audits, self-assessments, and corrective action documents related to radiological hazard assessment and exposure controls since the last inspection

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.01-05.

b. Findings

Introduction. The inspectors identified a noncited violation of Technical Specification 5.7.2 for failure to properly control and guard the entrance to a high radiation area with dose rates greater than or equal to 1000 mrem/hr.

Description. On January 25, 2011, during a tour of areas outside the plant buildings, the inspectors, accompanied by a licensee representative, observed radiological postings for access to the area between the auxiliary and radioactive waste buildings where the chemical decontamination equipment was placed. An outer posting identified the area as a radiologically controlled area and required persons entering the area to be on a radiation work permit and have electronic dosimeters to monitor personnel exposure to radiation. A second posting, closer to the chemical decontamination equipment, stated that the area beyond that posting was considered a “locked high radiation area” (a high radiation area with a dose rate greater than 1000 mrem/hr at 30 centimeters from the source of radiation). The inspectors noted the boundary consisted of a temporary fence with a gated entrance approximately 8 feet in width. The entrance was not locked and did not appear to be guarded. The licensee representative with the inspectors shouted and attempted to get the attention of any individual that may be in the area. No response was received. The inspectors investigated and found one individual in a temporary tent enclosure to the right side of the postings, in an area which was intended to be the entrance to the locked high radiation area. When questioned, the individual stated he/she was there to act as a guard for entrance to the locked high radiation area.

The inspectors evaluated the position of the guard and determined that the guard could only observe a small section of the right hand side of the gate opening. In addition, the guard would not be able to see individuals approaching the entrance to the locked high radiation area in order to challenge them or verify they were authorized to enter the area.

The inspectors confirmed radiological surveys (RBS-1101-0907 and RBS-1101-0983) of the chemical decontamination equipment documented an accessible dose rate of 1700 mrem/hr at 30 centimeters from the source of the radiation.

The inspectors discussed the situation with radiation protection supervisors. The supervisors immediately repositioned the guard within the tent and enhanced the tent construction so the guard could maintain the entrance to the within line of sight.

Analysis. The failure to properly guard and control access to a high radiation area with dose rates greater than or equal to 1000 mrem/hr was a performance deficiency. The finding was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute (exposure control) of program and process and affected the cornerstone objective, in that, the failure to properly control access to a high radiation area with dose rates in excess of 1000 mrem/hr had the potential to increase personnel dose. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding to have very low safety significance because it was not associated with ALARA planning or work controls, there was no overexposure, there was no substantial potential for an overexposure, and the ability to assess dose was not compromised. The finding has a human performance crosscutting aspect associated with work control, work planning activities, because the individuals failed to consider job site conditions which would impact the ability of the guard to adequately observe the entrance to the locked high radiation area. [H.3(a)]

Enforcement. Technical Specification 5.7.2 states, in part, that areas with radiation levels greater than or equal to 1000 mrem/hr shall be provided with locked or continuously guarded doors to prevent unauthorized entry. Attachment 9.5, "Responsibilities for the Access Control Guard," of licensee's procedure, EN-RP-101, "Access Control for Radiologically Controlled Areas," Revision 5, states that if the door controlling access to the locked high radiation area is to be left open or cannot be secured/locked when entering, the Access Control Guard shall remain stationed with a direct "line-of-sight" and control of the door. Contrary to these requirements, on January 25, 2011, the guard at the entrance to the locked high radiation area enclosing the chemical decontamination equipment was not positioned properly to provide direct line-of-sight control of the entrance. The licensee immediately changed the location of the access control guard and made modifications to the tent area to provide direct line-of-sight control of the entrance and other modifications to provide better observation of individuals approaching the area. Since this violation was of very low safety significance and was documented in the licensee's corrective action program as Condition Report 2011-1154, it is being treated as a noncited violation consistent with the NRC Enforcement Policy: NCV 05000458/2011002-06, "Failure to Properly Control and Guard the Entrance to a Locked High Radiation Area."

2RS02 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

This area was inspected to assess performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel and reviewed the following items:

- Site-specific ALARA procedures and collective exposure history, including the current 3-year rolling average, site-specific trends in collective exposures, and source-term measurements
- ALARA work activity evaluations/postjob reviews, exposure estimates, and exposure mitigation requirements
- The methodology for estimating work activity exposures, the intended dose outcome, the accuracy of dose rate and man-hour estimates, and intended versus actual work activity doses and the reasons for any inconsistencies
- Records detailing the historical trends and current status of tracked plant source terms and contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry
- Radiation worker and radiation protection technician performance during work activities in radiation areas, airborne radioactivity areas, or high radiation areas
- Audits, self-assessments, and corrective action documents related to ALARA planning and controls since the last inspection

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.02-05.

b. Findings

No findings were identified.

2RS03 In-plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

This area was inspected to verify in-plant airborne concentrations are being controlled consistent with ALARA principles and the use of respiratory protection devices on-site

does not pose an undue risk to the wearer. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel, performed walkdowns of various portions of the plant, and reviewed the following items items:

- The licensee's use, when applicable, of ventilation systems as part of its engineering controls
- The licensee's respiratory protection program for use, storage, maintenance, and quality assurance of NIOSH certified equipment, qualification and training of personnel, and user performance
- The licensee's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center during emergency conditions, status of SCBA staged and ready for use in the plant and associated surveillance records, and personnel qualification and training
- Audits, self-assessments, and corrective action documents related to in-plant airborne radioactivity control and mitigation since the last inspection

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of the one sample as defined in Inspection Procedure 71124.03-05.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the performance indicator data submitted by the licensee for the fourth quarter 2010 performance indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter 0608, "Performance Indicator Program."

This review was performed as part of the inspectors' normal plant status activities and, as such, did not constitute a separate inspection sample.

b. Findings

No findings were identified.

.2 Unplanned Scrams per 7000 Critical Hours (IE01)

a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned scrams per 7000 critical hours performance indicator for the period from the first quarter 2010 through the fourth quarter 2010. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, and NRC integrated inspection reports for the period of January 2010 through December 2010 to validate the accuracy of the submittals to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one unplanned scrams per 7000 critical hours sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.3 Unplanned Scrams with Complications (IE02)

a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned scrams with complications performance indicator for the period from the first quarter 2010 through the fourth quarter 2010. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, and NRC integrated inspection reports for the period of January 2010 through December 2010 to validate the accuracy of the submittals to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one unplanned scrams with complications samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.4 Unplanned Power Changes per 7000 Critical Hours (IE03)

a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned power changes per 7000 critical hours performance indicator for the period from the first quarter 2010 through the fourth quarter 2010. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, maintenance rule records, event reports, and NRC integrated inspection reports for the period of January 2010 through December 2010 to validate the accuracy of the submittals to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one unplanned transients per 7000 critical hours sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.5 Drill/Exercise Performance (EP01)

a. Inspection Scope

The inspector sampled licensee submittals for the performance indicator, Drill and Exercise Performance, for the period April through December 2010. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, was used. The inspector reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspector reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator; assessments of performance indicator opportunities during designated control room simulator training sessions, performance during the 2010 biennial exercise, and performance during other drills. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of the drill/exercise performance sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.6 Emergency Response Organization Drill Participation (EP02)

a. Inspection Scope

The inspector sampled licensee submittals for the Emergency Response Organization Drill Participation performance indicator for the period April through December 2010. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, was used. The inspector reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspector reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator, and revisions of the roster of personnel assigned to key emergency response organization positions. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of the emergency response organization drill participation sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.7 Alert and Notification System (EP03)

a. Inspection Scope

The inspector sampled licensee submittals for the Alert and Notification System performance indicator for the period April through December 2010. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, was used. The inspector reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspector reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator, and results of periodic alert notification system operability tests. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of the alert and notification system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.8 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the fourth quarter of 2010. The objective of the inspection was to determine the accuracy and completeness of the performance indicator data reported during these periods. The inspectors used the definitions and clarifying notes contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed corrective action program records associated with high radiation area (greater than 1 rem/hr) and very high radiation area non-conformances. The inspectors reviewed radiological, controlled area exit transactions greater than 100 mrem. The inspectors also conducted walkdowns of high radiation areas (greater than 1 rem/hr) and very high radiation area entrances to determine the adequacy of the controls of these areas.

These activities constitute completion of the occupational exposure control effectiveness sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.9 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences (PR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the fourth quarter of 2010. The objective of the inspection was to determine the accuracy and completeness of the performance indicator data reported during these periods. The inspectors used the definitions and clarifying notes contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed the licensee's corrective action program records and selected individual annual or special reports to identify potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose.

These activities constitute completion of the radiological effluent technical specifications/offsite dose calculation manual radiological effluent occurrences sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspector routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. The inspector reviewed attributes that included: the complete and accurate identification of the problem; the timely correction, commensurate with the safety significance; the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus, and timeliness of corrective actions. Minor issues entered into the licensee's corrective action program because of the inspector's observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of

items entered into the licensee's corrective action program. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

4OA3 Event Follow-up (71153)

.1 On February 11, 2011, at 2:38 PM, the main control room received a fire detector alarm for the B recirculation pump in the drywell. The inspectors responded to the control room and observed the stations response. The station was completing refueling outage 16 and the drywell had recently been closed to personnel access. The main control room was unable to determine whether the alarm was valid within fifteen minutes, and therefore entered the emergency action level for a fire within the protected area boundary that is not extinguished within fifteen minutes. The station declared a notification of an unusual event at 1:07 PM and terminated the event at 1:52 PM after verification that the drywell fire alarm was invalid. The inspectors determined that the licensee completed all required fire brigade and emergency response actions per station procedures.

.2 On February 12, 2011, at 12:13 PM, River Bend Station was at the end of RF16 and was in the process of raising reactor power. Reactor power was at approximately 20 percent. The circulating water pumps were supplying water to the condenser but there were no cooling tower fans in service at this time. The main control room received a smoke detector alarm for 'C' cooling tower. The outside operator reported thick black smoke coming from the circulating water cooling tower C. The main control room dispatched the fire brigade. The fire brigade reported the fire was out at 1:09 PM. River Bend Station NJS-X2C transformer bus was faulted causing significant bus, cable, and switchgear damage and a loss of CWS cooling tower "C" fans. The inspectors responded to the circulating cooling tower C. No emergency action level was declared because the fire was outside of the protected area. The inspectors determined that the licensee completed all required fire brigade and emergency response actions per station procedures.

.3 January 21, 2011 Refuel Equipment Damage and Potential Fuel Damage

a. Inspection Scope

On January 21, 2011, fuel handlers were performing core to core fuel movements. The refuel platform mast was bent and potential fuel damage occurred when the refuel platform was moved horizontally with a fuel assembly grappled and not fully withdrawn from the core. In addition, on the same day, a different fuel assembly was mispositioned in the spent fuel pool, and on February 4, 2011, another fuel assembly

was mispositioned in the reactor core. Region IV sent an operator licensing inspector to complete the inspection sample.

- On January 21, 2011, three members of the refuel team were on the refuel platform performing core to core moves. These members were the driver, the spotter and the refuel senior reactor operator (RSRO). A fuel assembly was grappled in the core and lifted approximately one foot. The next movement of the refuel platform was a horizontal move of approximately five feet, with the fuel assembly still inserted in the core. This horizontal movement caused damage to the main mast of the refuel platform and potential damage to the fuel assembly. Procedure AOP-0027, Fuel Handling Mishaps, was not entered at any time during this event. The next movement of the refuel platform was back to the horizontal position corresponding to the grappled fuel assembly that was still only partially lifted out of the core. The fuel assembly was then fully lifted out of the core, moved horizontally to its next core location, and lowered into the core. While lowering the assembly there was a loud noise and vibration of the main mast when a section of the telescoping mast that had been bound became dislodged and fell down to its normal position. There was no unexpected downward movement of the fuel assembly when this section of the mast fell.

- On January 21, 2011 a fuel assembly was mispositioned in the spent fuel pool. One page of the fuel movement plan was inadvertently skipped, causing this fuel assembly to be moved to the correct location out of sequence.

- On February 4, 2011 a fuel assembly was loaded into the core in the wrong location. This was discovered on February 5, when a fuel assembly was found in the upper containment pool which should have been loaded previously.

From January 30, 2011 through February 2, 2011, one regional inspector interviewed various fuel handling personnel and other plant staff and observed fuel movement in the reactor core. He also reviewed plant records, fuel handling procedures and guidelines.

b. Findings

(1) Failure To Follow Procedures

Introduction. The inspector identified a Green noncited violation of Technical Specification 5.4.1.a, “Procedures” for River Bend Station fuel handling personnel failing to follow AOP-0027, “Fuel Handling Mishaps”, when an actual fuel handling event occurred. This led to the fuel handling personnel continuing to move a fuel assembly after equipment damage and potential fuel damage.

Description. On January 21, 2011 the fuel handling team moved the refuel platform horizontally approximately five feet with a fuel assembly grappled and still partially inserted into the reactor core. This damaged the refuel platform main hoist mast and potentially damaged the irradiated fuel assembly. River Bend Station procedure,

AOP-0027, “Fuel Handling Mishaps” provides “instructions in the event of a mishap either causing or having the potential to cause damage to the nuclear fuel resulting from” a number of potential causes including “a dropped or damaged irradiated fuel bundle.” One of the symptoms given as an indicator that fuel may have been damaged is “observation of a fuel bundle dropping or striking a fixed object while moving.” The procedure also cautions that “minor bumping of a fuel bundle does not required implementation of this procedure.”

In reviewing the circumstances, inspectors concluded that, although the bundle in question was not dropped, the bundle was definitely forced against the other bundles surrounding it as the platform moved horizontally and it was subjected to bending forces sufficient to damage the platform mast and potentially damage the irradiated fuel bundle. The inspectors further concluded that these events did not constitute “minor bumping” and that the fuel handling team should have recognized these circumstances as having the potential to damage irradiated fuel and should have implemented the applicable steps of procedure AOP-0027. However, instead of stopping fuel movement and contacting the control room as directed by procedure AOP-0027, the fuel handling team continued the movement of potentially damaged fuel with damaged fuel handling equipment until it was placed in the next core location. A similar failure to recognize the conditions warranting entry into the fuel handling abnormal operating procedure due to the potential for having damaged irradiated fuel was addressed in NRC Inspection Report 05000528/529/530-2004011 associated with events at Palo Verde in 2002. Information related to this event was considered in River Bend Station’s operating experience process but was not adequately incorporated into the River Bend training on implementing AOP-0027 such that operators at River Bend would recognize that implementing AOP-0027 was appropriate for conditions that have the potential to damage irradiated fuel, even if indications of radiological consequences are not immediately observed.

Analysis. This failure to follow procedures is a performance deficiency. The performance deficiency is more than minor, and because it adversely impacted the human performance attribute of the barrier integrity cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding) protect the public from radionuclide releases caused by accidents or events. Using Manual Chapter 0609, “Significance Determination Process,” Phase 1 worksheets, the inspectors determined that the finding was of very low safety significance (Green) because the fuel cladding barrier was potentially degraded but there was no release of radionuclides. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the operating experience component because the licensee failed to implement and institutionalize operating experience through changes to station procedures and training programs [P.2(b)].

Enforcement. Technical Specifications 5.4.1.a, “Procedures,” requires written procedures be established and implemented covering activities in Appendix A of Regulatory Guide 1.33, “Quality Assurance Program Requirements (Operation),” February 1978. This requires “Procedures for Combating Emergencies and Other Significant Events” including “Irradiated Fuel Damage While Refueling.” River Bend

Station procedure, AOP-0027, “Fuel Handling Mishaps” provides “instructions in the event of a mishap either causing or having the potential to cause damage to the nuclear fuel resulting from” a number of potential causes including “a dropped or damaged irradiated fuel bundle.” One of the symptoms given as an indicator that fuel may have been damaged is “observation of a fuel bundle dropping or striking a fixed object while moving.” This procedure directs refueling operations be stopped, control room be contacted, and fuel be placed in a safe position. Contrary to the above, on January 21, 2011, River Bend fuel handling personnel failed to implement a procedure required by Technical Specification 5.4.1.a in that fuel handling personnel failed to implement AOP-0027 when conditions existed that created the potential to cause damage to the nuclear fuel. Specifically, fuel handling personnel moved the refuel platform approximately five feet horizontally with an irradiated fuel assembly grappled and only partially (approximately one foot) withdrawn from the reactor core. This movement of the bridge generated inappropriate lateral forces on the fuel bundle by pressing it against the adjacent fuel bundles which had the potential to damage the irradiated fuel bundle and generated sufficient force to damage the refueling platform mast. Instead of immediately stopping refueling operations and notifying the control room, as directed by procedure AOP-0027, River Bend operations personnel did not implement procedure AOP-0027 and the refuel crew continued to move the affected fuel assembly to its next core location. The fuel was lifted out of the core, moved horizontally to its new core location and lowered back into the core, even though the main mast of the refuel platform was damaged and the fuel assembly had potentially been damaged. Because this finding is of very low safety significance and the licensee has entered this issue into the corrective action program as Condition Report CR-RBS-2011-03692, this violation is being treated as a noncited violation: NCV 05000458/201100207, Failure to Implement Procedure AOP-0027, “Fuel Handling Mishaps.”

(2) Failure to Follow Fuel Handling Guidelines

Introduction. The inspector identified a Green finding for failure to follow River Bend Station’s “Fuel Handling Guideline.” A fuel handling event occurred at River Bend Station on January 21, 2011 when a fuel assembly was grappled and raised approximately one foot rather than fully withdrawn from the core. With the fuel assembly only partially withdrawn from the core, the refuel platform was erroneously moved horizontally approximately five feet. This inappropriate stop at one foot followed by inappropriate horizontal movement of the refuel platform with the fuel partially inserted into the core resulted in equipment damage and potential fuel damage.

Description. During core alterations, River Bend Station operating procedure FHP-0003, “Refuel Platform Operation” is utilized. However, this procedure does not describe specific steps and responsibilities to safely move fuel in the core. Instead, fuel handlers follow the River Bend Station “Fuel Handling Guideline.” This “Fuel Handling Guideline” is intended to be used in a step-wise fashion. Step 8 requires the grapple to be raised to the normal up position. The Spotter and the Driver are required to watch both the Z height and weight while a fuel assembly is being raised

to the normal up position. The refueling senior reactor operator is required to enforce these requirements. The required actions were neither performed nor enforced. Step 9 then directs the refuel platform be moved to the next location. River Bend fuel handlers began performing step 9 prior to the fuel assembly being lifted to the normal up position per step 8. This horizontal refuel platform movement with the fuel assembly still partially inserted in the core resulted in damage to the refuel platform mast and potential fuel damage.

Analysis. This failure to follow the licensee's guideline is a performance deficiency. The performance deficiency is more that minor, and therefore a finding, because it adversely impacted the human performance attribute of the barrier integrity cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding) protect the public from radionuclide releases caused by accidents or events. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, the inspectors determined that the finding was of very low safety significance because the fuel cladding barrier was potentially degraded but there was no release of radionuclides. This finding has a crosscutting aspect in the area of human performance associated with the decision making component because the licensee made a safety-significant decision without verifying the validity of underlying assumptions [H.1(b)].

Enforcement. River Bend Station fuel handlers rely on the instructions contained in "Fuel Handling Guideline," Revision 3 and on skill of the craft to conduct core alterations. This procedure contains a "General Grappling Procedure" which is followed in a step-wise fashion. Step 8 requires the grapple to be raised to the normal up position. The spotter and driver are expected to perform this step and the refueling senior reactor operator is expected to enforce these actions. Step 9 then directs the refuel platform be moved to the next location. Contrary to this instruction, River Bend Fuel Handlers began performing step 9 prior to the completion of step 8. This resulted in damage to the fuel handling equipment and potential damage to the irradiated fuel. This movement continued for more than 10 seconds due to the inattention of the fuel handling crew. This failure to follow a facility standard is a performance deficiency. Condition Report CR-RBS-2011-03693 was initiated. Because this finding is of very low safety significance, it is identified as a FIN. FIN 05000458/2011002-08 "Failure to follow Fuel Handling Guidelines."

4OA5 Other Activities

.1 (Open) NRC TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal and Containment Spray Systems (NRC Generic Letter 2008-01)"

As documented in Section 1R04 and 1R22, the inspectors confirmed the acceptability of the described licensee's actions. This inspection effort counts towards the completion of TI 2515/177 which will be closed in a later Inspection Report. The NRC staff (Office of Nuclear Reactor Regulation - NRR) completed their review of the licensee's Generic Letter 2008-01 responses as documented in a letter dated April 1, 2011, (ML110871252). Temporary Instruction TI 2515/177 is intended to be confirmatory in nature.

.2 (Closed) Temporary Instruction (TI) 2515/179, "Verification of Licensee Responses to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System Pursuant to Title 10, Code of Federal Regulations, Part 20.2207 (10 CFR 20.2207)"

a. Inspection Scope

An NRC inspection was performed to confirm that the licensee has reported their initial inventories of sealed sources pursuant to 10 CFR 20.2207 and to verify that the National Source Tracking System database correctly reflects the Category 1 and 2 sealed sources in custody of the licensee. Inspectors interviewed personnel and performed the following:

- Reviewed the licensee's source inventory
- Verified the presence of any Category 1 or 2 sources
- Reviewed procedures for and evaluated the effectiveness of storage and handling of sources
- Reviewed documents involving transactions of sources
- Reviewed adequacy of licensee maintenance, posting, and labeling of nationally tracked sources

b. Findings

No findings were identified.

.3 River Bend Station Decommissioning Apparent Violations

The following apparent violations have been closed per letter ML 110280410, dated March 11, 2011:

- AV 05000458/2010004-01, Failure to provide adequate decommissioning funding assurance from Dec. 31, 2008 through the present (10 CFR 50.75(b)).
- AV 05000458/2010004-02, Failure to provide complete and accurate information by failing to disclose its reliance on a contract in the March 2009 funds status report (10 CFR 50.75(f)(1) and 10 CFR 50.9).
- AV 05000458/2010004-03, Use of a decommissioning funding mechanism that did not meet the requirements of 10 CFR 50.75(e)(1)(v).

The NRC has reviewed the additional information concerning decommissioning funding provided by Entergy at the Pre-decisional Enforcement Conference held on November

19, 2010, and has determined that no additional enforcement action will be taken. The NRC considers these apparent violations closed.

4OA6 Meetings

Exit Meeting Summary

On January 26, 2011, the inspector presented the inspection results of the review of inservice inspection activities to Mr. E. Olson, General Manager, Plant Operations, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On January 28, 2011, the inspectors presented the results of the radiation safety inspections to Mr. M. Perito, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On March 18, 2011, the inspector presented the results of in-office and on-site inspection of the licensee's emergency preparedness program and changes to their emergency plan to Mr. B. Cox, General Manager, Plant Operations, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On March 18, 2011, the inspector presented the preliminary results of the triennial heat sink performance inspection to Mr. B. Cox, General Manager - Plant Operations, and other members of the licensee's staff. The licensee acknowledged the findings during the meeting. There was no propriety information reviewed during this inspection.

On April 7, 2011, the inspectors presented the integrated inspection results to Mr. E. Olson, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On April 25th the inspectors presented the 4OA3.3 inspection results to Mr. Eric Olson, Site Vice-President, and other members of the licensee staff. The licensee acknowledged the issues presented. No proprietary information was identified.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section 2.3.2 of the NRC Enforcement Policy for being dispositioned as noncited violations.

.1 Title 10 CFR 20.1703(c)(6) states, in part, that the licensee shall implement and maintain a respiratory protection program that includes written procedures regarding supervision

and training of respirator users. Section 5.4[3] of licensee procedure EN-RP-504, Revision 4, states that training must be completed prior to fit testing for, and use of, respiratory protection equipment. Contrary to these requirements, on August 03, 2010, and individual was assigned work in the hot machine shop that required the use of a powered air purifying respirator. Qualifications were incorrectly verified prior to the start of the job. A subsequent follow-up check of the individual's qualifications indicated the individual was not qualified. The individual immediately exited the area. The violation is considered to be of very low safety significance (green) because it is not an ALARA planning issue, no overexposure and no substantial potential for overexposure, and the licensee's ability to assess dose was not compromised. The issue has been entered into the licensee's corrective action program as condition report CR-RBS-2010-3635.

SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee Personnel

T. Baccus, Senior Technical Instructor, Radiation Protection
P. Barker, Spotter on Refuel Team, Contracted I.L.D.
M. Briley, Sr. Lead Technical Specialist
D. Burnett, Manager, Emergency Preparedness
G. Bush, Manager, Maintenance
D. Chase, Refuel Senior Reactor Operator\
M. Chase, Manager, Training
C. Chastain, Supervisor, Radiation Protection
J. Clark, Assistant Operations Manager – Shift
F. Corley, Acting Manager, Design Engineering
B. Cox, General Manager, Plant Operations
G. Degraw, Superintendent, Training
M. Feltner, Manager, Outage
C. Forpahl, Manager, Engineering Programs & Components
W. Fountain, Senior Licensing Specialist
H. Goodman, Director, Engineering
G. Hackett, Supervisor, Radiation Protection
D. Heath, Acting Manager, Radiation Protection
R. Heath, Manager, Chemistry
D. Hebert, Technical Specialist
W. Holland, Supervisor, Radiation Protection
B. Houston, Manager, Radiation Protection
K. Huffstatler, Senior Licensing Specialist
F. Hurst, Planner, Emergency Preparedness
A. James, Manager, Security
M. Jurey, Auditor, Quality Assurance (Acting Manager)
B. Kienlen, Technical Specialist
L. Kitchen, Manager, Planning and Scheduling, Outages
R. Kowalewski, Manager, Corrective Actions & Assessments
G. Krause, Assistant Operations Manager – Support C. Loebs, Quality Specialist
D. Lorfing, Manager, Licensing
W. Mashburn, Manager, Design Engineering
R. McAdams, Manager, System Engineering
D. Moore, Entergy South Fleet Radiation Protection Manager
D. Myers, Specialist, Radiation Protection
E. Olson, Site Vice President
J. Overton, Driver on Refuel Team, Contracted GEH
R. Persons, Superintendent, Training
L. Pickett, GEH Representative
G. Pierce, Manager, Radiation Protection
A. Pilutti, Manager, Waterford-3, Technical Training Staff
W. Renz, Director, Emergency Planning
J. Roberts, Director, Nuclear Safety Assurance

T. Shenk, Assistant Operations Manager – Training
M. Spustack, Supervisor, Engineering
J. Standridge, Planner, Emergency Preparedness
N. Tison, Planner, Emergency Preparedness
T. Tonkinson, HU Coordinator

D. Vines, Manager, MP & C
J. Vukovics, Supervisor, Reactor Engineering
L. Woods, Manager, Quality Assurance

NRC Personnel

G. Guerra, Emergency Preparedness Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

TI 2515/177	TI	Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01) (Sections 1R04 and 1R22)

Opened and Closed

05000458/2011002-01	NCV	Repetitive Service Water Pressure Control Valves Diaphragm Failures Affecting Control Building Chillers Operability (Section 1R04)
05000458/2011002-02	NCV	Failure to Determine the Appropriate Preventive Maintenance Strategy and Task Frequency for the Reactor Core Isolation Cooling System Turbine Lube Oil Cooler Inlet Pressure Control Valve (Section 1R12)
05000458/2011002-03	NCV	Inadequate Control Rod Inspection Procedure (Section 1R20)
05000458/2011002-04	FIN	Feedwater Control System Inadequate Corrective Actions Results in Power Transient (Section 1R20)
05000458/2011002-05	NCV	Reduction in ERO Staffing Decreased Emergency Plan Effectiveness (Section 1EP4)
05000458/2011002-06	NCV	Failure to Properly Control and Guard the Entrance to a Locked High Radiation Area (Section 2RS01)
05000458/201100207	NCV	Failure to Implement Procedure AOP-0027, “Fuel Handling Mishaps.” (Section 4OA3.3)
05000458/2011002-08	FIN	Failure to follow Fuel Handling Guidelines. (Section 4OA3.3)

Closed

2515/179	TI	Verification of Licensee Responses to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System Pursuant to Title 10, Code of Federal Regulations, Part 20.2207 (10 CFR 20.2207) (Section 4OA5)
05000458/2010004-01	AV	Failure to provide adequate decommissioning funding assurance from Dec. 31, 2008 through the present (10 CFR 50.75(b)) (Section 4OA5)
05000458/2010004-02	AV	Failure to provide complete and accurate information by failing to disclose its reliance on a contract in the March 2009 funds status report (10 CFR 50.75(f)(1) and 10 CFR 50.9) (Section 4OA5)
05000458/2010004-03	AV	Use of a decommissioning funding mechanism that did not meet the requirements of 10 CFR 50.75(3)(1)(v) (Section 4OA5)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

CONDITION REPORTS

CR-RBS-2011-02126 CR-RBS-2011-02602

DRAWINGS

NUMBER	TITLE	REVISION
PID-09-108	Engineering P&I Diagram System 118 Service Water – Normal	42
PID-27-07B	Engineering P&I Diagram System 204 Residual Heat Removal – LPCI	041

LICENSED OPERATOR TRAINING MANUAL

NUMBER	TITLE	DATE
LOTM-42-6	Standby Service Water	September 28, 1995

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	DATE
LER 2010-009-00	Callaway Plant High Energy Line Break (HELB) Program	January 27, 2011

PROCEDURE

NUMBER	TITLE	REVISION
SOP-0031	Residual Heat Removal Sys #204	313

SYSTEM DESIGN CRITERIA

NUMBER	TITLE	REVISION
SDC-402 & 410	Control Bldg. HVAC System Control Bldg. Chilled Water System Ventilation Chilled Water System Design Criteria System Numbers 402 & 410	2

SYSTEM TRAINING MANUAL

NUMBER	TITLE	REVISION
R-STM-0402	HVAC – CONTROL BUILDING AND DIESEL GENERATOR BUILDING	4

Section 1R05: Fire Protection

CALCULATION

NUMBER	TITLE	REVISION
G13.18.12.2-022	River Bend Station – Combustible Loading	4

CONDITION REPORT

CR-RBS-1996-01549

DRAWING

NUMBER	TITLE	REVISION
0241.211-156-014	LVI & LVC Electrical Penetrations	F

ENGINEERING & DESIGN COORDINATION REPORT

NUMBER	TITLE	DATE
E&DCR NO. C-25155	Clarification of Polysulfone Damage	August 30, 1984

MISCELLANEOUS DOCUMENTS

RBS USAR Appendix 9A, Fire Hazard Analysis, August 1988
Pre-Fire Plan/Strategy Book

PROCEDURES

NUMBER	TITLE	REVISION
FPP-0020	Guidelines for Preparation of Pre-Fire Strategies and Pre-Fire Plans	10
FPP-0114	Visual Inspection of Non-TRM Fire Barriers	0
RB-095-001	Recirculation Pump Area Fire Area RDW-1	3
RB-095-003	Annulus Area Fire Area RC-6	2
RB-114-004	HCU Area East Fire Area RC-3/Z-3	3
RB-114-005	HCU Area West RC-4/Z-3	2
RB-162-011	Containment Unit Cooler Area Fire Area RC-4/Z-5	3
STP-000-3601	Inaccessible Fire Barrier Outage Inspection	2

Section 1R06: Flood Protection Measures

PROCEDURE

NUMBER	TITLE	REVISION
EN-DC-346	Cable Reliability Program	0

Section 1R07: Heat Sink Performance

CALCULATIONS

NUMBER	TITLE	REVISION
228.800-PX-1006-0A	Calculation Worksheet Engineering Department, River Bend Station, Transient Cavitation (Column Separation and Rejoining) in Service Water System	0A

CALCULATIONS

NUMBER	TITLE	REVISION
G13.18.2.1*061	Auxiliary Building Design Basis Heat Loads and Unit Cooler Sizing Verification	3
PM-194	Standby Cooling Tower Performance and Evaporation Losses With-out Drywell Unit Coolers	8

CONDITION REPORTS

CR-RBS-2008-02206	CR-RBS-2008-04028	CR-RBS-2009-01886
CR-RBS-2008-00245	CR-RBS-2008-04037	CR-RBS-2009-01939
CR-RBS-2008-02280	CR-RBS-2008-04046	CR-RBS-2009-01967
CR-RBS-2008-02302	CR-RBS-2008-04092	CR-RBS-2009-05826
CR-RBS-2008-02446	CR-RBS-2008-04161	CR-RBS-2009-06319
CR-RBS-2008-02648	CR-RBS-2008-04292	CR-RBS-2010-00563
CR-RBS-2008-02655	CR-RBS-2008-04330	CR-RBS-2010-00692
CR-RBS-2008-02682	CR-RBS-2008-04532	CR-RBS-2010-00738
CR-RBS-2008-03067	CR-RBS-2008-04574	CR-RBS-2010-00799
CR-RBS-2008-03478	CR-RBS-2008-04709	CR-RBS-2010-00822
CR-RBS-2008-03593	CR-RBS-2008-04812	CR-RBS-2010-00866
CR-RBS-2008-03698	CR-RBS-2008-05101	CR-RBS-2010-01003
CR-RBS-2008-03700	CR-RBS-2008-05827	CR-RBS-2010-01039
CR-RBS-2008-03826	CR-RBS-2008-06913	CR-RBS-2010-01230
CR-RBS-2008-03838	CR-RBS-2008-06919	CR-RBS-2010-01501
CR-RBS-2008-03839	CR-RBS-2009-01309	CR-RBS-2010-01504
CR-RBS-2008-03845	CR-RBS-2009-01339	CR-RBS-2010-01593
CR-RBS-2008-03846	CR-RBS-2009-01539	CR-RBS-2010-01667
CR-RBS-2008-03903	CR-RBS-2009-01542	CR-RBS-2010-01692
CR-RBS-2008-03904	CR-RBS-2009-01630	CR-RBS-2010-02464
CR-RBS-2008-03905	CR-RBS-2009-01696	CR-RBS-2010-03404
CR-RBS-2008-03986	CR-RBS-2009-01725	CR-RBS-2010-04832
CR-RBS-2008-03993	CR-RBS-2009-01746	

MAINTENANCE ACTION ITEMS (MAI's)

NUMBER	TITLE	DATE
MAI 321443	Reactor Core Isolation Cooling Turbine Lube Oil Cooler	April 20, 1999
MAI 344081	Aux Building Unit Cooler 9, ID: HVR-UC9,	April 3, 2002

PROCEDURES

NUMBER	TITLE	REVISION
CEP-NDE-0862	Eddy Current Examination of Non-Ferrous Tubing in Safety Related Components	1
CMP-9267	Heat Exchanger Repairs	10
CSP-0006	Chemistry Surveillance and Scheduling System	27
ECH-CEP-NDE-0505	Ultrasonic Thickness Examinations	4
EN-DC-316	Heat Exchanger Program	2
PEP - 0240	Performance Monitoring Program for the Residual Heat Removal Heat Exchangers E12-EB001B and E12-EB001D (Div II)	3
PEP - 0240	Performance Monitoring Program for the Residual Heat Removal Heat Exchangers E12-EB001B and E12-EB001D (Div II)	4
PEP-0046	Service Water Heat Exchanger Inspections	4B

WORK ORDERS

NUMBER	TITLE	DATE
50573803	Clean Heat Exchanger 1E51-EC002, Residual Heat Removal Heat Exchanger B	November 12, 2004
51678307	HVR-UC9 – Inspect Filter and Coils	June 15, 2009
51695027	Service Water Pumps Flow Balance / Flow Verification Test.	
52193503	HVR-UC9 – Inspect Filter and Coils	September 13, 2010

MISCELLANEOUS

NUMBER	TITLE	DATE
	Service Water Pump Chemistry Data – From 2008 to Present	March 3, 2011
	Service Water System Chemistry Data	2008 through March 2, 2011

MISCELLANEOUS

NUMBER	TITLE	DATE
	Residual Heat Removal Heat Exchanger Performance Testing Results for Divisions I and II	December 6, 2006
0221432-000-007A	Supplier's Document Data Form, General Electric Co. Residual Heat Removal Heat Exchanger Design Specification Data Sheet, Equipment ID: E12- B001	June 21, 1990
0221432-000-007A	Suppliers Document Data Form – Residual Heat Removal Heat Exchanger Design Specification Data Sheet	June 25, 1990
4Q-2010	System Health Report – RBS, Unit 1, System 256 – Service Water Standby	March 16, 2011
4Q-2010	System Health Report – RBS, Unit 1, System 118 – Service Water Normal	March 16, 2011
7215.253-809-007A	Heat Transfer Performance of Replacement Coils for Auxiliary Building Unit Coolers at River Bend Station Unit 1. Design Document No. ER 99-0517,	June 23, 1999
7215.253-809-007A	Suppliers Document Data Form – Auxiliary Building Unit Cooler Performance at 93^{o}F Service Water Temperature.	June 22, 1999
Attachment 9;1	Sample Heat Exchanger Visual Inspection Datasheet	January 20, 2011
E12-EB-001B	Residual Heat Removal Heat Exchanger Calculated Performance. Equipment ID: E12-B001, File # 0221432-000-019A	June 25, 1990
E51-EC002	Terry Steam Turbine Co. Exchanger Specification Sheet, Reference No. ER-6475	September 24, 1974
EN-DC-195	Nuclear Management Manual – Margin Management, Revision 5	February 28,2011
EN-DC-316 Attachment 9.1	Sample Heat Exchanger Visual Inspection Datasheet	January 20,2011
PEP -0046 Attachment 2	Heat Exchanger Inspection Data Sheet – Component: HVR-UC9, MAI # 344081	April 3, 2002

MISCELLANEOUS

NUMBER	TITLE	DATE
PEP-0046 Attachment 2	Heat Exchanger Inspection Data Sheet – Component HVR-UC9, Aux Building Unit Cooler 9 Cooling Coil	April 3, 2002
RBF5-09-002 S-CRB-24879	Quality Assurance Audit of Engineering Programs, QA-8-2009-RBS-1	April 16, 2009

Section 1R08: Inservice Inspection Activities

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

NUMBER	TITLE	DATE
ELO-2006-00094	Welding Program Assessment Report	July 4, 2006

CONDITION REPORTS

CR-RBS-2006-03204	CR-RBS-2009-04301	CR-RBS-2009-04356	CR-RBS-2009-04421
CR-RBS-2009-04473	CR-RBS-2009-04551	CR-RBS-2009-04651	CR-RBS-2009-04679
CR-RBS-2009-04686	CR-RBS-2009-04779	CR-RBS-2009-04977	CR-RBS-2009-04988
CR-RBS-2009-05104	CR-RBS-2009-05115	CR-RBS-2009-05116	CR-RBS-2009-05212
CR-RBS-2009-05253	CR-RBS-2009-05308	CR-RBS-2009-05341	CR-RBS-2009-05346
CR-RBS-2009-05480	CR-RBS-2009-05807	CR-RBS-2009-06332	CR-RBS-2010-00025
CR-RBS-2010-00256	CR-RBS-2010-00367	CR-RBS-2010-01373	CR-RBS-2010-01491
CR-RBS-2010-01844	CR-RBS-2010-04777	CR-RBS-2010-05461	CR-RBS-2011-00899

MISCELLANEOUS DOCUMENTS

Various Welder Certification Records
Various Nondestructive Examination Technician Certification Records
Various Equipment Calibration Records
Video Recordings of In Vessel Visual Inspection
Video Recordings of Various Shroud Ultrasonic Testing

PROCEDURES

NUMBER	TITLE	REVISION
CEP-ISI-103	Program section for ASME Section XI, Division I Inservice Inspection Program	2
CEP-NDE-0400	Ultrasonic Examination	3

NUMBER	TITLE	REVISION
CEP-NDE-0404	Manual Ultrasonic Examination of Ferritic Piping Welds (ASME XI)	4
CEP-NDE-0407	Straight Beam Ultrasonic Examination of Bolts and Studs (ASME XI)	3
CEP-NDE-0423	Manual Ultrasonic Examination of Austenitic Piping Welds (ASME XI)	4
CEP-NDE-0731	Magnetic Particle Examination (MT) for ASME Section XI	3
CEP-NDE-0901	VT-3 Visual Examination (ASME XI)	5
CEP-NDE-0903	VT-1 Visual Examination (ASME XI)	4
CEP-WP-001	Control of Special Processes: Welding, Heat treatment, and Nondestructive Examination	2
EN-DC-161	Control of Combustibles	4
EN-DC-315	Flow Accelerated Corrosion Program	4
GEH-UT-716	Procedure for the Examination of Reactor Pressure Vessel welds From the Outside Surface with Microtomo in accordance with Appendix VIII	3
GEH-UT-718	Procedure for the Examination of Reactor Pressure Vessel Nozzle Inside Radius Sections From the Outside surface with Microtomo in accordance with Appendix VIII	3

WORK ORDERS

00135986 00145126 00159663 00212743 00226631
52248132

Section 1R11: Licensed Operator Requalification Program

MISCELLANEOUS DOCUMENTS

SIMULATOR SCENARIO

NUMBER	TITLE	REVISION

NUMBER	TITLE	REVISION
RSMS-OPS-653	Inadvertent RCIC Initiation / Low Power ATWS / Bypass Valves Failure	00

Section 1R12: Maintenance Effectiveness

CONDITION REPORTS

CR-RBS-2008-06841 CR-RBS-2009-02174 CR-RBS-2011-03135

DRAWING

NUMBER	TITLE	REVISION
PID-34-028	System 602 Fuel Pool Cooling	18

SYSTEM TRAINING MANUAL

NUMBER	TITLE	REVISION
R-STM-0602	Fuel Pool Cooling and Cleanup System	6

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

PROCEDURES

NUMBER	TITLE	REVISION
ADM-0096	Risk Management Program Implementation and Online Maintenance Risk Guidance	309
OSP-0037	Shutdown Operations Protection Plan	24

Section 1R15: Operability Evaluations

CALCULATION

NUMBER	TITLE	REVISION
G13.18.4.0*048	Standby Service Water Pump Capacity Verification with Flow Through Drywell Unit Coolers, Including 5 percent Pumps Degradation	003

CONDITION REPORTS

CR-RBS-2010-03949	CR-RBS-2011-00346	CR-RBS-2011-01700	CR-RBS-2011-01704
CR-RBS-2011-01956	CR-RBS-2011-02009	CR-RBS-2011-02126	CR-RBS-2011-02485
CR-RBS-2011-02493	CR-RBS-2011-02512	CR-RBS-2011-02517	CR-RBS-2011-02528

MISCELLANEOUS DOCUMENTS

Westinghouse Report BTM-04-128, Inspection Guidelines and Operating Experience of CR 82, CR 82M, CR 82M-1 Westinghouse BWR Control Rods, August 8, 2004

Westinghouse Reference NF-BWR-11-2, Disposition for Operation in the Next Cycle of ABB Blade 2277 Located in Position 40-49, February 2, 2011

PROCEDURES

NUMBER	TITLE	REVISION
EN-RE-211	Control Blade Lifetime	0
EOP-0005	Emergency Operating and Severe Accident Procedures Enclosures	308
REP-0053	Control Rod Visual Inspection	2
REP-0053	Control Rod Visual Inspection	3

WORK ORDERS

WO 247952

Section 1R19: Postmaintenance Testing

CONDITION REPORTS

CR-RBS-2011-001650	CR-RBS-2002-01464
CR-RBS-2004-02780	CR-RBS-2011-01767
CR-RBS-2004-00345	
CR-RBS-2010-00239	

WORK ORDERS

WO 00263753	MAI 364345	WO-00226160	WO 52306556
MAI 373919	WO 00155921	WO 139943	WO-00193045

Section 1R20: Refueling and Other Outage Activities

CONDITION REPORTS

CR-RBS-2011-03895	CR-RBS-2011-00300	CR-RBS-2011-00359	CR-RBS-2011-01755

CR-RBS-2011-01761	CR-RBS-2011-01767	CR-RBS-2011-01768	CR-RBS-2011-01776
CR-RBS-2011-01804	CR-RBS-2011-01850	CR-RBS-2011-01915	CR-RBS-2011-01942
CR-RBS-2011-01976	CR-RBS-2011-02065	CR-RBS-2011-02066	CR-RBS-2011-02279

MISCELLANEOUS DOCUMENTS

EC 2736 Engineering Evaluation for RBS Cycle 15 Core Shuffle

Licensee Event Report 2010-004-00, Clinton Power Station Unit 1, Operations with the Potential for Draining the Reactor Vessel (OPDRV) Requirements Not Met During Control Rod Drive Mechanism Replacements, January 25, 2011

Outage Risk Assessment Team RF15 Pre-Outage Report

Outage Risk Assessment Team RF-16 Outage Report

RF-16 Water Movement Plan

PROCEDURES

NUMBER	TITLE	REVISION
OSP-0033	Operations With a Potential to Drain the Reactor Vessel/Cavity	6
OSP-0037	Shutdown Operations Protection Plan (SOPP)	19

SYSTEM TRAINING MANUAL

NUMBER	TITLE	DATE
R-STM-050.02	Reactor Vessel and Internals	May 8, 2006
R-STM-055.02	Refueling	January 13, 2005

Section 1R22: Surveillance Testing

CONDITION REPORTS

CR-RBS-2008-05905	CR-RBS-2011-00353	CR-RBS-2011-00439	CR-RBS-2011-00691
CR-RBS-2011-00692	CR-RBS-2011-00740	CR-RBS-2011-00803	CR-RBS-2011-00920
CR-RBS-2011-00960	CR-RBS-2011-01926	CR-RBS-2011-02067	CR-RBS-2011-02863

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION/DATE
RBG-46803	Interim Response to Generic Letter 2008-01	April 9, 2008

NUMBER	TITLE	REVISION/DATE
RBG-46815	Three Month Response to NRC Generic Letter 2008-01, “Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems	May 15, 2008
RBG-46848	Nine Month Response to NRC Generic Letter 2008-001, “Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems”	October 14, 2008
RBS-ME-08-00001	Engineering Report – Summary of Activities Associated with the Resolution of GL 2008-01	00

PROCEDURES

NUMBER	TITLE	REVISION
SOP-0030	High Pressure Core Spray (Sys. #203)	025
STP-203-0201	HPCS Piping Water Fill and Valve Position Verification	303
STP-203-6603	HPCS System Refuel Pressure Isolation Valve Test	005
STP-204-0201	LPCI A Discharge Piping Fill and Valve Lineup Verification	304
STP-204-0202	LPCI B Discharge Piping Fill and Valve Lineup Verification	303
STP-204-0203	LPCI C Discharge Piping Fill and Valve Lineup Verification	305
STP-204-6501	DIV I ECCS Check Valve Operability Test	002
STP-204-6603	RHR System Refuel Pressure Isolation Valve Test	006
STP-209-6310	RCIC Quarterly Pump and Valve Operability Test	033
STP-309-0201	Division I Diesel Generator Operability Test	037

SYSTEM DESIGN CRITERIA

NUMBER	TITLE	REVISION
SDC-203	High Pressure Core Spray System Design Criteria System Number 203	4

WORK ORDERS

WO 52290417 WO 52301470 WO 52301796

Section 1EP2: Alert Notification System Testing

NUMBER	TITLE	REVISION
	RBS Prompt Notification System Design Report	1
EPP-2-401	Inadvertent Siren Sounding	7
EPP-2-502	Emergency Communications System Testing	23
EPP-2-701	Prompt Notification System Maintenance and Testing	23

Section 1EP3: Emergency Response Organization Augmentation Testing

NUMBER	TITLE	REVISION / DATE
EPP-2-202	Emergency Response Organization	14
EPP-2-502	Emergency Communications System Testing	23
	Pager Test Evaluation, March 24, 2009	March 25, 2009
	Pager Test Evaluation, June 2, 2009	June 3, 2009
	Pager Test Evaluation, September 15, 2009	September 16, 2009
	Pager Test Evaluation, December 16, 2009	December 17, 2009
	Pager Test Evaluation, March 2, 2010	March 3, 2010
	Pager Test Evaluation, June 15, 2010	June 16, 2010
	Pager Test Evaluation, August 31, 2010	September 1, 2010
	Pager Test Evaluation, November 30, 2010	December 1, 2010

Section 1EP4: Emergency Action Level and Emergency Plan Changes

NUMBER	TITLE	REVISIONS / DATE
EIP-2-020	Emergency Operations Facility	33, 34
ENS-TQ-110	Emergency Preparedness Training Program	14
	10CRF50.54(q) Screening: Emergency Plan Revision 36	November 17, 2010
	10CRF50.54(q) Screening: RBS Physical Security Plan R9	May 20, 2010
	10CRF50.54(q) Screening: EIP-2-007, Protective Action Guidelines, R23	November 30, 2010
	10CRF50.54(q) Screening: EIP-2-012, Radiation Exposure Controls, R20	November 30, 2010

Section 1EP4: Emergency Action Level and Emergency Plan Changes

NUMBER	TITLE	REVISIONS / DATE
	10CRF50.54(q) Screening: EIP-2-028, Recovery, R11	November 30, 2010

Section 1EP5: Correction of Emergency Preparedness Weaknesses and Deficiencies

NUMBER	TITLE	REVISION / DATE
EPP-2-100	Procedure Review, Revision, and Approval	15
EPP-2-201	River Bend Station Emergency Preparedness Organization and Responsibilities	21
EN-LI-102	Corrective Action Process	16
EN-LI-118	Root Cause Analysis Process	13
EN-LI-119	Apparent Cause Analysis Process	11
EN-QV-109	Audit Process	19
	2010 Emergency Planning Program Assessment	April 1, 2010
RLO 2010-051	2011 Emergency Planning Program Assessment	December 9, 2010
EP-M-09-014	Drill Evaluation Report for the March 3, 2009 Drill	May 3, 2009
QA-07-2010-RBS-1	Quality Assurance Audit Report: Emergency Preparedness	June 11, 2010
QS-2009-RBS-008	Quality Assurance Surveillance Report: Review of changes in personnel, procedures, equipment, or facilities in the River Bend Station Emergency Preparedness Program	April 13, 2009
	2010 Off-Hours Accountability Drill Report, December 21, 2010	December 22. 2010
EP-M-09-020	Drill Evaluation Report for the April 21, 2009 Drill	August 27, 2009
EP-M-09-025	Drill Evaluation Report for the July 21, 2009 Drill	December 8, 2009
EP-M-10-002	Drill Evaluation Report for the November 18, 2009 Drill	February 10, 2010
EP-M-09-024	Drill Evaluation Report for the November 6, 2009 Owner Controlled Area Evacuation Drill	November 9, 2009
	River Bend Station Oversight Report, First Quarter 2010	

Section 1EP5: Correction of Emergency Preparedness Weaknesses and Deficiencies

NUMBER	TITLE	REVISION / DATE
	River Bend Station Oversight Report, Second Quarter 2010 River Bend Station Oversight Report, July through October 2010 River Bend Station Oversight Report, November 2010 through February 2011	
EP-M-09-027	Drill Evaluation Report for the December 28, 2009 Onsite Medical Drill	December 28, 2009
EP-M-10-003	Drill Evaluation Report for the February 23, 2010 Drill	March 2, 2010
EP-M-10-08	Drill Evaluation Report for the April 13, 2010 Drill	May 6, 2010
EP-M-10-016	Drill Evaluation Report for the May 19, 2010 Drill	July 21, 2010
EP-M-10-014	Drill Evaluation Report for the June 8, 2010 Drill	July 15, 2010
EP-M-10-017	Drill Evaluation Report for the August 18, 2010 Drill	August 31, 2010
EP-M-10-018	Drill Evaluation Report for the September 2, 2010 Drill	November 8, 2010

Corrective Action Program Entries (Condition Reports)

CR-RBS-

2009-00106	2009-02375	2009-02458	2009-02573	2009-03337	2010-00901
2010-01691	2010-01732	2010-01733	2010-01832	2010-01938	2010-02127
2010-03128	2010-04374	2010-04985	2010-01140		

Section 2RS01: Radiological Hazard Assessment and Exposure Controls

PROCEDURES

NUMBER	TITLE	REVISION
EN-RP-101	Access Control for Radiologically Controlled Areas	5
EN-RP-108	Radiation Protection Posting	9
EN-RP-121	Radioactive Material Control	6
EN-RP-122	Alpha Monitoring	5
EN-RP-141	Job Coverage	5

PROCEDURES

NUMBER	TITLE	REVISION
EN-RP-143	Source Control	7
FHP-0005	Fuel Transfer Tube Operations	26
FHP-0008	Fuel Transfer Tube Operations When In Modes 1, 2, or 3	12
RPP-0005	Management of Radiological Postings	29
RPP-0006	Performance of Radiological Surveys	22
RBNP-024	Radiation Protection Plan	301
RSP-0217	Access Control Briefs and Supplemental Functions	31

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

NUMBER	TITLE	DATE
LO-RLO-2010-00046	Radiation Protection (RP) Program Assessment	October 18-21, 2010
RLO-2009-0147	Radiation Protection Snaphot Assessment	August 27, 2010
RLO-2009-0148	Refuel Outage 16 RP Outage Readiness	July 28, 2010

CONDITION REPORTS

CR-RBS-2010-4074	CR-RBS-2010-4292	CR-RBS-2010-4675
CR-RBS-2010-4677	CR-RBS-2010-4845	CR-RBS-2010-4858
CR-RBS-2010-5099	CR-RBS-2010-5664	CR-RBS-2010-5797
CR-HQN-2010-1118	CR-HQN-2010-1128	CR-RBS-2011-1246
CR-RBS-2011-1360	CR-RBS-2011-1362	CR-RBS-2011-1363

RADIATION WORK PERMITS

2011-1405	2011-1427	2011-1436	2011-1499	2011-1600
2011-1607	2011-1917			

SAMPLE RESULTS AND SURVEYS

RBS-0908-0076	RBS-1101-0204	RBS-1101-0794
RBS-0909-0547	RBS-1101-0209	RBS-1101-0932
RBS-0909-0482	RBS-1101-0210	RBS-1101-0935
RBS-0909-0547	RBS-1101-0216	RBS-1101-0937
RBS-1001-0067	RBS-1101-0238	RBS-1101-0972
RBS-1003-0137	RBS-1101-0241	RBS-1101-0983
RBS-1004-0155	RBS-1101-0250	RBS-1101-0991
RBS-1004-0233	RBS-1101-0254	RBS-1101-1011
RBS-1007-0204	RBS-1101-0263	RBS-1101-1012
RBS-1010-0164	RBS-1101-0266	RBS-1101-1021
RBS-1010-0224	RBS-1101-0332	RBS-1101-1110
RBS-1011-0396	RBS-1101-0383	RBS-1101-1139

SAMPLE RESULTS AND SURVEYS

RBS-1101-0056	RBS-1101-0443	RBS-1101-1142
RBS-1101-0184	RBS-1101-0464	RBS-1101-1218
RBS-1101-0200	RBS-1101-0501	RBS-1101-1275
RBS-1101-0202	RBS-1101-0687	RBS-1101-1335

Section 2RS02: Occupational ALARA Planning and Controls

PROCEDURES

NUMBER	TITLE	DATE
EN-RP-102	Radiological Controls	2
EN-RP-105	Radiological Work Permits	9
EN-RP-110	ALARA Program	7
ADM-0046	Temporary Shielding Control Program	8

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

NUMBER	TITLE	DATE
LO-RLO-2009-00148	Refuel Outage 16 RP Outage Readiness	July 28, 2010
LO-RLO-2010-00046	Radiation Protection Program Assessment	October 18-21, 2010

CONDITION REPORTS

RBS-2010-01252	RBS-2010-04169	RBS-2010-04206	RBS-2010-05681

RADIATION WORK PERMITS AND ALARA WORK PACKAGES

NUMBER	TITLE
2011-1499	RF-16 RWCU Chemical Decon
2011-1800	RF016 Refuel Activities
2011-1901	RF-16 Drywell Radiation Protection Activities
2011-1909	RF-16 Scaffolding Activities in the Drywell
2011-1917	RF-16 Undervessel Preps/Restoration
2011-1930	RF-16 “B” Recirc Pump Replacement/Refurbishment
2011-1953	RF-16 ISI Weld Inspection Behind Bio-shield
2010-1004	General Maintenance Activities
2010-1329	PO 10-01 B33-PC001A/B Recirc Pump Work

Section 2RS03: In-plant Airborne Radioactivity Control and Mitigation

PROCEDURES

NUMBER	TITLE	REVISION
EN-RP-501	Respiratory Protection Program	4
EN-RP-502	Inspection and Maintenance of Respiratory Protection Equipment	6
EN-RP-504	Breathing Air	3
EN-RP-505	Portacount Respirator Fit Testing	2

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

NUMBER	TITLE	DATE
LO-RLO-2010-0046	Radiation Protection Program Assessment	October 21, 2010
LO-RLO-2010-0148	Refuel Outage 16 RP Outage Readiness	July 28, 2010

CONDITION REPORTS

RBS-2010-3635	RBS-2010-6176	HQN-2010-0857	RBS-2010-3694
RBS-2010-3686	RBS-2010-3687	RBS-2010-4367	HQN-2020-1132
RBS-2010-4736	RBS-2010-5177	RBS-2010-4871	RBS-2010-4873
HQN-2010-1193	RBS-2010-4116	HQN-2010-0873	RBS-2010-4037
RBS-2011-0009			

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	DATE
141230	Laboratory Report Compressed Air/Gas Quality Testing; Reactor Building Plant Air	January 18, 2011
138451	Laboratory Report Compressed Air/Gas Quality Testing; SCBA Compressor	December 6, 2010
138450	Laboratory Report Compressed Air/Gas Quality Testing; Plant Air System	December 6, 2010
	Portacount Calibration Record; Serial Number 18168	November 15, 2010

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	DATE
	Portacount Calibration Record; Serial Number 18167	November 15, 2010

Section 4OA1: Performance Indicator Verification

PROCEDURES

NUMBER	TITLE	REVISIONS / DATE
EIP-2-002	Classification Actions	29, 30
EIP-2-006	Notifications	38, 39
EIP-2-007	Protective Action Recommendation Guidelines	23, 24
RPG-M-11-002	NRC Performance Indicators – 4th Quarter, 2010	January 11, 2011

Section 4OA2: Identification and Resolution of Problems

CONDITION REPORTS

CR-RBS-2009-03743 CR-RBS-2010-06689 CR-RBS-2010-06714 CR-RBS-2010-06750

Section 4OA3: Event Follow-Up

CONDITION REPORTS

CR-RBS-2011-02209 CR-RBS-2011-00899
CR-RBS-2011-02271 CR-RBS-2011-00886
CR-RBS-2011-02272 CR-RBS-2011-01850
CR-RBS-2011-02277 CR-RBS-2011-00670

PROCEDURES

NUMBER	TITLE	REVISION
AOP-0027	Fuel Handling Mishaps	025
FHP-0002	Fuel Handling Platform Operation	023
FHP-0003	Refuel Platform Operation	021
EN-HU-102	Human Performance Tools	5
EN-AD-102	Procedure Adherence and Level of Use	5

PROCEDURES

NUMBER	TITLE	REVISION
FHP-0001	Control of Fuel Handling and Refueling Operations	034
REP-0029	Fuel Movement	28
N/A	Fuel Handling Guideline	3

Section 4OA5: Other Activities

MISCELLANEOUS DOCUMENT

TITLE	DATE
2011 NSTS Annual Inventory Reconciliation	January 25, 2011

PROCEDURE

NUMBER	TITLE	REVISION
EN-RP-143	Source Control	7