



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

February 14, 2011

Michael Perito  
Site Vice President  
Entergy Operations, Inc.  
River Bend Station  
5485 US Highway 61N  
St. Francisville, LA 70775

Subject: RIVER BEND STATION - NRC INTEGRATED INSPECTION REPORT NUMBER  
05000458/2010005

Dear Mr. Perito:

On December 31, 2010, 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 January 12, 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 identified five issues that were evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has determined that four violations are associated with these issues. Additionally, two licensee-identified violations, which were determined to be of very low safety significance, are listed in this report. However, because of the 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.

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 crosscutting 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 05000458/2010005  
w/Attachment: Supplemental Information

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SRI:DRP/C	RI:DRP/C	SPE:DRP/C	C:DRS/EB1	C:DRS/EB2	
GFLarkin	AJBarrett	RCHagar	TRFarnholtz	NFO'Keefe	
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1/31/2011	1/31/2011	2/13/11	1/24/2011	1/25/2011	
C:DRS/OB	C:DRS/PSB1	C:DRS/PSB2	C:DRS/TSB	C:DRP/C	
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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 05000458

License: NPF-47

Report: 05000458/2010005

Licensee: Entergy Operations, Inc.

Facility: River Bend Station

Location: 5485 U.S. Highway 61N  
St. Francisville, LA

Dates: October 1 through December 31, 2010

Inspectors: G. Larkin, Senior Resident Inspector, Project Branch C  
A. Barrett, Resident Inspector, Project Branch C  
B. Correll, Reactor Inspector, Engineering Branch 2  
R. Hagar, Senior Project Engineer, Project Branch C  
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Approved By: Vincent G. Gaddy, Chief, Project Branch C  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000000458/2010005; 10/01/2010 – 12/31/2010; River Bend Station; Integrated Resident and Regional Report; Maintenance Effectiveness; Postmaintenance Testing; Identification and Resolution of Problems; Event Follow-up

The report covered a 3-month period of inspection by resident inspectors and announced baseline inspections by region-based inspectors. Four Green noncited violations and one Green finding 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 crosscutting 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 for the licensee's failure to plug a main condenser tube in accordance with an approved work order. Specifically, a plastic tube plug was not replaced with the required brass plug causing a tube leak requiring the plant to reduce power. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2010-04526.

The performance deficiency was more than minor because it was associated with the human performance attribute of the Initiating Events Cornerstone and 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, in that the performance deficiency created a condition that upset plant stability by creating a condenser tube leak that prompted the plant to reduce power. The inspectors determined that the apparent cause of this finding was the licensee's failure to use human performance error-prevention techniques to ensure that the tube plugging was performed correctly. This finding therefore has a crosscutting aspect in the work practices component of the human performance area because the licensee did not communicate and use human error prevention techniques commensurate with the risk of the assigned task, such that work activities are performed safely [(H.4(a)) (Section 4OA5)].

Cornerstone: Mitigating Systems

- 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 o-ring in the high pressure core spray lower motor bearing drain plug. As immediate correction action, the licensee replaced the o-ring. At the conclusion of the inspection, the

licensee was in the process of determining the appropriate replacement frequency. The licensee entered this issue into their corrective action system as Condition Report CR-RBS-2010-05766.

This finding was more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern, in that if the licensee did not develop a preventive maintenance schedule for periodically replacing the subject o-ring, degradation of that o-ring due to aging could allow a leak that would drain oil from the lower motor bearing and thus render the high pressure core spray pump inoperable. As described in Inspection Manual 0609 Appendix A, a Phase 2 analysis using the presolved worksheet determined that this finding had very low (Green) risk significance. This finding has a crosscutting aspect in the operating experience component of the problem identification & resolution area because the licensee did not systematically collect, evaluate, and communicate to affected internal stakeholders in a timely manner relevant internal and external operating experience [P.2(a)] (Section 1R19.b.2).

- Green. The inspectors reviewed a two-example self-revealing green noncited violation of Technical Specification 5.4.1 for two occasions on which the licensee completed maintenance that affected the performance of safety-related equipment (high pressure core spray) but was not properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. As a result, the licensee overtorqued the high pressure core spray lower motor bearing drain plug causing the plug to fracture. This fracture resulted in excessive oil leakage that caused the pump to become inoperable. The violation is in the licensee's corrective action program as Condition Report CR-RBS-2011-00224.

These performance deficiencies were more than minor and therefore constituted a finding because they affected the equipment performance attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. As described in Inspection Manual 0609 Appendix A, a Phase 2 analysis using the presolved worksheet determined that this finding had very low risk significance. The finding has a crosscutting aspect in the resources component of the human performance area because the apparent cause of the finding was a procedure that was not adequate to assure nuclear safety [H.2(c)] (Section 1R19.b.2).

- Green. Inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion X, "Inspection," for the failure to ensure that Quality Control verification inspections were consistently included and correctly specified in quality-affecting procedures and work instructions for construction-like work activities as required by the Quality Assurance Program. The licensee performed extensive reviews, and inspectors performed independent reviews of the licensee's conclusions as well as independent sampling, to confirm that improper or missed inspections did not actually affect the operability of plant equipment. Entergy initiated prompt fleet-wide corrective actions to ensure proper work order evaluation and proper

inclusion of Quality Control verification inspections. This issue was entered into the corrective action program under Condition Reports CR-HQN-2009-01184 and CR-HQN-2010-0013.

The failure to ensure that adequate Quality Control verification inspections were included in quality-affecting procedures and work instructions as required by the Quality Assurance Program was a performance deficiency. This programmatic deficiency was more than minor because, if left uncorrected, it could lead to a more significant safety concern in that the failure to check quality attributes could involve an actual impact to plant equipment. This issue affected the design control attribute of the Mitigating Systems Cornerstone because missed or improper quality control inspections during plant modifications could impact the availability, reliability, and capability of systems needed to respond to initiating events. This performance deficiency was determined to have very low safety significance in Phase 1 of the significance determination process since it was confirmed to involve a qualification deficiency that did not result in a loss of operability or functionality. The inspectors determined that this performance deficiency involved a crosscutting aspect related to the human performance area associated with decision making [H.1(a)] because the licensee did not have an effective systematic process for obtaining interdisciplinary reviews of proposed work instructions to determine whether Quality Control verification inspections were appropriate (Section 4OA2.5.b.1).

- Green. Inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion II, "Quality Assurance Program," for the failure to implement the experience and qualification requirements of the Quality Assurance Program. As a result, the licensee failed to ensure that an individual assigned to the position of Quality Assurance Manager met the qualification and experience requirements of ANSI/ANS 3.1-1978 as required by the Quality Assurance Program. Specifically, the individual assigned to be the responsible person for the licensee's overall implementation of the Quality Assurance Program did not have at least 1 year of nuclear plant experience in the overall implementation of the Quality Assurance Program within the quality assurance organization prior to assuming those responsibilities. This issue was entered into the corrective action program as Condition Report CR-HQN-2010-00386.

Failure to ensure that an individual assigned to the position Quality Assurance Manager met the qualification and experience requirements of ANSI/ANS 3.1-1978 as required by the Quality Assurance Program was a performance deficiency. This performance deficiency was determined to be more than minor because, if left uncorrected, it could create a more significant safety concern. Failure to have a fully qualified individual providing overall oversight to the Quality Assurance Program had the potential to affect all cornerstones, but this finding will be tracked under the Mitigating Systems Cornerstone as the area most likely to be impacted. The issue was not suitable for quantitative assessment using existing Significance Determination Process guidance, so it was determined to be of very low safety significance using Inspection Manual Chapter 0609, Appendix M, "Significance Determination Process Using

Qualitative Criteria.” The inspectors determined that there was no crosscutting aspect associated with this finding because this issue was not indicative of current performance because the violation occurred more than 3 years ago (Section 4OA2.5.b.2).

**B. Licensee-Identified Violations**

Two violations of very low safety significance, which were identified by the licensee, have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee’s corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

River Bend Station began the inspection period at 100 percent thermal power. On November 12, 2010, the plant reduced reactor power to 85 percent for a control rod line adjustment. The plant returned to full power on November 13, 2010. On November 19, 2010, the plant reduced reactor power to 98 percent to exercise partially withdrawn control rods and perform turbine bypass valve testing. The plant returned to full power on November 19, 2010. On November 20, 2010, the plant reduced reactor power to 51 percent due to a failed optical isolator that caused a trip of reactor recirculation pump B. The plant later reduced reactor power to 35 percent power on November 22, 2010, to restart reactor recirculation pump B. The plant returned to continuous full power following the second of two fuel preconditioning cycles on November 24, 2010. On December 17, 2010, the plant reduced reactor power to 88 percent to exercise partially withdrawn control rods and perform turbine bypass valve testing. The plant returned to full power on December 18, 2010, and remained at full power for the rest of the inspection period.

### 1. REACTOR SAFETY

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

#### 1R01 Adverse Weather Protection (71111.01)

##### .1 Readiness for Impending Adverse Weather Conditions

##### a. Inspection Scope

Since thunderstorms with potential tornados and high winds were forecast in the vicinity of the facility, the inspectors reviewed the plant personnel's overall preparations/ protection for the expected weather conditions. On October 28, 2010, the inspectors walked down the normal service water system, ultimate heat sink, and the service water cooling system because their safety-related or risk significant functions could be affected, or required, as a result of high winds or tornado-generated missiles or the loss of offsite power. The inspectors evaluated the plant staff's preparations against the site's procedures and determined that the staff's actions were adequate. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors also toured the plant grounds to look for any loose debris that could become missiles during a tornado. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. Additionally, the inspectors reviewed the Updated Safety Analysis Report and performance requirements for the systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. The inspectors also reviewed a sample of corrective action program items to verify that the licensee-identified adverse weather issues at an appropriate threshold and dispositioned them through the corrective action program in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one readiness for impending adverse weather condition sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings were identified.

.2 Readiness to Cope with External Flooding

a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the Updated Safety Analysis Report for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed an inspection of the protected area to identify any modification to the site that would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also reviewed the abnormal operating procedure for mitigating the design basis flood to ensure it could be implemented as written. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one external flooding sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings were identified.

**1R04 Equipment Alignments (71111.04)**

Partial Walkdown

a. Inspection Scope

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

- Division I emergency diesel generator
- Division II residual heat removal
- Division 1 spent fuel pooling cooling
- Division 2 spent fuel pooling cooling
- Division 2 standby gas treatment
- Division 2 main steam positive leakage control

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 six partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

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:

- October 18, 2010, control building, fire zone C-14, standby switchgear room
- October 18, 2010, control building, fire zone C-17, HVAC room
- October 19, 2010, control building, fire zone C-18, battery 1A room
- October 20, 2010, control building, fire zone C-19, ENB inverter room and battery charger B room
- October 25, 2010, control building, fire zone C-24, 125 VDC switchgear room
- October 26, 2010, control building, fire zone C-25, control room

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 six 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, and control circuits, and temporary or removable flood barriers. Specific documents reviewed during this inspection are listed in the attachment.

- October 21, 2010, residual heat removal pump room B
- October 25, 2010, residual heat removal pump room C
- October 27, 2010, reactor core isolation cooling room
- November 4, 2010, station electrical manholes

These activities constitute completion of three flood protection measures inspection samples and one bunker/manhole sample as defined in Inspection Procedure 71111.06-05.

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 systems:

- Reactor core isolation cooling

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(a)(1) or -(a)(2)
- 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 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 one quarterly maintenance effectiveness sample as defined in Inspection Procedure 71111.12-05.

a. Findings

No findings were identified.

**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:

- High pressure core spray pump bearing oil drain plug emergent maintenance, November 7, 2010
- Reactor recirculation pump B trip emergent maintenance, November 20, 2010

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 two 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-2009-05542, 3D Monicore core flow and heat balance problems, reviewed on October 21, 2010

- CR-RBS-2010-05652, SWP-MOV74A increased running loads, reviewed on November 3, 2010
- CR-RBS-2010-06661, remote shutdown circuit relay failure, reviewed on December 17, 2010

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 three operability evaluations inspection samples as defined in Inspection Procedure 71111.15-04

b. Findings

No findings were identified.

**1R18 Plant Modifications (71111.18)**

Temporary Modifications

a. Inspection Scope

To verify that the safety functions of important safety systems were not degraded, the inspectors reviewed the temporary modification identified as Engineering Change EC-23283, "RCS-X1A Differential Relay Setting Changes," Revision 0.

The inspectors reviewed the temporary modification and the associated safety-evaluation screening against the system design bases documentation, including the Updated Safety Analysis Report and the technical specifications, and verified that the modification did not adversely affect the system operability/availability. The inspectors also verified that the installation and restoration were consistent with the modification documents and that configuration control was adequate. Additionally, the inspectors verified that the temporary modification was identified on control room drawings, appropriate tags were placed on the affected equipment, and licensee personnel evaluated the combined effects on mitigating systems and the integrity of radiological barriers.

These activities constitute completion of one sample for temporary plant modifications as defined in Inspection Procedure 71111.18-05.

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 00247958, "CMSA08- 1XA, 1XB, 3A Replace Relays," reviewed on November 2, 2010
- WO 00246793, "STP-000-6606 EGF RV3A (Group 26)," reviewed on November 5, 2010
- WO 00246663, "HPCS Motor Lower Bearing Drain Plug Has a Small Oil Leak," reviewed on November 8, 2010
- WO 52255115, "SWP-MOV74A – Clean, Inspect, Insulation Test, Lubricate," reviewed on November 22, 2010
- WO 52261157, "Division II Diesel Generator 184 Day Op Test," reviewed on November 24, 2010
- WO 00215034, "Replace 1X Relay for HVK-CHL1C," reviewed on November 29, 2010
- WO 52298809, "BYS-EG1 – Test, Verify, Station Portable DG," reviewed on December 28, 2010
- WO 00260067, "Mechanical Maintenance Replace SWP-PVY-32 A/B/C/D," reviewed on December 29, 2010

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 eight postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

- .1 Introduction. The inspectors reviewed a Green self-revealing non-cited violation of Technical Specification 5.4.1 for the licensee's failure to determine the appropriate preventive maintenance strategy and task frequency for the o-ring in the high pressure core spray lower motor bearing drain plug assembly.

Description. In December 1985, the high pressure core spray pump with its lower motor bearing drain plug was placed into service. The pump vendor's technical manual had not recommended periodic replacement of the o-ring in the plug, and, consequently, the licensee had no plan in place to periodically replace that o-ring.

On March 29, 1989, the motor vendor (General Electric) issued Service Information Letter 484, which, in part, stated that the o-ring in the high pressure core spray pump lower motor bearing drain plug required periodic replacement. In 2001, the licensee reviewed Service Information Letter 484, agreed that a preventive maintenance task to periodically replace the subject o-ring was needed, but did not initiate that task.

On July 25, 2001, General Electric issued Supplement 6 to Service Information Letter 484. That supplement included an attachment that constituted a reminder that the original service information letter had recommended that the motor drain plug o-ring and sight glass o-rings should be replaced. On August 21, 2001, the licensee's review of that supplement determined that no action was required.

On March 11, 2005, a drain plug on a residual heat removal pump motor failed due to over-torquing at the Columbia Generating Station. A report of that failure was distributed to the industry via operating experience. On March 15, 2005, the licensee's review of that report determined that it was applicable to the River Bend Station, but the licensee did not develop any related corrective action.

In 2008, because River Bend recognized that they had been negatively impacted by poor utilization of industry technical information in the past, they initiated a project to, in part, re-review selected service information letters to determine if vulnerabilities

continued to exist. That project was described as corrective action #63 of LO-RLO-2007-00073, and included a re-review of Supplement 6 to Service Information Letter 484. On July 29, 2008, that re-review of that supplement determined that no action was required.

On July 14, 2010, the licensee noted a small oil leak from the high pressure core spray pump lower motor bearing drain plug. The subsequent investigation of that leak, documented in Condition Report CR-RBS-2010-05766, determined that the o-ring contained surface cracks and chips, and had developed a permanent set in the radial direction due to its nearly 25 years of service. The permanent set, surface cracks, and chips had reduced the o-ring's resilience and sealing ability, which had resulted in the small leak.

On November 23, 2010, via Work Order 00246663, the licensee replaced the high pressure core spray pump lower motor bearing drain plug assembly, thereby replacing the o-ring and stopping the leak.

In Condition Report CR-RBS-2010-05766, corrective action #8 describes initiating a preventive maintenance task to periodically replace the subject o-ring. That task is scheduled to be completed on February 24, 2011.

Analysis. The licensee's failure to determine the appropriate preventive maintenance strategy and task frequency for the o-ring in the high pressure core spray lower motor bearing drain plug was a performance deficiency. This performance deficiency was more than minor because, if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern, in that if the licensee did not develop a preventive maintenance schedule for periodically replacing the subject o-ring, degradation of that o-ring due to aging could allow a leak that would drain oil from the lower motor bearing and thus render the high pressure core spray pump inoperable. 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 determine its risk significance. In Table 2 of that attachment, the inspectors determined that the finding degraded core heat removal in the Mitigating Systems Cornerstone. In Table 3a, the finding screened to Green because questions 1 through 5 for the Mitigating Systems Cornerstone were all answered in the negative.

The inspectors determined that the apparent cause of this finding was the licensee's failure to adequately respond to Service Information Letter 484 in 2001, Supplement 6 to Service Information Letter 484 in 2001, OE 20162 in 2005, and Supplement 6 to Service Information Letter 484 again in 2008. Although these failures occurred more than three years ago, these failures represent an adverse trend in responding to operating experience reports that the licensee has not yet addressed by either encouraging corresponding behavior changes and/or initiating corresponding procedure changes. The inspectors therefore considered that this trend reflects current licensee performance, and that this finding consequently has a crosscutting aspect in the operating experience component of the problem identification and resolution area because the licensee did not systematically collect, evaluate, and communicate to affected internal stakeholders relevant external operating experience [P.2(a)].

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.

Section 9 of Regulatory Guide 1.33 says that preventive maintenance schedules should be developed to specify, in part, inspection or replacement of parts that have a specific lifetime.

EN-DC-335, “[Preventive Maintenance] Basis Template,” Rev. 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, the licensee did not develop a preventive maintenance schedule to specify inspection or replacement of the o-ring in the high pressure core spray lower motor bearing drain plug, a part that has a specific lifetime.

This violation existed from approximately December 1985 to the present. The licensee plans to restore compliance by initiating a preventive maintenance schedule for inspection or replacement of the subject o-ring as completing corrective action #8 of Condition Report CR-RBS-2010-05766. That action is scheduled to be complete on February 24, 2011.

Because this violation was of very low safety significance and was entered into the licensee’s corrective action program as Condition Report CR-RBS-2010-05766, this violation is being treated as a noncited violation consistent with the NRC Enforcement Policy: NCV 05000458/2010005-01, “Failure to Develop a Preventive Maintenance Schedule to Specify Inspection or Replacement of the O-Ring in the High Pressure Core Spray Lower Motor Bearing Drain Plug.”

- .2 Introduction. The inspectors reviewed a two-example Green self-revealing noncited violation of Technical Specification 5.4.1 for two occasions on which the licensee completed maintenance that affected the performance of safety-related equipment but was not properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances.

Description. On July 14, 2010, during routine operator rounds, the licensee noted a small amount of oil leakage from the high pressure core spray lower motor bearing drain plug. The licensee characterized this leakage as “non-quantifiable” and continued to monitor the plug. (Operators were directed to examine the motor at least once every shift.) The licensee initiated Condition Report CR-RBS-2010-03170.

On August 7, 2010, the licensee noted increased leakage from the plug, and characterized the leakage at 1 drop every 3 minutes. The drain plug had been tightened near ¼ turn using a wrench as reported by a fix-it-now technician. The technician reported that he was uncomfortable with additional tightening and stated this was the only time that he tightened the drain plug during this timeframe. The additional tightening of the drain plug was performed as minor maintenance. The licensee

prepared work order 0024663 to replace the lower motor bearing drain plug assembly, initiated Condition Report CR-RBS-2010-03744, and continued to monitor the plug.

On November 7, 2010, the licensee noted significantly more leakage from the subject plug, which they characterized as a “stream with the diameter of a number two pencil lead.” When they noted this leakage, the licensee declared the pump inoperable at 10:23 a.m., initiated Condition Report CR-RBS-2010-05766, completed work order 0024663, and restored the pump to operable status at 7:40 p.m.

The licensee hired an offsite engineering firm to complete a metallurgical and failure analysis of the drain plug that was removed. In its report issued on December 2, 2010, that firm said,

*“Initial leakage (one drop) as described in CR-RBS-2010-3170 of the drain plug is postulated to be the result of O-ring failure. The O-ring exhibited surface cracks and chips and has developed a permanent set in the radial direction due to its more than 24 years of service. It appears an attempt to mitigate the leakage was made by further tightening of the drain plug. Further tightening forced the head of the plug to bear against the bushing. One half (as defined by the drain hole axis) of the plug experienced higher tensile stress than the other, due to the incline plane of the threads and square bearing surfaces of the plug head and bushing. The initially higher stressed half, between the two drain holes, failed first. This failure did not result in a markedly higher leak rate since there are already drain holes at the failed cross section. Further torque application from this point caused the plug to fracture along a line of porosity in the casting toward the underside of the plug head. This final fracture along the head of the plug caused the markedly higher leak rate as documented in CR-RBS-2010-05766.”*

Licensee records indicate that between August 7 and November 7, no work order was completed that involved the high pressure core spray motor.

From the facts above and the engineering firm’s report, the inspectors concluded that:

- On August 7, the licensee had tightened the plug without a work order and had caused the crack between the two drain holes as described in the report. This crack had allowed the leakage noted by the licensee at the rate of approximately 1 drop every 3 minutes.
- On November 6 or 7, the licensee had further tightened the plug without a work order and had caused the plug to fracture as described in the LPI report. This fracture had allowed the leakage noted by the licensee as a “stream with the diameter of a number two pencil lead.”

Analysis. The licensee’s actions on August 7 and on November 6 or 7 to tighten the high pressure core spray lower motor bearing drain plug were performance deficiencies. These performance deficiencies were more than minor and therefore constituted a finding because they affected the equipment performance attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to

prevent undesirable consequences, in that these performance deficiencies caused oil leakage from the lower motor bearing that rendered inoperable the high pressure core spray pump.

Because the finding represented the loss of the HPCS function for approximately 12 hours on November 7, question 2 in Table 3a was answered in the affirmative, and the finding was screened using MC 0609 Appendix A. For the HPCS function being unavailable for less than 3 days, the inspectors used the pre-solved worksheet described in Appendix A to determine that this finding had a very low (green) risk significance.

The inspectors determined that the apparent cause of this finding was step 5.2 of licensee procedure EN-WM-100, "Work Request (WR) Generation, Screening and Classification," Revision 4, because that step allowed anyone who discovered a deficiency to repair it, if they were qualified to do so, and if the repair, in part, didn't affect a safety-related function. That is, the inspectors considered that this finding had occurred because on two occasions, a worker had noted leakage from the high pressure core spray motor lower bearing oil drain plug, had not recognized that adjusting the plug could affect a safety-related function, and had believed because of step 5.2 of procedure EN-WM-100 that he or she had permission to repair the leak. The inspectors therefore considered that step 5.2 of procedure EN-WM-100 was the apparent major contributor to this finding, and that, consequently, this finding has a crosscutting aspect in the resources component of the human performance area, because the subject text represented an example of a procedure that was not adequate to assure nuclear safety [H.2(c)].

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, says, in part, that maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances.

Contrary to the above, on August 7 and again on November 6 or 7, the licensee completed maintenance that affected the performance of safety-related equipment and was not preplanned and was not performed in accordance with any written procedure, documented instruction, or drawing, in that on the subject occasions, a worker tightened the high pressure core spray motor lower bearing oil drain plug in an apparent effort to reduce leakage from the plug without any documentation or instructions. On the first occasion, the maintenance increased the leak rate from non-quantifiable to 1 drop every 3 minutes. On the second occasion, the maintenance increased the leakage to a steady stream that upon discovery prompted the licensee to declare the motor inoperable.

This violation is in the licensee's corrective action program as Condition Report CR-RBS-2011-00224. 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 two-example noncited violation consistent with the NRC Enforcement Policy:

NCV 05000458/2010005-02, "Two Examples of Completing Maintenance that Affected the Performance of Safety-Related Equipment but Was Not Properly Preplanned."

## **1R22 Surveillance Testing (71111.22)**

### 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:

- 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
- 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-610-6301, "Reactor Plant Sampling System Quarterly Valve Operability Test," performed on October 19, 2010

- STP-309-0207, "Division II Diesel Generator 184 Day Op Test," performed on November 24, 2010
- STP-402-202, "Main Control Room A/C Train B Operability Test," performed on December 14, 2010

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

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

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 licensee'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

No findings were identified.

**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 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.

**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 Reactor Coolant System Specific Activity (BI01)

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system specific activity performance indicator for the period from the fourth quarter 2009 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 reactor coolant system chemistry samples, technical specification requirements, issue reports, event reports, and NRC integrated inspection reports for the period from September 2009 through September 2010 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. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one reactor coolant system specific activity sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.3 Reactor Coolant System Leakage (BI02)

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system leakage performance indicator for the period from the fourth quarter 2009 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 logs, reactor coolant system leakage tracking data, issue reports, event reports, and NRC integrated inspection reports for the period of September 2009 through September 2010 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 reactor coolant system leakage sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.4 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

Cornerstone: Occupational Radiation Safety

The inspectors reviewed performance indicator data for the third quarter 2009 through the third quarter 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 nonconformances. 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.

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

a. Inspection Scope

Cornerstone: Public Radiation Safety

The inspectors reviewed performance indicator data for the third quarter 2009 through the third quarter 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.

## 40A2 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 inspectors 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 inspectors 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 inspectors' 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.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period from April 2010 through September 2010 although some examples expanded beyond those dates where the scope of the trend warranted.

The inspectors also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

PI&R Inspection Results

The inspectors did identify an increasing trend in condition reports related to balance of plant steam leaks related to maintenance procedure weakness and work practices. The inspectors specifically reviewed condition reports that documented equipment reliability issues and found a number of issues related to the control building chillers pressure control valves and failed relays; feedwater pump seal failures due to material selection and manufacturing issues; and, reactor recirculation seal failures related to pump shaft thrust reversals. The specific items were reviewed by the inspectors and determined to be minor in nature. The licensee is aware of the adverse trend and is implementing changes to address the deficiencies.

These activities constitute completion of one single semi-annual trend inspection sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

.4 In-depth Review of Operator Workarounds

a. Inspection Scope

An operator workaround is defined as a degraded or nonconforming condition that complicates the operation of plant equipment and is compensated for by operator action. During the week of November 1, 2010, the inspectors reviewed the cumulative effect of the existing operator workarounds and contingency plans. The inspectors concentrated on the effect the workarounds have on: (1) the reliability, availability, and potential for misoperation of any mitigating system; (2) whether they could increase the frequency of an initiating event; and (3) their effect on the operation of multiple mitigating systems. In addition, the inspectors reviewed the cumulative effects the operator workarounds have on the ability of the operators to respond in a correct and timely manner to plant transients and accidents.

These activities constitute completion of one in-depth review of operator workarounds sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

.5 Selected Issue Follow-up Inspection

a. Inspection Scope

An inspection was performed at the Entergy corporate office in Jackson, Mississippi on June 14 through 17, 2010, to review the circumstances surrounding missed quality control (QC) verification inspections documented in CR-HQN-2009-01184 and CR-HQN-2010-00013. The issue involved QC verification inspections performed during construction-related activities which were required as part of the Entergy quality oversight and verification programs. The inspection was performed to determine if the licensee had taken corrective actions commensurate with the significance of the identified issues, and to assess the impact, if any, on the operability of plant equipment caused by the missed inspections. This inspection was conducted by inspectors from Regions I, II, and IV, as well as a Senior Program Engineer from the Quality and Vendor Branch of the Office of Nuclear Reactor Regulation (NRR). The inspection covered all NRC-licensed sites owned by Entergy Operations, Inc., including Arkansas Nuclear One, James A. Fitzpatrick, Grand Gulf Nuclear Station, Indian Point Units 2 and 3, Palisades Plant, Pilgrim Nuclear Power Station, River Bend Station, Vermont Yankee, and Waterford 3.

The inspectors reviewed root cause analyses documented in Condition Reports CR-HQN-2009-01184 and CR-HQN-2010-00013, and the results of the licensee's extent of condition reviews and plant impact assessments. The inspectors also independently assessed the potential impacts of the missed inspections on the operability of plant equipment by reviewing all of the examples identified by the licensee, and by independently reviewing completed modifications and work orders to identify additional examples. The inspectors also reviewed the corrective action database to assess reported equipment failures in order to assess whether the failure might have involved missed QC verification inspections.

The inspectors assessed causal factors that may have contributed to missing QC verification inspections. This assessment included reviewing the Entergy Quality Assurance Program Manual (QAPM) requirements, changes made to the QAPM, and the level of agreement between the QAPM and its implementing procedures.

Specific documents reviewed are listed in the attachment.

b. Findings

**Background**

The inspectors identified problems with the implementation of elements of the Quality Assurance (QA) Program that affected the fleet of Entergy Operations Inc., (hereafter referred to as “Entergy”) nuclear power plants that are licensed by the NRC. While the plant organizations are NRC licensees, Entergy also has corporate groups which are not NRC licensees that are actively involved in some activities affecting sites, including program and procedure changes. Entergy adopted a business strategy of adopting standard programs and procedures at all fleet plants.

On October 30, 2009, the NRC discussed with Entergy the initial concerns about whether QC verification inspections were being performed consistently for the types of work that require that level of inspection. Both the non-licensed and licensed Entergy organizations responded with an appropriate review of the issues. Entergy’s review of work documents that were potentially affected was extensive at each site. Entergy’s total review examined over 320 Engineering Change documents and 2676 Work Orders. Of the 30 Work Orders identified to have QC verification inspection deficiencies affecting eight safety-related design changes, all 30 were determined by Entergy to have sufficient documentation to provide confidence that the equipment was installed correctly. Specific corrective actions were identified and implemented to ensure that QC verification inspections would be included in current and future work documents, including procedure enhancements.

The information provided to the NRC was used to perform a focused inspection in order to assess the impact of the missed verification inspections at each of the NRC-licensed facilities. The inspection documented below independently assessed the potential impact of missed QC verification inspections on the operability of plant equipment, as well as assessing details of QA Program for the Entergy fleet.

Two findings were identified during this inspection. These findings involved missed QC verification inspections at seven Entergy sites, and the assignment of individuals to the QA Manager position that did not meet the experience and qualification requirements at eight sites. Only the findings impacting this licensee are described below.

The inspectors concluded that the Entergy fleet organizational structure and Entergy strategy of adopting standardized procedures across the fleet were contributing factors to the findings. Specifically:

- Changes to adopt the standard fleet QA program created a partially conflict with existing requirements for worker qualifications at some sites. The process for creating and revising standardized fleet procedures and programs used to meet

NRC requirements must ensure that site-specific regulatory requirements and commitments are properly addressed for all sites.

- Changes that removed details from existing site-specific QA and QC program implementing procedures while shifting to standardized fleet procedures contributed to the finding involving missed QC verification inspections. Condition reports at individual sites regarding problems related to this issue were not recognized collectively as symptoms of a problem with these procedures because they were addressed at the site level.

b.1 Failure to Perform Required Quality Control Inspections

Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion X, "Inspection," for the failure to ensure that Quality Control verification inspections were included in quality-affecting procedures and work instructions for construction-like work activities as required by the Quality Assurance Program.

Description. In response to the inspectors request for information concerning implementation of the quality oversight and verification programs, the licensee performed a review of a representative sample of engineering changes and work order tasks issued between 2006 and 2009. The licensee's review included performing equipment walkdowns, evaluating rework rates and human error rates, and causes for failures of significant components. Based on the results of these reviews, Entergy initiated condition reports at the various sites to document problems with Quality Control (QC) verification activities and failures to perform required QC reviews of safety-related engineering changes and construction related work activities. Entergy's investigation concluded that procedures contained inadequate guidance, which resulted in inconsistent implementation of the QC Program. Specifically, some safety-related design change work orders were not reviewed to determine whether QC verification inspections were required, and some safety-related design change work orders did not include all required QC verification inspections. These examples were documented in Condition Reports CR-HQN-2009-01083, -01084, -01085, -01093, -01096, -01140, -01169, -01170, -01184, and -01188.

Additional findings identified by Entergy's review included:

- Managers in maintenance organizations did not have a detailed understanding of QC responsibilities, required inspections, or what documents required review (CR HQN-2009-01150).
- A weakness was identified in the process for ensuring proper approval of contract QC inspection personnel at all Entergy sites. Procedure EN-QV-111, "Training and Certification of Inspection/verification and examination Personnel," Section 4.0 [1], required that the Manager responsible for Quality Assurance or designee at each location is responsible for approving ANSI N45.2.6 certification of QC inspection personnel. In practice, contract QC inspectors' qualifications were not approved by the QA Manager prior to November of 2009. This was determined to be a minor violation because the ANSI Level III inspector at each

site was documenting that the contract QC personnel had the necessary qualifications to perform the inspections for which they were contracted. This issue was entered into the licensee's corrective action program as Condition Report CR-HQN-2009-1091.

- At individual Entergy plants, 27 condition reports were written in 2008 and 2009 to document potentially missed QC verification inspections or missed reviews to consider QC verification inspections prior to the NRC engaging Entergy on this issue. Of those, seven were actual missed inspections (CR-RBS-2009-05041, CR-JAF-2008-03648, and CR-PNP-2008-00916 and CR-PNP-2008-03922, CR-PNP-2009-01798, CR-PNP-2009-02059, and CR-PNP-2009-02255). Multiple condition reports documented work package quality issues that impacted the ability to identify appropriate QC verification inspection requirements.
- Two examples of QC programmatic issues were identified, assigned the Entergy headquarters, and not properly addressed (CR-ANO-C-2009-01884, and CR-HQN-2009-00178). These were considered examples of the violation discussed below.
- River Bend Station was using notification points instead of designating specific QC hold points (CR-RBS-2008-04685). This is further discussed in Section 4OA7.
- Insufficient resources were assigned or qualified to perform the required tasks at Grand Gulf Nuclear Station and River Bend Station. River Bend Station operated with a single QC Level II inspector for more than 3 years, and Grand Gulf Nuclear Station's two QC inspectors did not have all of the discipline certifications for which they were conducting inspections (CR-HQN-2009-01140 and CR GGN-2009-06575). While these conditions were inappropriate, the inspectors did not identify a separate violation associated with these issues. To the extent that the individuals at River Bend Station were evaluating work documents for QC verification inspections and not correctly identifying those verifications, those examples are part of the violation discussed below.
- Although equipment-related QC condition reports were addressed appropriately, QC programmatic issues were not always effectively addressed.
- QA audits and oversight activities for the QC Program missed opportunities to identify the findings of their investigation (CR-HQN-2009-01169, CR-HQN-2009-0153, and CR-HQN-2010-00013). In particular, the Entergy corporate ANSI Level III inspector was required to perform periodic surveillances of QC inspection activities to ensure the program is being adequately implemented and maintained, but these required surveillances were not performed in 2008 (CR-HQN-2009-00111). This is further discussed in Section 4OA7.

Subsequent to the identification of these deficiencies, Entergy initiated prompt corrective actions to ensure that appropriate safety-related, engineering changes and non-routine maintenance work orders were identified and routed to the Maintenance Inspection

Coordinator for evaluation and inclusion of QC verification inspections in accordance with the revised requirements of procedure EN-WM-105, "Planning." These corrective actions and actions to preclude recurrence were collectively documented in the following Level A condition reports: CR-HQN 2009-01184, dated December 21, 2009 and CR-HQN-2010-0013, dated January 6, 2010.

In-office NRC reviews identified the need to conduct further inspection activities. On June 14 through 17, 2010, the inspectors conducted a focused review of work performed at each NRC-licensed Entergy site to assess whether examples of missed QC verification inspections identified by Entergy during their review had the potential to have impacted the operability of important plant equipment. The inspectors also reviewed the corrective action database and maintenance records to independently assess the rigor of the Entergy review and to identify additional examples of missed QC verification inspections. The inspectors identified no additional examples, and concluded that the Entergy reviews were sufficient to identify the scope of the problems and develop actions to address the causes.

The inspectors' reviewed specific work items whose scope met QAPM requirements to have had QC verification inspections but did not have the appropriate inspections. Based in part on interviews with Entergy personnel, the inspectors determined that procedural guidance for work planning was not sufficiently detailed or clear to ensure that work packages with construction-like activities would be reviewed by the specified QC personnel. These individuals were responsible for designating the QC inspections that were required by the QAPM.

The inspectors also identified numerous condition reports written at Entergy sites that documented improper implementation of QC verification inspections. Specific condition reports are listed in the attachment.

In response to inspectors' questions about staffing and qualifications among QC inspectors, the licensee identified that at Grand Gulf Nuclear Station, QC inspectors had been performing QC verification inspections in disciplines for which the individuals did not have certifications. This was addressed in CR-GGN-2009-06575 and CR-HQN-2009-01197. Relative to the QC staffing level at River Bend Station, the inspectors reviewed applicable regulatory requirements and concluded that, while this practice was inappropriate, it did not violate any specific requirement. Also, while QC inspector staffing was marginal at Grand Gulf Nuclear Station and River Bend Station, these stations frequently used contractors and inspectors from other Entergy sites to supplement the onsite QC inspection staff.

Analysis. The failure to ensure that adequate Quality Control verification inspections were included in quality-affecting procedures and work instructions as required by the Quality Assurance Program was a performance deficiency. This programmatic deficiency, if left uncorrected, could lead to a more significant safety concern in that the failure to check quality attributes could involve an actual impact to plant equipment. This issue affected the Design Control attribute of the Mitigating Systems cornerstone because missed quality control inspections during plant modifications could impact the availability, reliability, and capability of systems needed to respond to initiating events. This performance deficiency was determined to have very low safety significance in

Phase 1 of the SDP, since it was confirmed to involve a qualification deficiency that did not result in a loss of operability or functionality. Specifically, inspectors verified by sampling that work documents provided objective quality evidence that work activities that had missed quality control verifications were properly performed.

The inspectors determined that this performance deficiency involved a cross-cutting aspect related to the Human performance in Decision-making (H.1(a)), because the licensee did not have an effective systematic process for obtaining interdisciplinary reviews of proposed work instructions to determine whether QC verification inspections were appropriate.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion X, "Inspection," requires, in part, that: "Examinations, measurements, or tests of material... shall be performed for each work operation where necessary to assure quality . . . If mandatory inspection hold points, which require witnessing or inspecting by the licensee's designated representative and beyond which work shall not proceed without the consent of the designated representative are required, the specific hold points shall be indicated in appropriate documents."

Entergy's QAPM, Revision 20, Section B.12., "Inspection" requires, in part, that: "Provisions to ensure inspection planning is properly accomplished are to be established. Planning activities are to identify the characteristics and activities to be inspected, the inspection techniques, the acceptance criteria, and the organization responsible for performing the inspection. Provisions to identify inspection hold points, beyond which work is not to proceed without consent of the inspection organization, are to be defined."

Contrary to the above, from February 2006, to December 2009, the licensee failed to ensure that examinations, measurements, or tests of material were performed for each work operation where necessary to assure quality, and failed to include mandatory inspection hold points in appropriate documents. Specifically, multiple examples of Maintenance Work Orders and Engineering Change documents for construction-related activities involving safety-related systems structures and components were identified where witnessing or inspections were required to be performed to ensure quality, but these steps were not identified, included in the work documents, or performed as required QC hold points in the work instructions. Condition reports documenting the specific problems and examples of the violation included:

CR-RBS-2009-06446  
CR-RBS-2009-06451  
CR-RBS-2009-06471  
CR-RBS-2009-06473  
CR-RBS-2009-06490  
CR-RBS-2010-00044  
CR-HQN-2009-01083  
CR-HQN-2009-01084  
CR-HQN-2009-01085  
CR-HQN-2009-01093  
CR-HQN-2009-01096

CR-HQN-2009-01140  
CR-HQN-2009-01169  
CR-HQN-2009-01170  
CR-HQN-2009-01184  
CR-HQN-2009-01188

Because this issue was of very low safety significance and was entered into the corrective action program as Condition Reports CR-HQN 2009-01184 and CR-HQN-2010-0013, this violation is being treated as a noncited violation consistent with the NRC Enforcement Policy: NCV 05000458/2010005-03: "Failure to Perform Required Quality Control Inspections."

b.2. Failure to Implement the Experience and Qualification Requirements Associated With the Quality Assurance Program

Introduction. The inspectors identified a Green noncited violation of 10 CFR 50, Appendix B, Criterion II, "Quality Assurance Program," for the failure to implement the experience and qualification requirements of the Quality Assurance Program. As a result, the licensee failed to ensure that an individual assigned to the position of Quality Assurance Manager met the qualification and experience requirements of ANSI/ANS 3.1-1978 as required by the Quality Assurance Program.

Description. During their review of the issues surrounding the improper implementation of quality control (QC) verifications discussed above, the inspectors noted that the root cause analysis documented in CR-HQN-2010-0013 identified that lack of experience of the Quality Assurance (QA) Manager contributed to the failure to identify the trend in missed QC verification inspections. The inspectors reviewed the relevant experience and qualifications of the QA Manager at each Entergy site. The inspectors also reviewed the NRC's safety evaluation report that approved Entergy's original corporate Quality Assurance Program Manual (QAPM), which is the document that contains the QA Program. Additionally, the inspectors reviewed the administrative section of the Technical Specifications for all the Entergy sites and a sample of evaluations, performed in accordance with 10 CFR 50.54(a), that supported Entergy QAPM changes and alignment of plants that were subsequently purchased by Entergy.

The Entergy corporate QAPM required each site to meet the experience and qualification standards in ANSI/ANS 3.1-1978, "American National Standard for Selection and Training of Nuclear Power Plant Personnel." Section 4.4 included qualification and experience requirements for the personnel described as "group leaders" of five professional-technical groups, including Quality Assurance. Section 4.4.5, "Quality Assurance," required that "...the responsible person shall have six years experience in the field of quality assurance, preferably at an operating nuclear plant, or operations supervisory experience. At least one year of this six years experience shall be nuclear power plant experience in the overall implementation of the quality assurance program. (This experience shall be obtained within the quality assurance organization.)"

On December 15, 2008, procedure EN-QV-117, "Oversight Training Program," the Entergy procedure used by all Entergy sites to implement the requirements of ANSI/ANS

3.1-1978, was revised by the Entergy corporate QA group. Section 5.7, "Manager/QA Senior Auditor Training," was changed to state:

Either the QA Manager or the Senior QA Auditor will meet the requirements of ANS 3.1-1978 paragraph 4.4.5 for operating plants and if applicable ANS 3.1-1993 paragraph 4.3.7 for new plants.

The inspectors reviewed completed Personnel Change Planning Checklist/Forms for QA Managers at each site. Entergy used this form to evaluate QA Manager candidates prior to the implementation of an Entergy fleet-wide restructuring in July 2007. Attachment 8, "Change Management Guidelines for Alignment Implementation," included the following conclusion for the individual that subsequently was assigned to be the QA Manager:

[Individual's name redacted] meets the minimum requirements for QA Manager with the exception of at least one year of this six years experience shall be nuclear power plant experience in the overall implementation of the quality assurance program. This requirement must be met by the QA Senior Auditor.

Based on discussions with Entergy corporate QA personnel, the inspectors determined that Entergy personnel had interpreted ANSI/ANS 3.1-1978, Sections 4.4 and 4.4.5 to allow the Senior Auditor to be considered the QA group leader described in the standard for purposes of meeting the experience requirements of Section 4.4.5 in cases where a candidate for the position of QA Manager did not satisfy the experience requirements.

In reviewing this issue, the NRC staff has determined that the group leader in this case is the individual filling the position assigned responsibility for overall implementation of the QA Program (Entergy used the title "QA Manager" for this position). The individual meeting the experience and qualification requirements must be the individual assigned the responsibilities for overall implementation of the QA Program assigned within the QA Program.

The inspectors determined that this change to procedure EN-QV-117 did not ensure that the qualifications for the QA Manager would meet the requirements of standard. The inspectors identified an example where the Senior Auditor was credited as being the group leader for purposes of meeting ANSI/ANS 3.1-1978, and the individual who was assigned as the QA Manager did not meet the ANSI/ANS 3.1-1978 experience requirements. The team also determined that the responsibilities assigned to the QA Manager under the QAPM were not reassigned to the Senior Auditor, and the Senior Auditor did not report directly to the designated senior executive. The Senior Auditor continued to report to the QA Manager, so the person with the greater experience did not have the positional authority to decide issues.

Analysis. Failure to ensure that an individual assigned to the position of Quality Assurance Manager met the qualification and experience requirements of ANSI/ANS 3.1-1978 as required by the Quality Assurance Program was a performance deficiency. This performance deficiency was determined to be more than minor because, if left uncorrected, it could create a more significant safety concern. Failure to have a fully qualified individual providing overall oversight to the QA Program had the potential to affect all cornerstones, but this finding will be tracked under the Mitigating

Systems cornerstone as the area most likely to be impacted. The issue was not suitable for quantitative significance determination, so it was assessed using IMC 0609, Appendix M, so it was evaluated using the qualitative criteria listed in Table 4.1. This finding was determined to be of very low safety significance because other quality assurance program functions remained unaffected by this performance deficiency, so defense-in-depth continued to exist.

The inspectors determined that there was no cross-cutting aspect associated with this finding because this issue was not indicative of current performance because the violation occurred more than 3 years ago.

Enforcement. Appendix B to 10 CFR 50, Criterion II, "Quality Assurance Program," requires, in part, that the licensee establish a quality assurance program which complies with Appendix B. This program shall be documented by written policies, procedures, or instructions and shall be carried out throughout plant life in accordance with those policies, procedures, or instructions. The program shall provide for indoctrination and training of personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained.

The Entergy Quality Assurance Program Manual, Revision 13, is the document used at each Entergy-owned site to describe the quality assurance program. Table 1, Section A of the Quality Assurance Program Manual states, in part, that qualifications and experience for station personnel shall meet ANSI/ANS 3.1-1978 except for positions where an exception to either ANSI/ANS 3.1-1978 or N18.1-1971 is stated in the applicable unit's Technical Specifications.

ANSI/ANS 3.1-1978, Section 4.4.5, "Quality Assurance," states, in part, that the responsible person (i.e. the Quality Assurance Manager) shall have six years experience in the field of quality assurance. At least one year of this six years experience shall be obtained within the quality assurance organization.

Contrary to the above, between July 7, 2007, and July 8, 2008, the licensee failed to implement the quality assurance program requirements intended to provide indoctrination and training of personnel performing activities affecting quality as necessary to assure that suitable proficiency was achieved and maintained. Specifically, the individual(s) assigned to be the responsible person for the licensee's overall implementation of the Quality Assurance Program did not have at least 1 year of nuclear plant experience in the overall implementation of the Quality Assurance Program within the quality assurance organization prior to assuming those responsibilities. Because this issue was of very low safety significance and was entered into the corrective action program as Condition Report CR-HQN-2010-00386, this violation is being treated as a noncited violation consistent with the NRC Enforcement Policy: NCV 05000458/2010005-04: "Failure to Implement the Experience and Qualification Requirements of the Quality Assurance Program."

#### 40A3 Event Follow-up (71153)

##### November 20, 2010, Unplanned Trip of Reactor Recirculation Pump B

On November 20, 2010, while the plant was at 100 percent power, reactor recirculation pump B unexpectedly tripped off. The plant entered single loop operations at 51 percent power. The plant identified a failed optical isolator in the reactor recirculation pump B trip logic as the likely failure mechanism. The plant replaced the optical isolator, reduced power to 35 percent to start the pump, and subsequently returned the plant to 100 percent power. Thermal-hydraulic conditions remained within operational limits during the event. The licensee entered the event into their corrective action program as Condition Report CR-RBS-2010-06059. The inspectors discussed the event with licensee management, engineering, operations, and maintenance personnel to understand the conditions leading to the loss of reactor recirculation pump B and subsequent operator actions.

#### 40A5 Other Activities

##### .1 Down Power to Correct a Tube Leak in Main Condenser Waterbox C

Introduction. The inspectors reviewed a self-revealing finding for the licensee's failure to plug a main condenser tube in accordance with an approved work order. Specifically, a plastic tube plug was not replaced with the required brass plug causing a tube leak requiring the plant to reduce power.

Description. During refueling outage 14, workers completed an activity that required them to install brass "Pop-A-Plug" plugs in several main condenser tubes as directed by work order 113757. Tube 36-1 was on the list of tubes to have been plugged during that activity. Work order 113757 did not require or encourage those workers to apply human performance error-prevention techniques.

On September 2, 2010, the licensee noted an increase in Condensate Demineralizer Influent conductivity. The licensee added marine grade sawdust to the circulating water system in an effort to plug the leak. By September 9, subsequent increases in the Condensate Demineralizer Influent and the resulting investigation had determined that a tube leak existed in the main condenser "C" waterbox, and a down power to 75 percent of full power was completed to identify and plug the leaking tube. Upon entry into the waterbox, the licensee determined that tube 36-1 was leaking. Within tube 36-1, they found a plastic plug instead of the brass "Pop-A-Plug" plug that should have been installed under work order 113757, clearly indicating that the brass "Pop-A-Plug" plug had not been installed.

The licensee's investigation of these circumstances was documented in Condition Report CR-RBS-2010-04526. That investigation determined that the apparent cause of the down power had been that during refueling outage 14, tube 36-1 had not been plugged in accordance with work order instructions, even though the work order step had been signed off as complete. It also determined that a contributing cause was that personnel had exhibited insufficient awareness of the impact of actions on safety/reliability.

Analysis: The performance deficiency was the licensee's failure to plug main condenser tube 36-1 in accordance with work order 113757. That performance deficiency was more than minor because it is associated with the human performance attribute of the Initiating Events Cornerstone and 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, in that the performance deficiency created a condition that upset plant stability by creating a condenser tube leak that prompted a down power.

Using Inspection Manual Chapter 0609, Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the inspectors determined that this finding was a transient initiator contributor, affected the safety of an operating reactor, degraded the Initiating Events Cornerstone but did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The finding therefore screened to Green (very low safety significance).

The inspectors determined that the apparent cause of this finding was the licensee's failure to use human performance error prevention techniques to ensure that the tube plugging was performed correctly. This finding therefore has a crosscutting aspect in the work practices component of the human performance area because the licensee did not communicate and use human error prevention techniques commensurate with the risk of the assigned task, such that work activities are performed safely [H.4(a)].

Enforcement: This finding does not involve enforcement action because no regulatory requirement violation was identified. Because this finding does not involve a violation and has very low safety significance, it is identified as FIN 05000458/2010005-05, "Failure to Plug a Main Condenser Tube in Accordance With an Approved Work Order."

## **40A6 Meetings**

### Exit Meeting Summary

On October 8, 2010, the inspectors presented the results of the radiation safety inspection to Mr. M. Perito, 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 January 10, 2011, the inspector presented the results of the Selected Issue Follow-up Inspection of quality assurance and quality control issues 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 12, 2011, the inspectors presented the integrated inspection results to Mr. M. Perito, 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.

#### 40A7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as noncited violations.

1. Procedure, EN-QV-111, "Training and Certification of Inspection/Verification and Examination Personnel," Section 4.0 [4](i), requires that the Entergy corporate ANSI Level III inspector shall perform periodic (annual) surveillances of quality control inspection activities to ensure that the program is being adequately implemented and maintained. Contrary to the above, no surveillances of quality control inspection activities were performed for any Entergy site during calendar year 2008. The issue was not suitable for quantitative significance determination, so it was assessed using Inspection Manual Chapter 0609, Appendix M, so it was evaluated using the qualitative criteria listed in Table 4.1. This finding was determined to be of very low safety significance because other quality assurance program functions remained unaffected by this performance deficiency, so defense-in-depth continued to exist. This issue was entered into the licensee's corrective action program as Condition Report CR-HQN-2009-00111.
2. Title 10 CFR Part 50, Appendix B, Criterion X, "Inspection," requires, in part, that: "Examinations, measurements, or tests of material... shall be performed for each work operation where necessary to assure quality . . . . If mandatory inspection verification inspections, which require witnessing or inspecting by the licensee's designated representative and beyond which work shall not proceed without the consent of the designated representative are required, the hold points shall be indicated in appropriate documents." Contrary to the above, between July 31, 2008 and November 30, 2009, mandatory inspection verification inspections, which require witnessing or inspecting by the licensee's designated representative and beyond which work shall not proceed without the consent of the designated representative were required, but the required hold points were not indicated in appropriate documents. Specifically, the hold points were replaced with "notification points", which provided general work activity oversight controls but did not clearly indicate discrete work steps where craft personnel were not to proceed until the required witnessing had occurred. . The issue was not suitable for quantitative significance determination, so it was assessed using Inspection Manual Chapter 0609, Appendix M, so it was evaluated using the qualitative criteria listed in Table 4.1. This finding was determined to be of very low safety significance because other quality assurance program functions remained unaffected by this performance deficiency, so defense-in-depth continued to exist. This issue was entered into the licensee's corrective action program as Condition Report CR-RBS-2009-06123.

**SUPPLEMENTAL INFORMATION**  
**KEY POINTS OF CONTACT**

Licensee Personnel

J. Abisamra, Echelon Chief Engineer  
S. Beagles, Echelon Manager of Fleet Operations  
D. Burnett, Manager, Emergency Preparedness  
G. Bush, Manager, Maintenance  
R. Byrd, Echelon Sr. Staff Engineer  
M. Chase, Manager, Training  
J. Clark, Assistant Operations Manager – Shift  
B. Cox, Manager, Operations  
G. Degraw, Superintendent, Training  
J. Dent, Echelon General Manager Plant Operations, Fleet Operations Support  
M. Feltner, Manager, Outage  
B. Ford, Echelon Sr. Manager, Nuclear Safety and Licensing  
C. Forpahl, Manager, Engineering Programs & Components  
W. Fountain, Senior Licensing Specialist  
H. Goodman, Director, Engineering  
E. Harris, Echelon, QA Manager  
D. Heath, Acting Manager, Radiation Protection  
R. Heath, Manager, Chemistry  
B. Houston, Manager, Radiation Protection  
K. Huffstatler, Senior Licensing Specialist  
D. Jacobs, Echelon Sr. Vice President of Planning, Development and Oversight  
A. James, Manager, Security  
M. Jurey, Auditor, Quality Assurance (Acting Manager)  
L. Kitchen, Manager, Planning and Scheduling, Outages  
R. Kowalewski, Manager, Corrective Actions & Assessments  
G. Krause, Assistant Operations Manager – Support  
C. Loeb, Quality Specialist  
D. Lorfing, Manager, Licensing  
W. Mashburn, Manager, Design Engineering  
R. McAdams, Manager, System Engineering  
J. McCann, White Plains VP of Nuclear Safety, Emergency Preparedness, and Licensing  
P. Morris, Echelon Manager of Administrative Services  
E. Olson, General Manager, Plant Operations  
T. Palmisano, Echelon Vice President of Oversight  
M. Perito, Site Vice President  
R. Persons, Superintendent, Training  
J. Roberts, Director, Nuclear Safety Assurance  
J. Schlesinger, Senior Engineer  
T. Shenk, Assistant Operations Manager – Training  
T. Tankersly, Echelon Director of Oversight  
J. Vollmer, Senior Health Physicist/Chemistry Specialist  
J. Vukovics, Supervisor, Reactor Engineering

E. Eeinkam, White Plains Sr. Manager of Nuclear Safety and Licensing  
L. Woods, Manager, Quality Assurance

NRC Personnel

G. Larkin, Senior Resident Inspector  
A. Barrett, Resident Inspector  
M. Ashley, Office of Nuclear Reactor Regulation  
K. Fuller, Region IV  
M. Gray, Region I  
J. Geissner, Region III  
N. Hilton, Office of Enforcement  
D. Holody, Region I  
D. Jackson, Region I  
W. Jones, Region IV  
R. Kellar, Region IV  
M. Marsh, Office of General Counsel  
M. McLaughlin, Region I  
M. Murphy, Office of Nuclear Reactor Regulation  
C. Schulten, Office of Nuclear reactor Regulation  
D. Thatcher, Office of Nuclear Reactor Regulation

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened and Closed

05000458/2010005-01	NCV	Failure to Develop a Preventive Maintenance Schedule to Specify Inspection or Replacement of the O-Ring in the High Pressure Core Spray Lower Motor Bearing Drain Plug (Section 1R19.b.1)
05000458/2010005-02	NCV	Two Examples of Completing Maintenance that Affected the Performance of Safety-Related Equipment but Was Not Properly Preplanned (Section 1R19.b.3)
05000458/2010005-03	NCV	Failure to Perform Required Quality Control Inspections (Section 4OA2)
05000458/2010005-04	NCV	Failure to Implement the Experience and Qualification Requirements of the Quality Assurance Program (Section 4OA2)
05000458/2010005-05	FIN	Failure to Plug a Main Condenser Tube in Accordance with an Approved Work Order (Section 4OA5 )

## LIST OF DOCUMENTS REVIEWED

### **Section 1R01: Adverse Weather Protection**

#### CONDITION REPORT

CR-RBS-2009-06263

#### MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION/DATE</u>
RIS-2004-05	Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power	April 15, 2004
NUREG-1779	Regulatory Effectiveness of the Station Blackout Rule	0

#### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
AOP-0029	Severe Weather Operation	21
AOP-0064	Degraded Grid	0
DC-199	Off-Site Power Supply Design Requirements	6

DC-201	ENS Transmission Grid Monitoring	5
OSP-0063	Grid Monitor	1

**Section 1R04: Equipment Alignment**

CONDITION REPORTS

CR-RBS-2010-04607 CR-RBS-2010-06406

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
PID-34-02A	Fuel Pool Cooling	19
PID-34-02A	Fuel Pool Cooling	20
PID-34-02B	Fuel Pool Cooling	18

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
R-STM-0602	Fuel Pool Cooling and Cleanup System	6

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-OP-104	Operability Determination Process	4
SOP-0031	Residual Heat Removal System	311
SOP-0034	MSIV Sealing System (Positive Leakage Control) and Penetration Valve Leakage Control (Sys #208/255)	11
SOP-0043	Standby Gas Treatment System	014
SOP-0053	Standby Diesel Generator and Auxiliaries (Sys #309)	314
SOP-0091	Fuel Pool Cooling and Cleanup Sys (#602)	41

**Section 1R05: Fire Protection**

CALCULATION

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ER-RB-2001-0069-000	Repair of Shrinkage Cracks on Fireproof Coating Material	0

CONDITION REPORTS

CR-RBS-2010-05320	CR-RBS-2010-05321	CR-RBS-2010-05340	CR-RBS-2010-05345
CR-RBS-2010-05355	CR-RBS-2010-05356	CR-RBS-2010-05472	

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EB-003BC	Fire Protection Features Plant Plan View – Elevations 83'-0" to 106'-0"	4
EB-003BD	Fire Protection Features Plant Plan View – Elevations 109'-9" to 148'-0"	4
EB-003BE	Fire Protection Features Plant Plan View – Elevations 113'-0" to 186'-3"	4
PID-15-01C	System 251 Fire Protection Wtr and Eng Pump	13

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION/DATE</u>
RLP-FB-FT052	Fire Protection Water System – Suppression	0
FSAR, 9.5.1	Fire Protection	8
FSAR, App 9A	Fire Hazard Analysis	August 1988
FSAR, App 9B	Fire Protection Program Comparison with Appendix R to 10CFR50	August 1987

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION/DATE</u>
ARP-863-74A (CO3)	Charcoal Filter Bed 3A Exit Temp High	021
ARP-863-74A (CO8)	Charcoal Filter Bed 3B Exit Temp High	021

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION/DATE</u>
CB-098-117	Standby Switchgear 1B Room Fire Area C-14	3
CB-113-127	HVAC Room Fire Area C-17	3
CB-113-129	125 VDC Switchgear Room Fire Area C-24	3
CB-113-133	Battery 1A Room Fire Area C-18	2
CB-113-135	ENB Inverter Charger B Room Fire Area C-19	2
CB-136-138	Control Room Fire Area C-25	4
FPP-100	Fire Protection System Impairment	010
RBNP-038	Site Fire Protection Program	06B
SOP-0037	Fire Protection Water System Operating Procedure (Sys#251)	031
WM-105-04	Fire Extinguishers Monthly Inspection	October 26, 2009

#### **Section 1R06: Flood Protection Measures**

##### CALCULATION

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
PN-317	Max Flood Elevations for Moderate Energy Line Cracks in CAT I Structures	0B

##### CONDITION REPORTS

CR-RBS-2009-01626    CR-HQN-2009-00296    LO-WTHQN-2010-00057

##### MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
FSAR, App 3C	Failure Mode Analysis for Pipe Breaks and Cracks	August 1987
3214.400-273-015A	Installation, Operation and Maintenance Model 1384-A Wet Chemical System	October 1, 1995

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-DC-346	Cable Reliability Program	0

**Section 1R12: Maintenance Effectiveness**

CONDITION REPORTS

CR-RBS-2007-00835 CR-RBS-2010-01784 CR-RBS-2010-05224

MAINTENANCE RULE DOCUMENTS

Scoping questions for system 209  
Performance criteria for system 209

OTHER DOCUMENTS

Preventive Maintenance Evaluation Record for E51-PCVF015 VALVE, dated September 25, 2006

Vendor Manual T020-0127 (Publication #TM700-02), "Target Rock Solenoid Operating Valve [Part Number] 71010-1; 71010-3; 71010-4; 71010-5"

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-DC-153	Preventive Maintenance Component Classification	5
EN-DC-335	[Preventive Maintenance] Basis Template	2
EN-LI-102	Corrective Action Process	16
EN-LI-119	Apparent Cause Evaluation (ACE) Process	11

**Section 1R13: Maintenance Risk Assessment and Emergent Work Controls**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ADM-0096	Risk Management Program and Implementation Risk Assessment	309

AOP-0029	Severe Weather Operation	26
AOP-0064	Degraded Grid	3
EN-MA-125	Troubleshooting and Control of Maintenance Activities	6
EN-OP-103	Reactivity Management Program	4

**Section 1R15: Operability Evaluations**

CONDITION REPORTS

CR-RBS-2006-01256	CR-RBS-2009-02995	CR-RBS-2010-05371	CR-RBS-2010-05384
CR-RBS-2010-05397	CR-RBS-2010-05447	CR-RBS-2010-05562	CR-RBS-2010-05652

**Section 1R18: Plant Modifications**

CONDITION REPORT

CR-RBS-2008-05650

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-DC-115	Engineering Change Process	10
EN-DC-136	Temporary Modifications	5

**Section 1R19: Postmaintenance Testing**

CONDITION REPORTS

CR-RBS-2010-03170	CR-RBS-2010-03744	CR-RBS-2010-05766	CR-RBS-2010-06102
CR-RBS-2010-06125	LO-RLO-2007-00073		

DESIGN SPECIFICATIONS

DB213A8535, OIL DRAIN PLUG ASSEMBLY (3/4)  
 DB213A8711, O-RING  
 DD213A8535, OIL DRAIN PLUG ASSEMBLY (3/4)  
 9920512BB, Outline (Induction Motor)

MISCELLANEOUS DOCUMENTS

Manual No. D214A, "Installation, Operation, and Maintenance of 4" – 150lb. Flow Regulating Valves for Entergy Operations, Inc. River Bend Station – Unit 1, Revision A

Service Information Letter 484, "Experience with [General Electric Alternating Current] Induction Motors," March 29, 1989

Vendor Technical Information Impact Notice No. 91-024 (Review of SIL 484), November 12, 1991

OPX 2001-0128, "OPERATING EXPERIENCE STATEMENT OF ACTION for SIL-484S6, Experience with AC motors," August 21,2001

[Operating Experience] Evaluation of SIL 484 Supplement 6, "Experience with AC Motors," August 2, 2008

Lucius Pitkin, Inc. Report No. F10508-R-001, "Metallurgical and Failure Analysis of HPCS Pump Motor Lower Bearing Oil Drain Plug," December 2, 2010

Work order 24663, "HPCS MOTOR LOWER BEARING DRAIN PLUG HAS A SMALL OIL LEAK"

PROCEDURE

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-DC-153	Preventive Maintenance Component Classification	5
EN-DC-335	[Preventive Maintenance] Basis Templates	2
EN-OE-100	Operating Experience Program	10
EN-WM-100	Work Request (WR) Generation, Screening, and Classification	4
EN-WM-105	Planning	8
GMP-0018	General Torquing Guide	13
STP-309-0207	Division II Diesel Generator 184 Day Op Test	13

TRAINING MATERIALS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
FLP-MMBA-FASNR	Fasteners, Torquing, and Gaskets	0
RLEC-MM-MT429	Mechanical Maintenance Training	2

WORK ORDERS

<u>NUMBER</u>	<u>TITLE</u>
00256255	BYS-EG1 Load Test Feeding BYC-CHGR1D with 300 Amp DC Load
00256411	BYS-EG1 – Perform Annual Inspection and Lubrication of the DG
52298809	BYS-EG1 – Test, Verify, Station Blackout Portable DG

**Section 1R22: Surveillance Testing**

CONDITION REPORT

CR-RBS-2010-5372

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ESK-05ENS07	Elementary Diag. 4.16KV SWGR STBY. BUS 1B Gen. ACB	17

MISCELLANEOUS DOCUMENT

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
VTD-W120-0135	Instruction Leaflet-Type SA-1 Generator Differential Relay for Class 1E Applications	0

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
STP-402-0202	Main Control Room A/C Train B Operability Test	012
MCP-1090	Testing and Calibration of Westinghouse Type SA-1 Relay	8

WORK ORDER

<u>NUMBER</u>	<u>TITLE</u>
WO-00145145	EGS-EG1B Protective Relay Test

**Section 2RS01: Radiological Hazard Assessment and Exposure Controls**

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
RBS-1010-0042	3205 TB 123 Condensate Full Flow Filters	October 6, 2010
LO-RLO-2009-00144	Radiation Protection Program Review	May 30, 2010
RBS-1002-0166	3205 TB 123 Condensate Full Flow Filters	February 15, 2010
LO-RLO-2009-00143	Occupational Rad Safety	January 22, 2010
	Snapshot Assessment/Benchmark on Access to High Radiological Risk Activities	November 30, 2009

CONDITION REPORTS

CR-RBS-2009-04327	CR-RBS-2009-04342	CR-RBS-2009-04362	CR-RBS-2009-05277
CR-RBS-2009-05284	CR-RBS-2010-01219	CR-RBS-2010-03236	CR-RBS-2010-04772
CR-RBS-2010-05102	CR-RBS-2010-05149		

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
RP-101, Att. 9.6	LHRA/VHRA Key Log	October 6, 2010
RP-101, Att. 9.8	Radiological Area Access Key Log	October 6, 2010
RP-143, Att. 9.4	Sealed Source Leak Test Worksheet	September 16, 2010
RP-143, Att. 9.4	Sealed Source Leak Test Worksheet	March 10, 2010
NRC Form 748	National Source Tracking Transaction Report	January 14, 2010

## PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-RP-100	Radworker Expectations	5
EN-RP-101	Access Control for Radiologically Controlled Areas	5
EN-RP-102	Radiological Control	2
EN-RP-105	Radiological Work Permits	9
EN-RP-106	Radiological Survey Documentation	2
EN-RP-108	Radiation Protection Posting	9
EN-RP-121	Radioactive Material Control	6
EN-RP-123	Radiological Controls for Highly Radioactive Objects	0
EN-RP-131	Air Sampling	8
EN-RP-143	Source Control	6
EN-RP-202	Personnel Monitoring	7

## RADIATION WORK PERMITS

<u>NUMBER</u>	<u>TITLE</u>
2010-1001	General Radiation Protection Activities
2010-1002	General Operations Activities
2010-1004	General Maintenance Activities
2010-1005	General Inspections and Tours
2010-1212	Inspection and Tours in LHRAs

### **Section 2RS02: Occupational ALARA Planning and Controls**

## AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
QS-2010-RBS-7	River Bend Station QA Surveillance Report	June 11, 2010
QA-14/15-2009-RBS-1	QA Audit Report	December 10, 2009

CONDITION REPORTS

CR-RBS-2009-04327    CR-RBS-2009-04342    CR-RBS-2009-04362    CR-RBS-2009-05277  
CR-RBS-2009-05284    CR-RBS-2010-01219    CR-RBS-2010-03236    CR-RBS-2010-04772

MISCELLANEOUS DOCUMENTS

<u>TITLE</u>	<u>DATE</u>
RP-15 Radiation Protection Outage Report	
2010 RWP Logbook – Estimated versus Actual dose	September 20, 2010
2010-2014 RBS CRE Goals – 5-Year ALARA Plan	
ALARA Managers Committee Meeting 09-14	October 1, 2009
ALARA Managers Committee Meeting 09-16	October 2, 2009
ALARA Managers Committee Meeting 09-16	October 5, 2009

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-RP-110	ALARA Program	7
EN-RP-110-01	ALARA Initiative Referrals	0
EN-FAP-RP-001	Corporate ALARA Committee	1
RBNP-024	Radiation Protection Plan	301

RADIATION WORK PERMITS (ALARA Reviews)

<u>NUMBER</u>	<u>TITLE</u>
2009-1603	RF-15 Noble Gas Chem Project Activities
2009-1912	RF-15 Remove/Replace 8 SRVs
2009-1929	RF-15 B33-PC001A Recirc Pump Work
2009-1932	RF-15 Drywell Snubbers

**Section 4OA1: Performance Indicator Verification**

CONDITION REPORT  
CR-RBS-2009-05758

MISCELLANEOUS DOCUMENT

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
RLO-2010-00019	Snapshot Assessment/Benchmark: Performance Indicator Verification	March 23, 2010

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-FAP-RP-002	Radiation Protection Performance Indicator Program	0
EN-LI-114	Performance Indicator Process	4
EN-LI-102	Corrective Action Process	13

**Section 4OA2: Identification and Resolution of Problems**

MISCELLANEOUS DOCUMENTS

<u>TITLE</u>	<u>REVISION</u>
River Bend Station 2rd Quarter Trend Report	0
River Bend Station 3rd Quarter Trend Report	0
On-Line Operations Aggregate Index	16 Sept 10

**Section 4OA2.5: Identification and Resolution of Problems  
(Selected Issue Follow-up Inspection)**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
EN-LI-121	Entergy Trending Process	Rev 8

EN-MA-102	Inspection Program	Rev 3 and 4
EN-QV-100	Conduct of Nuclear Oversight	Rev 4
EN-QV-109	Audit Process	Rev 16
EN-QV-109-02	Audit Process Guidance	Rev 0
EN-QV-111	Training and Certification of Inspection/Verification and Examination Personnel	Rev 8
EN-QV-117	Oversight Training Program	Rev 9
EN-QV-119	Corrective Action Requests, Supplier Stop Work Orders, and Recommendations	Rev 6
EN-QV-123	Supplier Audits/Surveys	Rev 3
EN-QV-128	Assessments of Nuclear Oversight?	Rev 2
EN-QV-129	Vulnerability Review Process	Rev 1

TECHNICAL SPECIFICATIONS

SECTION

Waterford Unit 3	6.3 Unit Staff Qualifications
Arkansas Nuclear One -1	5.3 Unit Staff Qualifications
Arkansas Nuclear One -2	6.3 Unit Staff Qualifications
Grand Gulf	5.3 Unit Staff Qualifications
Indian Point 2	5.3 Unit Staff Qualifications
Indian Point 3	5.3 Unit Staff Qualifications
River Bend	5.3 Plant Staff Qualifications
Vermont Yankee	5.3 Plant Staff Qualifications
James A. Fitzpatrick	5.3 Unit Staff Qualifications
Palisades Nuclear Plant	5.3 Unit Staff Qualifications
Pilgrim Nuclear Power Station	6.2 Unit Staff Qualifications

CONDITION REPORTS

CR-ANO-1-2009-02330	CR-ANO-2010-01503	CR-ANO-1-2010-00743
CR-ANO-C-2009-01884	CR-ANO-1-2010-01724	CR-ANO-1-2010-01080
CR-ANO-C-2009-02608	CR-ANO-1-2010-01182	CR-ANO-1-2010-00719
CR-ANO-2-2010-00028		
CR-JAF-2008-03648	CR-JAF-2009-04592	CR-JAF-2010-03280
CR-HQN-2010-00111	CR-HQN-2009-01188	CR-HQN-2010-00415
CR-HQN-2009-00178	CR-HQN-2009-01197	CR-HQN-2010-00333
CR-HQN-2009-01083	CR-HQN-2010-00013	CR-HQN-2010-00123
CR-HQN-2009-01084	CR-HQN-2010-00386	CR-HQN-2010-00109
CR-HQN-2009-01085	CR-HQN-2010-00571	CR-HQN-2010-00068
CR-HQN-2009-01091	CR-HQN-2010-00593	CR-HQN-2010-00063
CR-HQN-2009-01093	CR-HQN-2010-00515	CR-HQN-2010-00045
CR-HQN-2009-01096	CR-HQN-2010-00550	CR-HQN-2010-00060
CR-HQN-2009-01140	CR-HQN-2010-00511	CR-HQN-2009-01198
CR-HQN-2009-01150	CR-HQN-2010-00510	CR-HQN-2009-01194
CR-HQN-2009-01169	CR-HQN-2010-00475	CR-HQN-2010-00594
CR-HQN-2009-01170	CR-HQN-2010-00499	CR-HQN-2009-01171

CR-HQN-2009-01184	CR-HQN-2010-00338	CR-HQN-2009-01153
CR-IP2-2010-04085	CR-IP3-2009-04917	CR-IP2-2009-05393
CR-IP3-2010-01740	CR-IP3-2009-04920	CR-IP2-2009-05399
CR-IP2-2010-03985	CR-IP3-2009-04897	CR-IP2-2009-05400
CR-IP2-2010-03986	CR-IP2-2009-05404	CR-IP2-2009-05389
CR-IP2-2010-03988	CR-IP2-2009-05409	CR-IP2-2009-05349
CR-IP2-2010-03984	CR-IP3-2009-04868	CR-IP2-2009-05348
CR-IP3-2009-04903	CR-IP3-2009-04883	CR-IP2-2009-05321
CR-IP3-2009-04905	CR-IP3-2009-04884	
CR-PLP-2009-04108	CR-PLP-2010-02288	CR-PLP-2009-05909
CR-PLP-2009-05613	CR-PLP-2010-02290	CR-PLP-2010-02012
CR-PLP-2009-05918	CR-PLP-2009-05942	CR-PLP-2009-05897
CR-PLP-2009-05908		
CR-PNP-2009-01798	CR-PNP-2008-03922	CR-PNP-2009-05303
CR-PNP-2009-02059	CR-PNP-2009-05359	CR-PNP-2009-05297
CR-PNP-2009-02255	CR-PNP-2010-00015	CR-PNP-2010-02124
CR-PNP-2008-00916		
CR-RBS-2008-04685	CR-RBS-2010-01472	CR-RBS-2010-00006
CR-RBS-2009-05041	CR-RBS-2010-02033	CR-RBS-2009-06472
CR-RBS-2009-06123	CR-RBS-2010-00200	CR-RBS-2009-06495
CR-RBS-2009-06446	CR-RBS-2010-00221	CR-RBS-2009-06456
CR-RBS-2009-06451	CR-RBS-2010-00278	CR-RBS-2009-06450
CR-RBS-2009-06471	CR-RBS-2010-00088	CR-RBS-2009-06452
CR-RBS-2009-06473	CR-RBS-2010-00011	CR-RBS-2009-06158
CR-RBS-2009-06490	CR-RBS-2009-06520	CR-RBS-2009-06209
CR-RBS-2010-00044	CR-RBS-2009-06539	CR-RBS-2009-06449
CR-WF3-2010-01198	CR-WF3-2010-00284	CR-WF3-2009-07711
CR-WF3-2010-01356	CR-WF3-2009-07713	CR-WF3-2010-02629
CR-WF3-2010-00746		
CR-VTY-2009-04496	CR-VTY-2010-04432	CR-VTY-2010-04496
CR-VTY-2010-01479	CR-VTY-2010-04434	CR-VTY-2010-00070
CR-VTY-2010-02759		
CR-GGN-2010-04140	CR-GGN-2010-02135	CR-GGS-2009-06921
CR-GGN-2010-02730	CR-GGN-2010-02382	CR-GGS-2009-06922
CR-GGN-2010-04178	CR-GGN-2010-02902	CR-GGS-2009-06923

CR-GGN-2010-04101	CR-GGN-2010-00590	CR-GGS-2009-06927
CR-GGN-2010-04092	CR-GGN-2010-01247	CR-GGS-2009-06806
CR-GGN-2010-03674	CR-GGN-2010-01252	CR-GGN-2010-00164
CR-GGN-2010-03721	CR-GGN-2009-06575	CR-GGN-2009-06904
CR-GGN-2010-03900	CR-GGS-2009-06907	CR-GGN-2009-06910
CR-GGN-2010-03451	CR-GGS-2009-06920	CR-GGN-2009-06505
CR-GGN-2010-03492		
CR-ANO-1-2009-02330	CR-ANO-2010-01503	CR-ANO-1-2010-00743

#### MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
EOI Letter ENOC-10-00002	Response to Request for Information, Revision 1	1/8/10
EOI Letter ENOC-09-00037	Response to Request for Information	11/30/10
QAPM Regulatory Guide 1.8	Entergy Quality Assurance Program Manual Personnel Selection and Training	0 through 20 1
ANSI/ANS 3.1- 1978	American National Standard for Selection and Training of Nuclear Power Plant Personnel	1978
ANSI N18.1- 1971	American National Standard for Selection and Training of Nuclear Power Plant Personnel	1971
NRC SER	NRC Safety Evaluation Report, "Entergy Operations, Inc. Quality Assurance Program Consolidation"	11/6/98
Technical Specification	Unit Staff Qualifications	various
5.3.1	Personnel Change Planning Checklist/Forms for QA Manager Candidates	July 2007
CEO2009-00195	Corporate ANSI Level III Surveillance of VY Maintenance Inspection Program (VTY)	12/15/2009
EOI Letter BVY 03-12	Vermont Yankee Nuclear Power Station, Docket No. 50-271 Annual Submittal of QAP Changes (VTY)	02/05/2003
CIN-2003/00059	Vermont Yankee, 10 CFR Part 50.54(a)(3) Change Review	04/24/2002

EOI Letter No. CNRO-2003-013	Forms for QAPM	Rev 8 (VTY)
EOI Letter No. CEXO-2003/164	Entergy Quality Assurance Program Manual, Rev. 8 (VTY)	04/24/2003
EOI Letter NO. CNRO-2002/027	Issuance of Entergy Quality Assurance Program Manual (QAPM) Revision 8 (VTY)	04/24/2003
10 CFR 50.59 Review Form	Entergy Quality Assurance Program Manual, Revision 7 (PNPS)	04/25/2002
ENO Letter No. 1.2.02-067	Entergy QA Program Manual, Revision 7 (PNPS)	05/02/2002
EN-QV-104 Attachment 9.1	Entergy QA Program Manual, Revision 7 (PNPS) Independent Spent Fuel Storage Installation	07/30/2002
ENOC Letter NO. 07-0020	Entergy QA Program Manual Change Review Form 50.54(a) Parts 1,2 and 3 (PLP)	04.05/2007
AP-20.06, Attachment 1	Entergy QA Program Manual, Revision 16, Annual Report 10 CFR 50.54(a)(3) and 10 CFR 72.140(d) (PLP)	04/15/2007
MCM-4.1 Attachment 4.1	FSAR Change Request Form, Relocate QA Program from Chapter 17 to Entergy QAPM (JAF)	05/06/2002
AP-20.09 Attachment 1	Nuclear Engineering 10 CFR 50.59 Screening Form (JAF)	04/03/2002
Entergy Letter JLIC-02-017	Process Applicability Screening – Relocate QA Program From FSAR Ch. 17 to Entergy QAPM (JAF)	04/01/2002
ENO Letter 1.2.02-060	Cross Reference of QAPM commitments to Implementing procedures at JAF	04/02/2002
Entergy Letter CNRO-2002-027	Adaptation of Entergy Common QAPM, Revision 7 (JAF)	06/21/2002
10 CFR 50.54(a) Evaluation	Entergy QA Program Manual, Revision 7 (JAF)	04/25/2002
ENO Letter 1.2.02-060	QA Program Change/Prior Approval Determination - Part A (IP3)	05/06/2002
ENO Meeting Summary	Adaptation of Entergy Common QAPM, Revision 7, (IP2 and IP3)	06/21/2002

ENGINEERING CHANGES/MAINTENANCE WORK ORDERS

ANO-EC-07032	RBS-EC-00893	RBS-EC-70734	GGN-EC-01450	PLP-EC-05885
ANO-EC-02886	RBS-EC-02692	GGN-EC-00085	GGN-EC-01452	PLP-EC-
09121				
ANO-EC-03069	RBS-EC-03275	GGN-EC-00224	GGN-EC-02048	PLP-EC-
12392				
ANO-EC-04461	RBS-EC-03643	GGN-EC-02048	GGN-EC-02065	PLP-EC-
14181				
ANO-EC-08043	RBS-EC-03850	GGN-EC-02058	GGN-EC-13326	PLP-EC-
18042				
ANO-EC-00608	RBS-EC-03275	GGN-EC-02065	GGN-EC-13354	PLP-EC-
06553				
WF3-EC-15451	RBS-EC-05932	GGN-EC-02107	GGN-EC-13355	PLP-EC-
12731				
WF3-EC-10706	RBS-EC-06947	GGN-EC-02110	ANO U-1 EC 01039	
WF3-EC-01830	RBS-EC-07239	GGN-EC-02201	ANO U-1 EC 05808	
WF3-EC-07960	RBS-EC-08504	GGN-EC-02784	ANO U-1 EC 13153	
WF3-EC-01166	RBS-EC-12204	GGN-EC-04538	ANO U-1 EC 00380	
WF3-EC-09046	RBS-EC-13128	GGN-EC-06299	ANO U-1 EC 05054	
WF3-EC-00935	RBS-EC-16451	GGN-EC-06301	ANO U-1 EC 05388	
WF3-EC-01166	RBS-EC-70752	GGN-EC-07471	ANO U-1 EC 06241	
WF3-EC-01396	RBS-EC-07368	GGN-EC-07716	ANO U-1 EC 07032	
WF3-EC-01782	RBS-EC-03852	GGN-EC-06875	ANO U-1 EC 13224	
WF30EC-03013	RBS-EC-03853	GGN-EC-06039	WF3-EC-844881	
WF3-EC-11284	RBS-EC-03975	GGN-EC-06086	WF3-EC-05854	
WF3-EC-13981	RBS-EC-70733	GGN-EC-00494	VYT-EC-03138	

AUDIT REPORTS /SURVEILLANCES

Corporate ANSI Level III Surveillance of VY Inspection Program  
 PNP Pre-NIEP 2009 Report  
 PNP Pre-NIEP 2010  
 VY Pre-NIEP 2007 LO-VTYLO-2007-00029  
 Palisades Pre-NIEP 2009  
 Palisades 2008 Pre-NIEP Report  
 JAF Pre-NIEP August 2007  
 IPEC Pre-NIEP 2009  
 IPEC 2008 Pre- NIEP Assessment  
 GGNS Pre-NIEP Report final May 2008  
 GGNS Pre-NIEP 2009  
 ANO Pre-NIEP 2010  
 WF3 Pre-NIEP 2007 W3 CEO2008-00026  
 QA-13-2009-PLP-01 PLP NIEP 2009

QA-13-2009-GGNS-1 GGNS NIEP 2009  
QA-13-2007-VY-1 NIEP AUDIT REPORT  
NIEP - River Bend - 2007  
JAF QA 2008 NIEP Report  
IPEC 2009 NIEP Report  
WF3 NIEP 2008  
QA-10-2006-VY-1 Maintenance  
QA-10-2006-RBS-1 Maintenance  
QA-10-2006-JAF-1 Maintenance  
QA-10-2006-PNP-1 Maintenance  
QA-10-2006-IP-1 Maintenance  
QA-10-2006-GGNS-1 Maintenance  
QA-10-2006-ANO-1 Maintenance  
QA-10-2006-WF3-1 Maintenance  
QS-2010-PLP-017 PLP QC Inspection Program  
QS-2010-GGNS-011 GGNS QC Inspection Program  
QS-2010-ECH-008 ANSI Level III of IPEC  
QS-2010-ECH-007 Review of EOC for QC Inspection Point Selection  
QS-2010-ECH-006 Review of Fleet Interim Actions  
QS-2010-ECH-002 ANSI Level III of PNP  
QS-2010-ECH-001 ANSI Level III of GGNS  
QS-2009-VY-004 VY Inspection Program  
QS-2009-VY-020 VY Maintenance Inspection Program  
QS-2009-ANO-006 Corporate ANSI Level III of ANO  
QS-2008-VY-004 Peer Inspector Qualification Documentation  
QS-2010-PNPS-019 PNP Inspection Program  
QA-10-2008-VY-1 Maintenance  
QA-10-2008-RBS-1 Maintenance  
QA-10-2008-PNP-1 Maintenance  
QA-10-2008-PLP-1 Maintenance  
QA-10-2008-JAF-1 Maintenance  
QA-10-2008-IP-1 Maintenance  
QA-10-2008-GGNS-1 Maintenance  
QA-10-2008-ANO-1 Maintenance

#### AUDIT REPORTS /SURVEILLANCES

QA-10-2008-WF3-1 Maintenance  
Corporate ANSI Level III Surveillance of VY Inspection Program  
PNP Pre-NIEP 2009 Report  
PNP Pre-NIEP 2010  
VY Pre-NIEP 2007 LO-VTYLO-2007-00029  
Palisades Pre-NIEP 2009  
Palisades 2008 Pre-NIEP Report  
JAF Pre-NIEP August 2007  
IPEC Pre-NIEP 2009  
IPEC 2008 Pre- NIEP Assessment

GGNS Pre-NIEP Report final May 2008  
GGNS Pre-NIEP 2009  
ANO Pre-NIEP 2010  
WF3 Pre-NIEP 2007 W3 CEO2008-00026  
QA-13-2009-PLP-01 PLP NIEP 2009  
QA-13-2009-GGNS-1 GGNS NIEP 2009  
QA-13-2007-VY-1 NIEP AUDIT REPORT  
NIEP - River Bend - 2007  
JAF QA 2008 NIEP Report  
IPEC 2009 NIEP Report  
WF3 NIEP 2008  
QA-10-2006-VY-1 Maintenance  
QA-10-2006-RBS-1 Maintenance  
QA-10-2006-JAF-1 Maintenance  
QA-10-2006-PNP-1Maintenance  
QA-10-2006-IP-1 Maintenance  
QA-10-2006-GGNS-1 Maintenance  
QA-10-2006-ANO-1 Maintenance  
QA-10-2006-WF3-1 Maintenance  
QS-2010-PLP-017 PLP QC Inspection Program  
QS-2010-GGNS-011 GGNS QC Inspection Program  
QS-2010-ECH-008 ANSI Level III of IPEC  
QS-2010-ECH-007 Review of EOC for QC Inspection Point Selection  
QS-2010-ECH-006 Review of Fleet Interim Actions  
QS-2010-ECH-002 ANSI Level III of PNP  
QS-2010-ECH-001 ANSI Level III of GGNS  
QS-2009-VY-004 VY Inspection Program  
QS-2009-VY-020 VY Maintenance Inspection Program  
QS-2009-ANO-006 Corporate ANSI Level III of ANO  
QS-2008-VY-004 Peer Inspector Qualification Documentation  
QS-2010-PNPS-019 PNP Inspection Program  
QA-10-2008-VY-1 Maintenance  
QA-10-2008-RBS-1 Maintenance  
QA-10-2008-PNP-1 Maintenance  
QA-10-2008-PLP-1 Maintenance  
QA-10-2008-JAF-1 Maintenance  
QA-10-2008-IP-1 Maintenance  
QA-10-2008-GGNS-1 Maintenance  
QA-10-2008-ANO-1 Maintenance  
QA-10-2008-WF3-1 Maintenance

**Section 4OA3: Event Follow-Up**

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
LER 1995-012	Manual Scram Due to Recirculation Pump Transient	0
LER 2009-002	Unplanned Manual Reactor Scram Following Trip of Both Reactor Recirculation Pumps	0

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
AOP-0024	Thermal Hydraulic Stability Controls	23
GOP-0004	Single Loop Operation	20