UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 E. LAMAR BLVD.
ARLINGTON, TX 76011-4511

November 9, 2016

Mr. William F. Maguire
Site Vice President
Entergy Operations, Inc.
River Bend Station
5485 U.S. Highway 61N
St. Francisville, LA 70775

SUBJECT: RIVER BEND STATION – NRC INTEGRATED INSPECTION REPORT 05000458/2016003

Dear Mr. Maguire:

On September 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your River Bend Station, Unit 1. On October 14, 2016, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. Both of these findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations consistent with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest the violations or significance of these non-cited 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, DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement; and the NRC resident inspector at the River Bend Station.

If you disagree with a cross-cutting aspect assignment 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 U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; and the NRC resident inspector at the River Bend Station.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Gregory G. Warnick, Chief
Project Branch C
Division of Reactor Projects

Docket No.: 05000458
License No.: NPF-47

Enclosure:
Inspection Report 05000458/2016003
w/Attachment: Supplemental Information

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Letter to William F. Maguire from Gregory G. Warnick, dated November 9, 2016

SUBJECT: RIVER BEND STATION – NRC INTEGRATED INSPECTION REPORT 05000458/2016003

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000458
License:	NPF-47
Report:	05000458/2016003
Licensee:	Entergy Operations, Inc.
Facility:	River Bend Station
Location:	5485 U.S. Highway 61N St. Francisville, LA 70775
Dates:	July 1 through September 30, 2016
Inspectors:	J. Sowa, Senior Resident Inspector B. Parks, Acting Resident Inspector J. Melfi, Acting Resident Inspector P. Elkmann, Senior Emergency Preparedness Inspector G. Guerra, CHP, Emergency Preparedness Inspector S. Hedger, Operations Engineer M. Chambers, Physical Security Inspector
Approved By:	G. Warnick, Chief Project Branch C Division of Reactor Projects

Enclosure

SUMMARY

IR 05000458/2016003; 07/01/2016 – 09/30/2016; River Bend Station; Problem Identification and Resolution; Follow-up of Events and Notices of Enforcement Discretion

The inspection activities described in this report were performed between July 1 and September 30, 2016, by the resident inspectors at River Bend Station and inspectors from the NRC's Region IV office. Two findings of very low safety significance (Green) are documented in this report. Both of these findings involved violations of NRC requirements. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using NRC Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using NRC Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas." Violations of NRC requirements are dispositioned in accordance with the NRC Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to promptly identify and correct a condition adverse to quality. Specifically, after receiving a vendor nonconformance report identifying a failure-to-close vulnerability in Masterpact circuit breakers, the licensee failed to fully diagnose the extent of the vulnerability and take actions to correct the adverse impacts on safety-related plant systems. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2016-01702 and Condition Report CR-RBS-2016-03637. Corrective actions included implementing modifications to affected Masterpact circuit breakers.

  The failure to fully evaluate and correct binding vulnerabilities in Masterpact circuit breakers was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee's failure to appropriately resolve binding vulnerabilities in Masterpact circuit breakers adversely affected the availability, reliability, and capability of emergency diesel generators, standby gas treatment fans, auxiliary building unit coolers, and containment unit coolers. The inspectors performed the initial significance determination using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The finding required a detailed risk evaluation because it involved a loss of system and/or function. A Region IV senior reactor analyst performed a detailed risk evaluation for the issue and determined the issue to be of very low safety significance (Green). The finding had a cross-cutting aspect in the area of problem identification and resolution, evaluation, because the licensee failed to thoroughly evaluate an issue to ensure that the resolution addressed causes and extent of conditions commensurate with their safety significance [P.2]. (Section 4OA2.2)

- Green. The inspectors reviewed two examples of a self-revealing, non-cited violation of Technical Specification 5.4, "Procedures," for the licensee's failure to establish adequate instructions in the control building chilled water system operating procedures. The procedures for operating the control building chilled water system did not establish limits on

oil level as a prompt to swap chillers. As a result, station personnel did not take action to swap chillers, which resulted in a trip of the in-service control building chiller. The licensee entered these issues into their corrective action program as Condition Reports CR-RBS-2015-08834 and CR-RBS-2016-03361. Corrective actions included initiating a standing order to provide guidance on monitoring oil levels and direction to alternate operating chillers.

The failure to establish limits on oil level as a prompt to swap control building chillers in quality related system operating Procedure SOP-0066, "Control Building HVAC Chilled Water System," Revision 328, was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to alternate operating chillers on December 10, 2015, and again on May 2, 2016, upon the observance of rising oil level in the sight glass, resulted in a trip of control building chilled water system chillers 1D and 1C, respectively, and unplanned inoperability and limiting condition for operation entries for multiple safety-related systems. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined this finding to be of very low safety significance (Green) because the finding did not represent an actual loss of function of one or more trains of safety-related equipment for greater than its technical specification allowed outage time. The finding had a cross-cutting aspect in the area of problem identification and resolution, operating experience, because the licensee failed to systematically and effectively collect, evaluate, and implement relevant internal and external operating experience in a timely manner. Specifically, the station had previously identified in Condition Report CR-RBS-2006-04291 that the oil phenomenon was the cause of control building chilled water system chiller trips [P.5]. (Section 4OA3.2)

PLANT STATUS

River Bend Station began and ended the inspection period at 100 percent reactor thermal power with no significant departures from full power.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

Readiness to Cope with External Flooding

a. Inspection Scope

On July 21, 2016, the inspectors completed an inspection of the station's readiness to cope with external flooding. After reviewing the licensee's flooding analysis, the inspectors chose three plant areas that were susceptible to flooding:

- Residual heat removal train A pump room
- High pressure core spray pump room
- Division II emergency diesel generator

The inspectors reviewed plant design features and licensee procedures for coping with flooding. The inspectors walked down the selected areas to inspect the design features, including the material condition of seals, drains, and flood barriers. The inspectors evaluated whether credited operator actions could be successfully accomplished.

These activities constitute one sample of readiness to cope with external flooding, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- August 5, 2016, Division I emergency diesel generator
- August 17, 2016, Division I residual heat removal system

- August 30, 2016, high pressure core spray while the Division I residual heat removal system was out of service for maintenance

The inspectors reviewed the licensee's procedures and system design information to determine the correct lineup for the systems. They visually verified that critical portions of the systems were correctly aligned for the existing plant configuration.

These activities constitute three partial system walkdown samples, as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

On August 4, 2016, the inspectors performed a complete system walkdown inspection of the reactor core isolation cooling system. The inspectors reviewed the licensee's procedures and system design information to determine the correct system lineup for the existing plant configuration. The inspectors also reviewed outstanding work orders, open condition reports, in-process design changes, temporary modifications, and other open items tracked by the licensee's operations and engineering departments. The inspectors then visually verified that the system was correctly aligned for the existing plant configuration.

These activities constitute one complete system walkdown sample, as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

Quarterly Inspection

a. Inspection Scope

The inspectors evaluated the licensee's fire protection program for operational status and material condition. The inspectors focused their inspection on four plant areas important to safety:

- July 1, 2016, control building, standby switchgear 1B, fire area C-14
- July 27, 2016, fire pump house, diesel fire pump A, electric fire pump, and diesel fire pump 1B, fire areas FP-1, FP-2, and FP-3
- August 4, 2016, auxiliary building, residual heat removal C, reactor core isolation cooling, and reactor water cleanup, fire area AB-4

- August 13, 2016, auxiliary building, heating, ventilation and air conditioning room, fire area AB-17

For each area, the inspectors evaluated the fire plan against defined hazards and defense-in-depth features in the licensee's fire protection program. The inspectors evaluated control of transient combustibles and ignition sources, fire detection and suppression systems, manual firefighting equipment and capability, passive fire protection features, and compensatory measures for degraded conditions.

These activities constitute four quarterly inspection samples, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

On August 11, 2016, the inspectors completed an inspection of the station's ability to mitigate flooding due to internal causes. After reviewing the licensee's flooding analysis, the inspectors chose one plant area containing risk-significant structures, systems, and components that was susceptible to flooding:

- Diesel generator operating area DG-89-1

The inspectors reviewed plant design features and licensee procedures for coping with internal flooding. The inspectors walked down the selected area to inspect the design features, including the material condition of seals, drains, and flood barriers. The inspectors evaluated whether operator actions credited for flood mitigation could be successfully accomplished.

These activities constitute completion of one flood protection measures sample, as defined in Inspection Procedure 71111.06.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

On September 12, 2016, the inspectors completed an inspection of the readiness and availability of risk-significant heat exchangers. They reviewed the data from a performance test for the Division II spent fuel pool cooling heat exchanger and verified the licensee used the industry standard periodic maintenance method outlined in EPRI NP-7552. The inspectors verified that the spent fuel pool heat exchanger 1B was

correctly categorized under the Maintenance Rule and was receiving the required maintenance.

These activities constitute completion of one heat sink performance annual review sample, as defined in Inspection Procedure 71111.07.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11)

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On July 26, 2016, the inspectors observed a portion of an annual requalification test for licensed operators. The inspectors assessed the performance of the operators and the evaluators' critique of their performance. The inspectors also assessed the modeling and performance of the simulator during the requalification activities.

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

b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

On September 8, 2016, the inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened activity due to surveillance testing of the reactor core isolation cooling system.

In addition, the inspectors assessed the operators' adherence to plant procedures, including the conduct of operations procedure and other operations department policies.

These activities constitute completion of one quarterly licensed operator performance sample, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed two instances of degraded performance or condition of safety-related structures, systems, and components (SSCs):

- September 9, 2016, control building chillers, functional failure review
- September 19, 2016, Division I emergency diesel generator jacket water cooling, functional failure review

The inspectors reviewed the extent of condition of possible common cause SSC failures and evaluated the adequacy of the licensee's corrective actions. The inspectors reviewed the licensee's work practices to evaluate whether these may have played a role in the degradation of the SSCs. The inspectors assessed the licensee's characterization of the degradation in accordance with 10 CFR 50.65 (the Maintenance Rule), and verified that the licensee was appropriately tracking degraded performance and conditions in accordance with the Maintenance Rule.

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

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed three risk assessments performed by the licensee prior to changes in plant configuration and the risk management actions taken by the licensee in response to elevated risk:

- July 6, 2016, yellow risk due to surveillance testing on Division I residual heat removal with Division I main steam positive leakage control system out of service
- July 26, 2016, yellow risk due to high pressure core spray system and standby service water pump SWP-P2C out of service for Division III maintenance
- September 14, 2016, yellow risk due to planned maintenance on Division II residual heat removal with Division II main steam positive leakage control system out of service

The inspectors verified that these risk assessments were performed timely and in accordance with the requirements of 10 CFR 50.65 (the Maintenance Rule) and plant procedures. The inspectors reviewed the accuracy and completeness of the licensee's risk assessments and verified that the licensee implemented appropriate risk management actions based on the result of the assessments.

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

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed five operability determinations that the licensee performed for degraded or nonconforming structures, systems, and components (SSCs):

- July 15, 2016, operability determination of reactor protection system A bus voltage oscillations (CR-RBS-2016-03316)
- July 20, 2016, operability determination of reactor core isolation cooling trip throttle valve failure to trip (CR-RBS-2015-05822)
- August 5, 2016, operability determination of Division I diesel generator cylinder 2 high exhaust temperature (CR-RBS-2016-05478)
- September 15, 2016, operability determination of leaking Division I main steam positive leakage control system isolation valves E33-MOVF007 and E33-MOVF008 (CR-RBS-2016-06165)
- September 19, 2016, operability determination of indicated reactor core isolation cooling trip/throttle valve mechanical overspeed trip (CR-RBS-2016-06393)

The inspectors reviewed the timeliness and technical adequacy of the licensee's evaluations. Where the licensee determined the degraded SSC to be operable, the inspectors verified that the licensee's compensatory measures were appropriate to provide reasonable assurance of operability. The inspectors verified that the licensee had considered the effect of other degraded conditions on the operability of the degraded SSC.

These activities constitute completion of five operability and functionality review samples, as defined in Inspection Procedure 71111.15.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

On August 5, 2016, the inspectors reviewed a permanent plant modification to modify the Division III diesel generator nominal speed setting.

The inspectors reviewed the design and implementation of the modification. The inspectors verified that work activities involved in implementing the modification did not adversely impact operator actions that may be required in response to an emergency or other unplanned event. The inspectors verified that post-modification testing was adequate to establish the operability of the SSC as modified.

These activities constitute completion of one sample of permanent modifications, as defined in Inspection Procedure 71111.18.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed five post-maintenance testing activities that affected risk-significant structures, systems, and components (SSCs):

- July 11, 2016, work order (WO) 00450380-03, "LPCS Pump and Valve Operability Test," following installation and welding of low pressure core spray check valve E21-VF033
- August 1, 2016, WO 00440154, "Perform the Division III Diesel Generator Operability Test," following maintenance overhaul on Division III diesel generator
- August 31, 2016, WO 00450380, "LPCS Pump and Valve Operability Test," following replacement of LPCS line fill pump discharge check valve E21-FV033
- September 8, 2016, WO 00454670-02, "Div I PVLCS Quarterly Valve Operability Test," following emergent work on penetration valve leakage control system compressor unloader valve LSV-AOV44A
- September 15, 2016, WO 00450681-03, "Source Range Monitor 'C'," following power supply installation and troubleshooting

The inspectors reviewed licensing- and design-basis documents for the SSCs and the maintenance and post-maintenance test procedures. The inspectors observed the performance of the post-maintenance tests to verify that the licensee performed the tests in accordance with approved procedures, satisfied the established acceptance criteria, and restored the operability of the affected SSCs.

These activities constitute completion of five post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed four risk-significant surveillance tests and reviewed test results to verify that these tests adequately demonstrated that the SSCs were capable of performing their safety functions:

In-service test:

- July 12, 2016, STP-205-6301, "LPCS Pump and Valve Operability Test," performed on July 6, 2016

Other surveillance tests:

- July 12, 2016, STP-309-0203, "Division III Diesel Generator Operability Test," performed on May 22, 2016
- July 14, 2016, STP-204-1300, "LPCI Pump A Start Time Delay Channel Calibration and Channel Functional Test," performed on July 6, 2016
- September 19, 2016, STP-0309-0203, "Division III Diesel Generator Operability Test," performed on September 18, 2016

The inspectors verified that these tests met technical specification requirements, that the licensee performed the tests in accordance with their procedures, and that the results of the tests satisfied appropriate acceptance criteria. The inspectors verified that the licensee restored the operability of the affected SSCs following testing.

These activities constitute completion of four surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP1 Exercise Evaluation (71114.01)

a. Inspection Scope

The inspectors observed the June 29, 2016, biennial emergency preparedness exercise to verify the exercise acceptably tested the major elements of the emergency plan, and provided opportunities for the emergency response organization to demonstrate key skills and functions. The scenario demonstrated the licensee's capability to implement its emergency plan through simulating:

- a loss of the normal condensate system;
- a fire on a vital electrical bus requiring offsite assistance;

- an unisolable steam break in the steam tunnel;

- a reactor coolant leak inside the drywell;

- pump and valve failures limiting the ability of operators to maintain reactor water level using the high pressure core spray, low pressure core spray, and residual heat removal systems; and

- an unfiltered monitored radiological release to the environment through turbine building ventilation.

The inspectors observed exercise activities in the control room simulator and the following:

- technical support center
- operations support center
- emergency operations facility

The inspectors focused their evaluation of the licensee's performance on the risk-significant activities of event classification, offsite notification, recognition of offsite dose consequences, and development of protective action recommendations.

The inspectors also assessed recognition of, and response to, abnormal and emergency plant conditions, the transfer of decision-making authority and emergency function responsibilities between facilities, onsite and offsite communications, protection of emergency workers, emergency repair evaluation and capability, and the overall implementation of the emergency plan to protect public health and safety and the environment. The inspectors reviewed the current revision of the facility emergency plan, emergency plan implementing procedures associated with operation of the licensee's emergency response facilities, procedures for the performance of associated emergency functions, and other documents as listed in the attachment to this report.

The inspectors attended the post-exercise critiques in each emergency response facility to evaluate the initial licensee self-assessment of exercise performance. The inspectors also attended a subsequent formal presentation of critique items to plant management.

The inspectors reviewed the scenarios of the 2012 and 2014 biennial exercises and licensee drills conducted between July 2014 and May 2016 to determine whether the June 29, 2016, exercise was independent and avoided participant preconditioning in accordance with the requirements of 10 CFR Part 50, Appendix E, IV.F(2)(g). The inspectors also compared observed exercise performance with corrective action program entries and after-action reports for drills and exercises conducted between July 2014 and May 2016 to determine whether identified weaknesses had been corrected in accordance with the requirements of 10 CFR 50.47(b)(14) and 10 CFR Part 50, Appendix E, IV.F.

The inspectors discussed the integrated exercise with staff at the Federal Emergency Management Agency (FEMA), Region VI, to determine whether the exercise scenario

supported the FEMA exercise evaluation objectives and the results continued to support that participants could adequately protect the health and safety of the public.

These activities constitute one exercise evaluation sample, as defined in Inspection Procedure 71114.01.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors performed an onsite review of Entergy fleet Procedure EN-EP-801, "Emergency Response Organization," Revision 13, effective March 25, 2016, submitted March 30, 2016, and River Bend Station Emergency Plan, Revision 42. These revisions included the following:

- Moved the licensee's joint information center from the licensee's training building on site to the Louisiana Governor's Office of Homeland Security and Emergency Preparedness building in Baton Rouge, Louisiana
- Removed the (Entergy) Corporate Hot Line as a communication system located in the joint information center
- Removed joint information center habitability monitoring, credentialing, and facility security as functions performed by the licensee
- Removed the information technology specialist from the list of positions that can perform the emergency operations facility offsite communicator function
- Removed the technical support center dose assessor position and associated duties
- Removed the following positions from the joint information center: information coordinator, log keeper, joint information center logistics coordinator, inquiry response coordinator, and inquiry response staff
- Made other minor administrative changes and corrections

These revisions were compared to their previous revisions, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, and to the standards in 10 CFR 50.47(b) to determine if the revisions adequately implemented the requirements of 10 CFR 50.54(q)(3) and 50.54(q)(4). The inspectors verified that the revisions did not reduce the effectiveness of the licensee's emergency plan. These reviews were not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, these revisions are subject to future inspection.

These activities constitute completion of two emergency action level and emergency plan change samples, as defined in Inspection Procedure 71114.04.

b. Findings

No findings were identified.

1EP8 Exercise Evaluation – Scenario Review (71114.08)

a. Inspection Scope

The licensee submitted the preliminary exercise scenario for the June 29, 2016, biennial exercise to the NRC on April 26, 2016, in accordance with the requirements of 10 CFR Part 50, Appendix E, IV.F(2)(b). The inspectors performed an in-office review of the proposed scenario to determine whether it would acceptably test the major elements of the licensee's emergency plan, and provide opportunities for the emergency response organization to demonstrate key skills and functions. The inspectors discussed the preliminary exercise scenario with staff at FEMA, Region VI, to determine whether the preliminary scenario adequately supported the FEMA exercise evaluation objectives.

These activities constitute completion of one exercise scenario evaluation sample, as defined in Inspection Procedure 71114.08.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index: Heat Removal Systems (MS08)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of July 2015 through June 2016 to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constitute verification of the mitigating system performance index for heat removal systems for Unit 1, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index: Residual Heat Removal Systems (MS09)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of July 2015 through June 2016 to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constitute verification of the mitigating system performance index for residual heat removal systems for Unit 1, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index: Cooling Water Support Systems (MS10)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of July 2015 through June 2016 to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constitute verification of the mitigating system performance index for cooling water support systems for Unit 1, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.4 Drill/Exercise Performance (EP01)

a. Inspection Scope

The inspectors reviewed the licensee's evaluated exercises and selected drill and training evolutions that occurred between July 2015 and March 2016 to verify the accuracy of the licensee's data for classification, notification, and protective action recommendation (PAR) opportunities. The inspectors reviewed a sample of the licensee's completed classifications, notifications, and PARs to verify their timeliness and accuracy. The inspectors used Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data. The specific documents reviewed are described in the attachment to this report.

These activities constitute verification of the drill/exercise performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.5 Emergency Response Organization Drill Participation (EP02)

a. Inspection Scope

The inspectors reviewed the licensee's records for participation in drill and training evolutions between July 2015 and March 2016 to verify the accuracy of the licensee's data for drill participation opportunities. The inspectors verified that all members of the licensee's emergency response organization (ERO) in the identified key positions had been counted in the reported performance indicator data. The inspectors reviewed the licensee's basis for reporting the percentage of ERO members who participated in a drill. The inspectors reviewed drill attendance records and verified a sample of those reported as participating. The inspectors used Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data. The specific documents reviewed are described in the attachment to this report.

These activities constitute verification of the emergency response organization drill participation performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.6 Alert and Notification System Reliability (EP03)

a. Inspection Scope

The inspectors reviewed the licensee's records of alert and notification system tests conducted between July 2015 and March 2016 to verify the accuracy of the licensee's data for siren system testing opportunities. The inspectors reviewed procedural guidance on assessing alert and notification system opportunities and the results of periodic alert and notification system operability tests. The inspectors used Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data. The specific documents reviewed are described in the attachment to this report.

These activities constitute verification of the alert and notification system reliability performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review

a. Inspection Scope

Throughout the inspection period, the inspectors performed daily reviews of items entered into the licensee's corrective action program and periodically attended the licensee's condition report screening meetings. The inspectors verified that licensee personnel were identifying problems at an appropriate threshold and entering these problems into the corrective action program for resolution. The inspectors verified that the licensee developed and implemented corrective actions commensurate with the significance of the problems identified. The inspectors also reviewed the licensee's problem identification and resolution activities during the performance of the other inspection activities documented in this report.

b. Findings

No findings were identified.

.2 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors selected one issue for an in-depth follow-up:

On May 13, 2016, with the plant operating at full power, the operations shift manager was made aware of a design inadequacy that could potentially prevent both divisions of the standby gas treatment system from performing their design function. If an "open" signal is sent to a standby gas treatment fan breaker within 75 milliseconds of a "close" signal being sent, the breaker may bind and fail to close at the next attempt. The station's design basis includes a safe shutdown earthquake scenario that causes a loss of coolant accident concurrently with a loss of offsite power. Such an event could cause an "open" and a "close" signal to be sent to the breaker within a very short period of time, actuating the failure mechanism. The licensee's investigation of the issue determined that circuit breakers in the main control building air conditioning system and the emergency diesel generator room ventilation system were also susceptible to the postulated failure mechanism. The condition rendered both trains of standby gas treatment inoperable, which is an operation prohibited by technical specifications and a condition that could potentially prevent fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident. The cause of the event is that the licensee failed to fully diagnose the implications of the design vulnerability discussed in a nonconformance report for Masterpact circuit breakers issued in December 2014.

These activities constitute completion of one annual follow-up sample, as defined in Inspection Procedure 71152.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to promptly

identify and correct a condition adverse to quality. Specifically, after receiving a vendor nonconformance report identifying a failure-to-close vulnerability in Masterpact circuit breakers, the licensee failed to fully diagnose the extent of the vulnerability and take actions to correct the adverse impacts on safety-related plant systems. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2016-01702 and Condition Report CR-RBS-2016-03637.

Description. River Bend Station uses Nuclear Logistics Incorporated (NLI) Masterpact circuit breakers in various safety-related plant applications. These breakers have been found to be vulnerable to an intermittent failure-to-close mechanism. The vulnerability occurs whenever a Masterpact circuit breaker receives a "close" command and an "open" command at the same time. The "close" command causes the breaker's close coil plunger to extend downward, and the "open" command causes the breaker's anti-pump latch to extend out. When "close" and "open" commands occur at the same time, the anti-pump latch can push against the close coil plunger in a way that can cause the plunger to bind, preventing the breaker from closing on a subsequent "close" command. NLI documented this vulnerability in Nonconformance Report 573.

In December 2014, the licensee initiated Condition Report CR-RBS-2014-06284 to assess the vulnerability documented in Nonconformance Report 573 and evaluate its impact on the operability of safety-related equipment in the plant that utilized Masterpact circuit breakers. The condition report focused on components whose breakers receive a standing "close" signal, defined as a "close" signal that remains in place after the breaker has already closed. Whenever a breaker with a standing "close" signal trips while running, the "open" signal from the trip occurs alongside the standing "close" signal already in place, potentiating the binding mechanism described above.

The licensee's extent of condition review identified ten safety-related Masterpact circuit breakers that receive standing "close" signals whose functions could be impaired by the binding mechanism: four control building chiller breakers, four control building air handling unit breakers, and two standby gas treatment exhaust fan breakers. The standby gas treatment exhaust fans are required to be operable by Technical Specification (TS) 3.6.4.3, "Standby Gas Treatment System." The control building chillers and air handling units are not directly required to be operable by TS, but they represent necessary support equipment for systems housed in the control building that are required to be operable. In March and July of 2015, at the recommendation of the vendor, the licensee implemented a modification to these breakers designed to remove the vulnerability.

In a report dated February 16, 2016, the NRC issued two violations to River Bend Station associated with Masterpact breaker vulnerabilities (see NRC Inspection Report 05000458/2015010, ADAMS ML16047A268). NRC inspectors also shared information on the vulnerability with NLI. As a result of communications between the NRC and NLI, NLI submitted a technical bulletin documenting the issue. Upon receiving and reviewing the NLI technical bulletin, the licensee realized that additional safety-related Masterpact circuit breakers that had been screened out of the initial extent of condition review were, in fact, vulnerable to the binding mechanism. The following six safety-related breakers were deemed to be vulnerable: (1) the breakers for Fans HVP-FN2A and HVP-FN2B, the Division I and Division II emergency diesel generator room ventilation fans, (2) the breakers for Coolers HVR-UC1A and HVR-UC1B, the Division I and Division II containment unit coolers, and (3) the breakers for Coolers HVR-UC11A and

HVR-UC11B, the Division I and Division II auxiliary building unit coolers. The vulnerability in these breakers was a consequence of the fact that, after closing, they experience a standing “close" signal that lasts for approximately 60 seconds. If a loss of offsite power occurs within 60 seconds after the breaker(s) close, the breaker(s) will trip on undervoltage, creating a situation in which a simultaneous “open” and “close” signal will be present, actuating the binding mechanism and potentially preventing the breakers from re-closing as designed after the emergency diesel generators come online.

On February 24, 2016, after realizing that the failure-to-close vulnerability applied to these six additional breakers, the licensee declared all safety-related equipment supported by the breakers, to include the Division I and Division II emergency diesel generators and both trains of shutdown cooling, inoperable. In accordance with the requirements of 10 CFR 50.72, “Immediate Notification Requirements for Operating Nuclear Power Reactors,” the licensee issued an 8-hour non-emergency notification to the NRC documenting a condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to maintain the reactor in a safe shutdown condition. No shutdown actions were taken in response to the inoperability because the plant was already shut down for unrelated equipment repairs at the time of discovery.

To remove the vulnerability in the six additional breakers, the licensee implemented the same vendor-recommended modification that was used on the ten breakers initially identified as vulnerable. Additionally, the licensee conducted a follow-on extent of condition review to ensure that all vulnerabilities in safety-related Masterpact circuit breakers in the plant were appropriately identified and corrected. This issue is documented in the licensee’s corrective action program as Condition Report CR-RBS-2016-01702.

During reviews of the issue, inspectors sought to understand whether a Masterpact circuit breaker modified in accordance with the vendor recommendation would be capable of binding if an “open” signal were to occur very shortly after the breaker closes, before the close coil plunger has had time to fully retract. This question is relevant to operability because the station’s design basis postulates a scenario in which a safe shutdown earthquake causes a loss of coolant accident concurrently with a loss of offsite power. The loss of coolant accident will cause standby gas treatment fans to start, and the loss of offsite power will cause those same fans to trip on undervoltage, creating simultaneous “open” and “close” signals that could cause the breakers to bind and not re-close as designed after the emergency diesel generators come online. Additionally, it is possible that a loss of offsite power and associated undervoltage trip could occur within a small period of time of the emergency diesel generator room ventilation fans starting on a valid demand, or within a small period of time of the designated standby control building chiller starting during a divisional swap, which would actuate the binding mechanism and potentially prevent the breakers from re-closing as designed when the emergency diesel generators come online.

In response to these questions, the licensee coordinated with the vendor to conduct offsite testing of modified Masterpact breakers, exposing them to repeated cycles of “close” signals followed as soon as physically possible by “open” signals. The testing empirically demonstrated that even with the modification, the binding mechanism could still take place, particularly if a breaker were to receive an “open” command within a very

short period of time, on the order of 75 milliseconds, of having received a “close” command, before the close coil plunger has had sufficient time to retract.

On May 13, 2016, upon receipt of the results of the offsite testing, the licensee declared both trains of standby gas treatment inoperable. In accordance with the requirements of 10 CFR 50.72, “Immediate Notification Requirements for Operating Nuclear Power Reactors,” the licensee issued an 8-hour non-emergency notification to the NRC documenting a condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material.

The licensee was able to expeditiously restore a train of standby gas treatment to operable status by starting and continually running the associated standby gas treatment fan. The licensee was able to maintain the emergency diesel generators operable by starting and continually running their associated emergency diesel generator room ventilation fans. These actions were sufficient to establish operability in the presence of the newly identified vulnerability because the vulnerability does not exist when the breakers are already closed. The licensee was able to maintain systems supported by the control building air conditioning system operable through the use of a previously implemented standing order that provided specific operator actions to clear the condition in the event of breaker binding. The licensee had previously shown through analysis that these actions would be sufficient to maintain adequate cooling to safety-related components in the control building in a postulated design basis scenario.

To preclude the need to continually run standby gas treatment fans and emergency diesel generator room ventilation fans, the licensee implemented a new breaker modification designed to correct the condition by eliminating the possibility of an open command being received at the breaker within a very short period of time after a close command, before the close coil plunger has had time to fully retract. This issue is documented in the licensee’s corrective action program as Condition Report CR-RBS-2016-03637.

Analysis. The failure to fully evaluate and correct binding vulnerabilities in Masterpact circuit breakers was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee’s failure to appropriately resolve binding vulnerabilities in Masterpact circuit breakers adversely affected the availability, reliability, and capability of emergency diesel generators, standby gas treatment fans, auxiliary building unit coolers, and containment unit coolers. The inspectors performed the initial significance determination using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 2, “Mitigating Systems Screening Questions.” The finding required a detailed risk evaluation because it involved a loss of system and/or function. A Region IV senior reactor analyst performed a detailed risk evaluation for the issue.

The analyst assumed that the performance deficiency was limited to six breakers, which were the breakers for the Division I and Division II emergency diesel generator room ventilation fans, HVP-FN2A and HVP-FN2B, the Division I and Division II containment

unit coolers, HVR-UC1A and HVR-UC1B, and the Division I and Division II auxiliary building unit coolers, HVR-UC11A and HVR-UC11B.

The analyst first reviewed the breaker deficiency for the Division I and II emergency diesel generator ventilation fans. The analyst assumed that the issue would only occur when these fans were demanded to restart within a minute of being initially started. Sequences which include sequencer operations after a fan start for loss of coolant accidents were assumed to be the sequences which would provide nearly all of the risk posed from the finding. From this, the analyst assumed small, medium, and large break loss of coolant accidents were the only sequences to be analyzed. The analyst modified the NRC probabilistic risk assessment model to add the probability of a consequential loss of offsite power after a loss of coolant accident. The emergency diesel generators were then assumed to fail to run due to the failure of the ventilation fans.

The analyst assumed the exposure time was one year, specifically a year prior to December 2014, when the station first developed their manual actions to successfully recover from the issues with the Masterpact circuit breakers. The analyst then applied a recovery event which assumed the operators would be able to recover the fans by manually shutting the fan breakers locally.

For fan recovery, the analyst performed a human performance analysis using the SPAR-H methodology to determine the probability of plant personnel being able to diagnose and act to close the Masterpact circuit breakers for the emergency diesel generator room ventilation fans. Diagnosis was reviewed to be nominal with no factors identified which would adversely help or hinder plant personnel from diagnosing the need to manually close the breaker, and therefore the diagnosis failure probability was determined to be 1E-2. For action, experience/training was evaluated to be low and procedures was evaluated to be incomplete since the knowledge of how to recover a degraded Masterpact circuit breaker was not known to the site in the worst case exposure year. From this, the action failure probability was determined to be 6E-2. Combining the diagnosis and action values made the recovery failure probability 7E-2. The analyst used the NRC probabilistic risk assessment model for River Bend Station, Revision 8.20, run on SAPHIRE, Version 8.1.2, to analyze this issue. Large and medium loss of coolant accidents were the dominant sequences which were mitigated by recovery of the emergency diesel generator room ventilation fan breakers. The increase in core damage frequency due to the emergency diesel generator room ventilation fans being powered through the degraded Masterpact circuit breakers was estimated to be 1.5E-7/year.

Second, the analyst reviewed the Division I and Division II containment unit coolers. In applying NRC Inspection Manual Chapter 0609, Appendix H, “Containment Integrity Significance Determination Process,” the analyst assumed the coolers had no impact on core damage frequency and represented a Type B containment finding. The analyst screened the finding as Green because the coolers did not adversely affect the components listed in Table 6.1, “Phase 1 Screening-Type B Findings at Full Power,” of Appendix H.

Finally, the analyst reviewed the Division I and Division II auxiliary building unit coolers. The inspectors assumed that the coolers would only become unavailable when a loss of offsite power occurred followed by a loss of coolant accident. This sequence of events needed was opposite of that for the emergency diesel generator room ventilation fans,

and the loss of offsite power and loss of coolant accident were assumed to be independent events. The analyst estimated the initiating event frequency of this occurrence to be 8.8E-7/year. Because of this low frequency, any combination of loss of mitigating equipment with recovery applied would result in a maximum increase in core damage frequency less than 6.2E-8/year (Green).

The analyst combined the estimates of increase in core damage frequency of all six breakers and estimated the total change in core damage frequency to be bounded by 2.1E-7/year. The analyst reviewed the Internal Plant Examination of External Events for River Bend Station and identified no external events which would add significantly to the estimate for risk increase for the finding. Large early release frequency was qualitatively estimated to be of very low safety significance (Green).

The probability of a Masterpact breaker receiving an "open" command within a very short period of time, on the order of 75 milliseconds, of having received a "close" command, before the close coil plunger has had sufficient time to retract, was determined to be too small to meaningfully impact the detailed risk evaluation. The result of the evaluation therefore remained Green, despite the additional vulnerability uncovered by inspectors.

The finding had a cross-cutting aspect in the area of problem identification and resolution, evaluation, because the licensee failed to thoroughly evaluate an issue to ensure that the resolution addressed causes and extent of conditions commensurate with their safety-significance [P.2].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to the above, from December 9, 2014, through May 13, 2016, the licensee failed to assure that a condition adverse to quality was promptly identified and corrected. Specifically, in conducting an extent of condition review on the Masterpact circuit breaker vulnerability documented in nonconformance report 537, the licensee failed to identify and correct a vulnerability to binding in six safety-related Masterpact circuit breakers. Additionally, in implementing a vendor-recommended modification to Masterpact circuit breakers, the licensee failed to recognize that the modification was insufficient to fully eliminate the vulnerability. The licensee addressed this deficiency by implementing subsequent modifications to the affected breakers. The licensee documented these issues in Condition Reports CR-RBS-2016-01702 and CR-RBS-2016-03637. Because the finding is of very low safety significance (Green) and has been entered into the licensee's corrective action program, it is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 05000458/2016003-01, "Inadequate Design and Extent of Condition Review Leaves Circuit Breaker Failure Mechanism Uncorrected."

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report (LER) 05000458/2015-006-00, "Operations Prohibited by Technical Specifications Due to Error in Initial Operability Evaluation"

a. Inspection Scope

On July 17, 2015, with the plant operating at 92 percent power, the licensee determined that an operability evaluation previously performed on a safety-related instrument in the primary containment isolation circuitry had been conducted in error, resulting in a failure

to take actions required by technical specifications. The licensee had performed a scheduled surveillance test on a channel of the primary containment isolation logic on July 8, 2015. During that test, an error message was displayed on the associated trip unit. Operations personnel evaluated the issue and concluded that the channel was capable of performing its specified safety function and therefore operable. A subsequent review determined that this conclusion was based on information obtained from an outdated vendor manual and was incorrect. The presence of the error message suggested that the channel was not capable of performing its specified safety function, and was therefore inoperable. The required technical specification actions for the inoperable channel were to either place the channel in trip within 24 hours or isolate the primary containment path within 1 hour. When the review that determined the channel to be inoperable was completed, the time allowed for these actions had already elapsed. The licensee immediately took the required action of placing the channel in trip. The channel was restored to operable status on July 18, 2015, after the trip unit was replaced.

The licensee determined that the cause of the error was that operations personnel had a deficient understanding of the process for retrieving controlled documents, and did not know the correct method for differentiating the status of a historical controlled document from a current controlled document. As a result, an outdated version of the vendor manual was employed in the operability determination, which led to an incorrect operability conclusion. To address the deficiency, the licensee issued a corrective action to brief operators on the proper use of the document control operating system and developing a user guide.

The inspectors reviewed the LER and determined that the report adequately summarized the event. LER 05000458/2015-005-00 is closed.

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000458/2015-010-00, "Potential Loss of Safety Function of High Pressure Core Spray Due to Failure of Main Control Building Ventilation Chiller"

a. Inspection Scope

On December 11, 2015, with the plant operating at 83 percent power, the high pressure core spray system was declared inoperable following the failure of the operating chiller in the Division II control building chilled water system (HVK). HVK chiller 1D was in service when it tripped automatically due to a high bearing oil temperature signal. HVK chiller 1C started automatically as designed, and HVK chiller 1B was placed in the standby configuration 23 minutes later. The HVK system provides cooling to the equipment rooms housing the battery chargers and inverters for the safety-related onsite electrical distribution system. The loss of cooling to the various equipment rooms in the control building resulted in the inoperability of the supported safety-related equipment. Technical Specification 3.8.4, "DC Sources – Operating," Action C.1, requires the immediate declaration of inoperability of the high pressure core spray system upon entry into Condition C, which was entered for the resultant inoperability of the Division III

electrical power subsystem. The performance deficiency associated with this event is discussed below. LER 05000458/2015-010-00 is closed.

b. Findings

Introduction. The inspectors reviewed two examples of a self-revealing, Green non-cited violation of Technical Specification 5.4, "Procedures," for the licensee's failure to establish adequate instructions in the control building chilled water system operating procedures. The procedures for operating the HVK system did not establish limits on oil level as a prompt to swap chillers. As a result, station personnel did not take action to swap chillers, which resulted in a trip of the in-service control building chiller.

Description. The HVK system safety function is to provide chilled cooling water for the chilled water coils of the air conditioning units located in the control building. These units remove heat generated by personnel and equipment in the areas served by the main control room, standby switchgear rooms, and chiller equipment room air conditioning subsystems. The system is designed to operate during normal, shutdown, and postulated accident conditions.

As part of normal chiller unit operations, the refrigerant in the chiller unit entrains oil as it passes through the unit and interacts with bearings and other lubricated components. The entrained oil stays with the refrigerant as it passes through the remainder of the unit. While operating at low loads, the entrained oil will not return to the oil sump because as chiller load decreases the refrigerant flow decreases. As the refrigerant flow decreases, oil will begin to accumulate in the system instead of returning to the sump. The result is a decreased sump level, and oil must be added to prevent a low level trip. As chiller unit load increases (i.e. warmer weather adds load), the refrigerant flow increases. The higher refrigerant flow allows the entrained oil to return to the sump. The result is an increase in sump level; therefore, oil must be drained from the chiller to lower the level within acceptable ranges. This oil phenomenon occurs mostly during the winter months when outside air temperatures can swing between 30°F and 60°F in a day, ultimately resulting in swings in the chiller tonnage. The result is an increase in sump level and higher bearing oil temperatures. The inspectors reviewed two examples of inadequate procedures that resulted in an inadvertent trip of the in-service control building chiller.

- Example 1: HVK chiller 1D was placed in service on November 25, 2015, following maintenance to replace a mechanical seal. Work Order (WO) 430931 documented that 12 gallons of oil were drained and added back to the chiller. Post-maintenance checks were documented as satisfactory. On December 10, 2015, an operator logged that the load on HVK chiller 1D increased from an average of 83.5 to 96 tons, and that the sump oil level in the sight glass had also increased. On December 11, 2015, HVK chiller 1D tripped due to high oil bearing temperatures, which resulted in unplanned technical specification limiting condition for operation (LCO) action statements for the inoperability of safety-related systems supported by the cooling of HVK chiller 1D. HVK chiller 1C successfully auto-started, and operators placed HVK chiller 1B in standby and exited the applicable technical specification limiting condition for operation (LCO) actions within their allowed outage times.

- Example 2: HVK chiller 1C was placed in service on May 1, 2016, following maintenance to correct a Freon leak. WO 444298 documented that 15 gallons of

oil were drained, the oil filter was replaced, and 15 gallons were added back to the chiller. Post-maintenance checks were documented as satisfactory. On May 2, 2016, an operator observed high oil level in the HVK chiller 1C sight glass. Mechanical maintenance personnel initiated Condition Report CR-RBS-2016-03369 to document the high oil level in the sump sight glass and contacted the planning department to initiate a work package to remove the oil. While completing the review process for WO 444298, HVK chiller 1C tripped due to high oil bearing temperatures, which resulted in unplanned technical specification LCO action statements for the inoperability of safety-related systems supported by the cooling of HVK chiller 1C. HVK chiller 1D successfully auto-started, and operators placed HVK chiller 1A in standby and exited the applicable technical specification LCO actions within their allowed outage times.

Analysis. The failure to establish limits on oil level as a prompt to swap control building chillers in quality related system operating Procedure SOP-0066, "Control Building HVAC Chilled Water System," Revision 328, was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to alternate operating chillers on December 10, 2015, and again on May 2, 2016, upon the observance of rising level in the sight glass, resulted in a trip of HVK chiller 1D and 1C, respectively, and unplanned inoperability and LCO entries for multiple safety-related systems. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined this finding to be of very low safety significance (Green) because the finding did not represent an actual loss of function of one or more trains of safety-related equipment for greater than its technical specification allowed outage time. The finding had a cross-cutting aspect in the area of problem identification and resolution, operating experience, because the licensee failed to systematically and effectively collect, evaluate, and implement relevant internal and external operating experience in a timely manner. Specifically, the station had previously identified in Condition Report CR-RBS-2006-04291 that the oil phenomenon was a cause of HVK chiller trips [P.5].

Enforcement. Technical Specification 5.4, "Procedures," requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2. Section 4.s of Appendix A to Regulatory Guide 1.33 requires procedures for the operation of control room heating and ventilation systems. Contrary to the above, prior to May 12, 2016, the licensee failed to establish an adequate written procedure for the operation of control room heating and ventilation systems. Specifically, Procedure SOP-0066, "Control Building HVAC Chilled Water System," Revision 328, was inadequate in that it did not establish operational limits on HVK chiller oil level as criteria for realigning the system to another chiller. This resulted in multiple instances of unplanned inoperability of safety-related systems. The licensee restored compliance by initiating a standing order to provide guidance on monitoring oil levels and direction to alternate operating chillers until a procedure change could be completed. Because this finding is of very low safety significance and was entered into the licensee's corrective action

program as Condition Reports CR-RBS-2015-08834 and CR-RBS-2016-03361, this violation is being treated as a non-cited violation consistent with Section 2.3.2.a of the Enforcement Policy: NCV 05000458/2016003-02, "Failure to Establish Criteria for Alternating Control Building Chilled Water System Chillers."

.3 (Closed) Licensee Event Report (LER) 05000458/2016-001-00, "Potential Loss of Secondary Containment Safety Function Due to Failure of Auxiliary Building Ventilation System"

a. Inspection Scope

On January 5, 2016, the main control room received an alarm for high pressure in the auxiliary building that exceeded Technical Specification 3.6.4.1 limits. The licensee declared secondary containment inoperable and started the Division II standby gas treatment system. This action restored building pressure to the acceptable range, and secondary containment was declared operable. The licensee identified that the non-safety related auxiliary building normal ventilation system exhaust fans discharge dampers were degraded, and the flow control damper on the supply fans was not operating correctly. With the degraded dampers, some of the exhaust airflow was circulating backwards through the idle fan, which caused the high pressure in the auxiliary building. The licensee corrected the conditions in the normal ventilation system. The inspectors reviewed the LER and determined that the report adequately summarized the event. This condition was reported in accordance with 10 CFR 50.73(a)(2)(v)(C) as an event that caused the secondary containment to be potentially incapable of performing its safety function. LER 05000458/2016-001-00 is closed.

b. Findings

No findings were identified.

.4 (Closed) Licensee Event Report (LER) 05000458/2016-004-00, "Actuation of the Division I Emergency Diesel Generator and Primary Containment Isolation Logic Due to Partial Loss of Offsite Power"

a. Inspection Scope

On January 29, 2016, with the plant in cold shutdown, the station lost power on reserve station service line number one (RSS #1), which is one of two sources of offsite power required by technical specifications. The loss of power from RSS #1 caused a loss of power to the Division I safety-related bus and associated safety-related switchgear. The Division I emergency diesel generator started automatically in response to the loss as designed. Power to the Division I reactor protection system (RPS) was also lost, causing a half-scram signal and actuation of the Division I primary containment isolation logic, which isolated instrument air to containment. Prior to the event, the licensee had aligned shutdown cooling to the Division II sub-loop, so there was no impact to shutdown cooling. Approximately 8 minutes after air was isolated to containment, a full actuation of RPS occurred. Air bled off of the scram air header, causing air-operated scram valves to open, which produced a high water level condition in the control rod drive hydraulic system scram discharge volume header. The plant was already shut down, with control rods fully inserted, so there were no operational impacts due to the RPS actuation. The licensee reported the event in accordance with 10 CFR 50.73(a)(2)(iv)(A)

as an event that resulted in manual or automatic actuation of RPS and emergency diesel generators.

At the time of the event, technicians from Entergy's transmission department, a workgroup external to River Bend Station, were implementing a modification on relay setpoints for circuit breakers in the local 230kV switchyard. This modification was a corrective action issued in response to a reactor scram that occurred on November 27, 2015, as a result of transients in a 230kV transmission line. During the modification, a current signal was applied to the affected circuits without taking the necessary precautions to prevent an actuation of the protection logic, resulting in an unanticipated trip of the circuit breaker that supplies RSS #1. The licensee's investigation determined that a late change to the work package for the maintenance caused the work to proceed without the development of step-by-step instructions that conformed to nuclear industry standards. In response to the event, the licensee implemented an immediate corrective action requiring the plant manager to approve all 230kV switchyard work. Additionally, the licensee issued long-term corrective actions to revise the operating agreement between the station and the transmission department as well as the procedures used by the transmission department.

The inspectors reviewed the LER and determined that the report adequately summarized the event. LER 05000458/2016-004-00 is closed.

b. Findings

No findings were identified.

.5 (Closed) Licensee Event Report (LER) 05000458/2016-005-00, "Potential Loss of Safety Function of Onsite AC Sources and Operations Prohibited by Technical Specifications Due to Uncorrected Circuit Breaker Control Logic Design Causing Intermittent Failure to Close"

a. Inspection Scope

On February 24, 2016, with the plant in cold shutdown, the operations shift manager was made aware of a notification regarding a certain model of Masterpact circuit breakers that described a failure mode that could potentially prevent the automatic closure of the breakers. The licensee assessed the information and determined that the susceptible breakers included those powering the emergency ventilation fans in the Division I and Division II emergency diesel generator rooms and two auxiliary building unit coolers. The condition rendered both emergency diesel generators and both trains of shutdown cooling inoperable, which is an operation prohibited by technical specifications and a condition that could potentially prevent fulfillment of the safety function of structures or systems that are needed to shut down the reactor and maintain it in a safe shutdown condition. The cause of the event is that the licensee failed to recognize the breakers' vulnerability to this failure mode during an extent of condition review conducted in response to a nonconformance report for Masterpact circuit breakers issued in December 2014.

The inspectors reviewed the LER associated with the condition and determined that the report adequately documented the summary of the condition, including its cause and potential safety consequences. LER 05000458/2016-005-00 is closed.

b. Findings

The inspectors identified a Green non-cited violation for the licensee's failure to promptly identify and correct a condition adverse to quality. The finding is discussed in Section 4OA2.2 of this report.

.6 (Closed) Licensee Event Report (LER) 05000458/2016-006-00, "Potential Loss of Safety Function of Multiple Systems Due to Design Deficiency in 480-volt Circuit Breakers"

a. Inspection Scope

On May 13, 2016, with the plant operating at full power, the operations shift manager was made aware of a design inadequacy that could potentially prevent both divisions of the standby gas treatment system from performing their design function. If an "open" signal is sent to a standby gas treatment fan breaker within 75 milliseconds of a "close" signal being sent, the breaker may bind and fail to close at the next attempt. The station's design basis includes a safe shutdown earthquake scenario that causes a loss of coolant accident concurrently with a loss of offsite power. Such an event could cause an "open" and a "close" signal to be sent to the breaker within a very short period of time, actuating the failure mechanism. The licensee's investigation of the issue determined that circuit breakers in the main control building air condition system and the emergency diesel generator room ventilation system are also susceptible to the postulated failure mechanism. The condition rendered both trains of standby gas treatment inoperable, which is an operation prohibited by technical specifications and a condition that could potentially prevent fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident. The cause of the event is that the licensee failed to fully diagnose the implications of the design vulnerability discussed in a nonconformance report for Masterpact circuit breakers issued in December 2014.

The inspectors reviewed the LER associated with the condition and determined that the report adequately documented the summary of the condition, including its cause and potential safety consequences. LER 05000458/2016-006-00 is closed.

b. Findings

The inspectors identified a Green non-cited violation for the licensee's failure to promptly identify and correct a condition adverse to quality. The finding is discussed in Section 4OA2.2 of this report.

.7 (Closed) Licensee Event Report (LER) 05000458/2016-007-00, "Operations Prohibited by Technical Specifications Due to Failure to Implement Required Actions Within Completion Time"

a. Inspection Scope

On May 25, 2016, inspectors determined that there had been a violation of technical specifications during a recent planned maintenance outage of the Division I emergency diesel generator (EDG). During that outage, three material deficiencies of various subcomponents were discovered while conducting maintenance tasks. The initial operability screening of each deficiency determined that the as-found condition did not, by itself, cause the EDG to be inoperable. However, the associated condition report for

each item was flagged as “inoperable.” These determinations should have, thus, caused the operators to invoke the requirements of Technical Specification 3.8.1 and perform common cause evaluations to assure that the same conditions did not exist on the operable Division II EDG. This action was not performed.

Approximately four days following the discovery of the material deficiencies, system engineers documented operability evaluations which concluded that none of these conditions posed any potential challenge to the ability of the EDG to fulfill its safety function. It was confirmed that no similar conditions were present on the Division II EDG. The deficiencies were corrected prior to restoration of the Division I EDG to an operable status.

The inspectors reviewed the LER and determined that the report adequately summarized the event. A performance deficiency and associated finding were previously documented in Section 4OA2.2 of NRC Inspection Report 05000458/2016002 (ADAMS ML16211A189). LER 05000458/2016-007-00 is closed.

b. Findings

No findings were identified.

These activities constitute completion of seven event follow-up samples, as defined in Inspection Procedure 71153.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On May 25, 2016, the inspectors discussed the in-office review of the preliminary scenario for the June 29, 2016, biennial exercise, submitted April 26, 2016, with Mr. T. Schenk, Manager, Emergency Preparedness, and other members of the licensee staff. The licensee acknowledged the issues presented.

On July 20, 2016, the inspectors presented the results of the onsite inspection of the biennial emergency preparedness exercise conducted June 29, 2016, to Mr. W. Maguire, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On October 14, 2016, the inspectors presented the inspection results to Mr. W. Maguire, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

D. Burnett, Director, Emergency Planning, Entergy South
M. Chase, Director, Regulatory and Performance Improvement
R. Conner, Manager, Nuclear Oversight
R. Cook, Manager, Security
K. Crissman, Senior Manager, Maintenance
D. Fletcher, Manager, Supply Chain
B. Ford, Senior Manager, Fleet Regulatory Assurance
J. Henderson, Manager, Systems and Components Engineering
A. Hinton, Superintendent, Site Projects
K. Huffstatler, Senior Licensing Specialist, Regulatory Assurance
F. Hurst, Manager, Emergency Preparedness
C. King, Superintendent, Maintenance Support
R. Leasure, Superintendent, Radiation Protection
P. Lucky, Manager, Performance Improvement
W. Maguire, Site Vice President
P. O'Conner, Manager, Training
S. Peterkin, Manager, Radiation Protection
J. Reynolds, Senior Manager, Operations
D. Sandlin, Manager, Design & Program Engineering
T. Schenk, Manager, Regulatory Assurance
S. Vazquez, Director, Engineering
T. Venable, Assistant Manager, Operations
S. Vercelli, General Manager, Plant Operations
J. Vukovics, Supervisor, Reactor Engineering
J. Wieging, Senior Manager, Production
J. Wilson, Manager, Chemistry

NRC Personnel

J. Choate, Project Engineer, DRP/E

Other Contacts

D. Borland, Branch Chief, Technological Hazards Branch, FEMA Region VI
N. Williams, Chairman, Radiological Assistance Committee, FEMA Region VI

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000458/2016003-01	NCV	Inadequate Design and Extent of Condition Review Leaves Circuit Breaker Failure Mechanism Uncorrected (Section 4OA2.2)
05000458/2016003-02	NCV	Failure to Establish Criteria for Alternating Control Building Chilled Water System Chillers (Section 4OA3.2)

Closed

05000458/2015-006-00	LER	Operations Prohibited by Technical Specifications Due to Error in Initial Operability Evaluation (Section 4OA3.1)
05000458/2015-010-00	LER	Potential Loss of Safety Function of High Pressure Core Spray Due to Failure of Main Control Building Ventilation Chiller (Section 4OA3.2)
05000458/2016-001-00	LER	Potential Loss of Secondary Containment Safety Function Due to Failure of Auxiliary Building Ventilation System (Section 4OA3.3)
05000458/2016-004-00	LER	Actuation of the Division I Emergency Diesel Generator and Primary Containment Isolation Logic Due to Partial Loss of Offsite Power (Section 4OA3.4)
05000458/2016-005-00	LER	Potential Loss of Safety Function of Onsite AC Sources and Operations Prohibited by Technical Specifications Due to Uncorrected Circuit Breaker Control Logic Design Causing Intermittent Failure to Close (Section 4OA3.5)
05000458/2016-006-00	LER	Potential Loss of Safety Function of Multiple Systems Due to Design Deficiency in 480-volt Circuit Breakers (Section 4OA3.6)
05000458/2016-007-00	LER	Operations Prohibited by Technical Specifications Due to Failure to Implement Required Actions Within Completion Time (Section 4OA3.7)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Calculations/Specifications

Number	Title	Revision/Date
8.3.1.32	Design Basis Flood – River Bend Station (West Creek and Grants Bayou)	1
8.3.1.34	PMP in Site Area (Assuming no Berm Around Excavation	1

Calculations/Specifications

Number	Title	Revision/Date
8.3.1.37	Determination of Water Surface Elevations in Grants Bayou and West Creek Near Plant Site for PMF and 25-Year Flood + SSE	1
CF8503290006	Peelle Design Calculation for Pressuretight and Watertight Doors	March 15, 1985
CI8412200004	Calculations Design & Stress Analysis for Watertight & Pressuretight Doors	December 17, 1984
RBS-210.460	Specification for Missile Protected Doors	2
RBS-210.461	Specification for Pressuretight Doors, Watertight Doors, and Special Doors	2
RBS-210.462	Specification for Pressuretight and Watertight Doors	1

Condition Reports (CRs)

CR-RBS-2015-06200 CR-RBS-2015-08046 CR-RBS-2015-08941 CR-RBS-2016-04652

Section 1R04: Equipment Alignment

Condition Reports (CRs)

CR-RBS-2016-00926 CR-RBS-2016-01415 CR-RBS-2016-02355 CR-RBS-2016-06054

Drawings

Number	Title	Revision
PID-08-09A	System 309 Diesel Generator	14
PID-27-06A	System 209 Reactor Core Isolation Cooling	45
PID-27-07A	System 204 Residual Heat Removal – LPCI	38
PID-27-07B	System 204 Residual Heat Removal – LPCI	42
PID-27-07C	System 204 Residual Heat Removal – LPCI	28

Procedures

Number	Title	Revision
SOP-0030	High Pressure Core Spray	31
SOP-0035	Reactor Core Isolation Cooling System (SYS #209)	051

Training Document

Number	Title	Revision
R-STM-0209	Reactor Core Isolation Cooling (RCIC) System	13

Section 1R05: Fire Protection

Drawings

Number	Title	Revision
EB-006B	Fire Pump House Piping & Bldg Service SH-2	9
PID-08-09A	System 309 Diesel Generator	14
PID-15-01A	System 251 Fire Protection – Water & Engine Pumps	19
PID-27-06A	System 209 Reactor Core Isolation Cooling	45

Miscellaneous Documents

Number	Title	Revision
FSAR Figure 9A.2-3	Fire Area Boundaries Plant Plan Vies Elevations, 83'-0" to 106'-0"	22
R-STM-00250	Fire Protection and Detection System Training Manual	7
TR 3.7.9.1	Technical Requirement – Fire Suppression Systems	122
TR 3.7.9.2	Technical Requirement – Spray and/or Sprinkler Systems	5

Procedures

Number	Title	Revision
AB-070-503	Pre-Fire Strategies, RCIC Pump Room, Fire Area AB-4/Z1 and Z-2	4
AB-070-504	Pre-Fire Strategies, RHR Pump C Room, Fire Area AB-4/Z1 and Z-2	4
AB-171-538	HVAC Room Fire Area AB-17	2
CB-098-117	Standby Switchgear 1B Room Fire Area C-14	4
FP-095-800	Pre-Fire Strategies, Diesel Driven Fire Pump 1A Room Fire Area FP-1	3
FP-095-801	Pre-Fire Strategies, Motor Driven Fire Pump Room Fire Area FP-2	3

Procedures

Number	Title	Revision
FP-095-802	Pre-Fire Strategies, Diesel Driven Fire Pump 1B Room Fire Area FP-3	3

Section 1R06: Flood Protection Measures

Calculations

Number	Title	Revision
PN-317	Max Flood Elevations for Moderate Energy Line Cracks in Cat I Structures	1
PN-317	Max Flood Elevations for Moderate Energy Line Cracks in Cat I Structures	Addendum 02

Condition Reports (CRs)

CR-RBS-2015-05928	CR-RBS-2015-07227	CR-RBS-2016-02949	CR-RBS-2016-03612
CR-RBS-2016-05151			

Section 1R07: Heat Sink Performance

Calculations

Number	Title	Revision
223.312.-022	Nozzle Load and Seismic Stress Analysis for Fuel Pool Coolers	4
G13.18.14.0*183	Required SSW Flow Rate into the SFC Heat Exchangers	2
PN-311	Spent Fuel Pool Temperatures for Normal and Abnormal Heat Loads for Compliance with NRC Standard Review Plan 9.1.3.	2

Condition Reports (CRs)

CR-RBS-2015-00882	CR-RBS-2015-00896	CR-RBS-2015-01012	CR-RBS-2015-08910
CR-RBS-2016-01168	CR-RBS-2016-01314	CR-RBS-2016-02843	CR-RBS-2016-03802
CR-RBS-2016-05053	CR-RBS-2016-05418	CR-RBS-2016-05434	CR-RBS-2016-05464
CR-RBS-2016-05582	CR-RBS-2016-05632	CR-RBS-2016-05667	CR-RBS-2016-05878
CR-RBS-2016-05891	CR-RBS-2016-05905	CR-RBS-2016-05940	CR-RBS-2016-06007
CR-RBS-2016-06087	CR-RBS-2016-06109	CR-RBS-2016-06144	CR-RBS-2016-06195

Drawings

Number	Title	Revision
0223.312-002-005	Tube Layout for 28'' I.D. Heat Exchanger	0
PID-34-02A	Fuel Pool Cooling	23
PID-34-02B	Fuel Pool Cooling	19

Miscellaneous Documents

Number	Title	Revision/Date
	Eddy Current Inspection Report of Spent Fuel Pool Heat Exchanger SFC-E1B	August 4, 2016
221.920	Design Specification for Fuel Pool Cooling and Clean-Up Heat Exchanger Supports	1
223.312	Specification for Fuel Pool Coolers	May 7, 1973
3223.312-022-008A	Heat Exchanger Flow Rate Information	December 8, 1997

Procedures

Number	Title	Revision
EN-DC-184	NRC Generic Letter 89-13 Service Water Program	3
EN-DC-316	Heat Exchanger Performance and Condition Monitoring	7
SEP-SW-RBS-001	RBS GL89-13 Service Water Heat Exchanger Program	0
STP-602-6312	Division II Fuel Pool Cooling Pump and Valve Operability Test	305

Work Order (WO)

WO 00423712

Section 1R11: Licensed Operator Requalification Program and Licensed Operator Performance

Training Document

Number	Title	Revision
RSMS-OPS-630	Simulator Training – Loss of CRD Pumps with Failure to Scram Hydraulic Lock	05

Section 1R12: Maintenance Effectiveness

Condition Report (CR)

CR-RBS-2016-05330

Procedures

Number	Title	Revision/Date
EN-DC-143	Engineering Health Reports	18
EN-DC-203	Maintenance Rule Program	3
EN-DC-204	Maintenance Rule Scope and Basis	3
EN-DC-205	Maintenance Rule Monitoring	5
EN-DC-206	Maintenance Rule (A)(1) Process	3
EN-LI-102	Corrective Action Program	27

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Condition Report (CR)

CR-RBS-2016-04941

Procedures

Number	Title	Revision
ADM-0096	Risk Management Program Implementation and On-line Maintenance Risk Assessment	321
ADM-0096	Risk Management Program Implementation and On-line Maintenance Risk Assessment	323
EN-WM-104	On Line Risk Assessment	012
EN-WM-104	On Line Risk Assessment	014

Section 1R15: Operability Determinations and Functionality Assessments

Condition Reports (CRs)

CR-RBS-2015-05822 CR-RBS-2016-03316 CR-RBS-2016-06165

Drawing

Number	Title	Revision
PID-00-02A	Engineering P&I Diagram Drawing Symbols & General Notes	4

Miscellaneous Documents

Number	Title	Revision/Date
0221.261-000-002	RPS MG Set Purchase Specifications	June 5, 1975
3247.130-000-001B	RPS MG Set Instruction Manual	May 9, 2007
SEP-RBS-IST-1	RBS IST Basis Document	6

Procedures

Number	Title	Revision
EN-FAP-OM-012	Prompt Investigation, Notifications and Duty Manager Responsibilities	13
EN-FAP-OP-006	Operator Aggregate Impact Index Performance Indicator	2
EN-OP-104	Operability Determination Process	11
EN-OP-115	Conduct of Operations	17
STP-209-6310	RCIC Quarterly Pump and Valve Operability Test	38

Work Order (WO)

WO 52645543

Section 1R18: Plant Modifications

Condition Reports (CR)

CR-RBS-2016-05461 CR-RBS-2016-05462

Engineering Document

Number	Title	Revision
EC 63604	Emergency Diesel Generator Division III Nominal Speed Setting Change Evaluation	0

Procedures

Number	Title	Revision
EN-DC-115	Engineering Evaluation	18
EN-LI-100	Process Applicability Determination	18
SOP-0052	HPCS Diesel Generator	54
STP-309-0203	Division III Diesel Generator Operability Test	326
STP-309-0603	Division III ECCS Test	43

Procedures

Number	Title	Revision
STP-309-0613	Division III Diesel Generator 24 Hour Run	38

Work Order (WO)

WO 00440154

Section 1R19: Post-Maintenance Testing

Condition Reports (CR)

CR-RBS-1995-00689 CR-RBS-2006-00811 CR-RBS-2016-04890 CR-RBS-2016-04899
CR-RBS-2016-05461 CR-RBS-2016-06055

Miscellaneous Documents

Number	Title	Revision/Date
0228.231-058-056C	Velan Disc – Spring BC Piston Check Reference Table	C
BOP-PT-16-021	Liquid Penetrant Examinatioin	9
BOP-VT-16-016	Visual Examination System Leakage	7
EN-MA-118	Foreign Material Exclusion	10
IOM-SFVM006-14	Installation and Operation Manual for Velan Forged Steel Valves	1
N-532-5	ASME Section XI, Division I Code Case for the Repair/Replacement Activity Documenation Requirements and INservice Inspection Summary	January 4, 2011
RB-450380-06-01	Weld Map	0
SEP-CV-RBS-001	River Bend Station Check Valve Program Review and Concurrence Sheet	1
VTD-X002-0101	Xomox/Matryx Installation, Operations and Servicing Instructions for Matryx Vane Type Actuator	0

Procedures

Number	Title	Revision
STP-205-6301	LPCS Pump and Valve Operability Test	24
STP-255-6301	Div I PVLCS Quarterly Valve Operability Test	8
STP-309-0203	Division III Diesel Generator Operability Test	326

Work Orders (WO)

WO 00429669	WO 00450380	WO 00450681	WO 00454670-01
WO 00454670-02			

Section 1R22: Surveillance Testing

Condition Reports

CR-RBS-2016-03881	CR-RBS-2016-03882	CR-RBS-2016-05003

Procedure

Number	Title	Revision
STP-051-4610	LPCS Pump and Valve Operability Test	24
STP-204-1300	LPCI Pump A Start Time Delay Channel Calibration and Channel Functional Test	18
STP-309-0203	Division III Diesel Generator Operability Test	324

Work Orders (WO)

WO 00429506	WO 00450380	WO 52688135	WO 52688138

Section 1EP1: Exercise Evaluation

Condition Reports (CRs)

CR-RBS-2015-03722	CR-RBS-2015-04035	CR-RBS-2015-04209	CR-RBS-2015-03719
CR-RBS-2015-05513	CR-RBS-2015-05681	CR-RBS-2015-06467	CR-RBS-2015-07062
CR-RBS-2015-08386	CR-RBS-2016-00055	CR-RBS-2016-00056	CR-RBS-2016-00299
CR-RBS-2016-02169	CR-RBS-2016-03032	CR-RBS-2016-04863	CR-RBS-2016-04895
CR-RBS-2016-04905			

Procedures and Documents

Number	Title	Revision/Date
	River Bend Station Emergency Plan	42
	After Action Evaluation Report for the ERO Team B Augmentation Drill	August 27, 2014
	After Action Evaluation Report for the ERO Team C Site Drill	November 5, 2014
	After Action Evaluation Report for the 2014 Onsite Medical Drill	January 14, 2015
	After Action Evaluation Report for the TSC/OSC Focused Mini Drill	May 13, 2015

Procedures and Documents

Number	Title	Revision/Date
	After Action Evaluation Report for the ERO Team A Site Drill	June 25, 2015
	After Action Evaluation Report for the ERO Team B Site Drill	August 11, 2015
	After Action Evaluation Report for the ERO Team B Augmentation Drill	August 27, 2015
	After Action Evaluation Report for the ERO Team C Site Drill	October 12, 2015
	After Action Evaluation Report for the ERO Team D Site Drill	December 9, 2015
	After Action Evaluation Report for the ERO Team B Practice Drill	April 14, 2016
	After Action Evaluation Report for the ERO Team B Dress Rehearsal Drill	May 24, 2016
EN-EP-308	Emergency Planning Critiques	3
EN-EP-609	Emergency Operations Facility Operations	2
EN-EP-610	Technical Support Center Operations	2
EN-EP-801	Emergency Response Organization	13
EN-LI-306	Drills and Exercises	7
EN-LI-308	Emergency Planning Critiques	3
EPIP 2-001	Classification of Emergencies	26
EPIP 2-002	Classification Actions	32
EPIP 2-006	Notifications	43
EPIP 2-007	Protective Action Recommendations	27
EPIP 2-012	Radiation Exposure Controls	21
EPIP 2-016	Operations Support Center	30
EPIP 2-018	Technical Support Center	38
EPIP 2-020	Emergency Operations Facility	39
EPIP 2-024	Offsite Dose Calculations	25
EPIP 2-026	Evacuation, Personnel Accountability, and Search and Rescue	20
EPP 2-202	Emergency Response Organization	14
EPP 2-501	Emergency Facilities and Equipment Readiness	16

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Procedures and Documents

Number	Title	Revision/Date
	50.54q Review for River Bend Station Emergency Plan Revision 42	January 20, 2016
EN-EP-305	Emergency Planning 50.54(Q) Review Program	4

1EP8 Exercise Evaluation – Scenario Review

No additional documents were reviewed.

Section 4OA1: Performance Indicator Verification

Condition Reports (CRs)

CR-RBS-2015-04713	CR-RBS-2015-06882	CR-RBS-2015-07229	CR-RBS-2015-07934
CR-RBS-2015-08386	CR-RBS-2016-00104	CR-RBS-2016-00166	CR-RBS-2016-00299
CR-RBS-2016-02337			

Miscellaneous Documents

Number	Title	Revision/Date
	River Bend Station Alert and Notification System, Siren Warning System Upgrade Project, FEMA REP-10 Design Report Addendum	January 4, 2013
	ERO Notification System Test Results Checklist, Augmentation Capabilities	August 12, 2014
Engineering Report RBS-SA-06-0001	RBS Mitigating System Performance Index (MSPI) Basis Document	2
NEI 99-02	Regulatory Assessment Performance Indicator Guideline	7
RBF1-16-0083	Electronic Submittal of Second Quarter 2016 NRC Performance Indicator Information	June 19, 2016

Procedure

Number	Title	Revision
EN-LI-114	Performance Indicator Process	7
EPP 2-701	Prompt Notification System Maintenance and Testing	28

Section 4OA2: Problem Identification and Resolution

Condition Reports (CRs)

CR-RBS-2016-01702 CR-RBS-2016-03637

Work Orders (WO)

00445871

Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion

Condition Reports (CR)

CR-RBS-2016-00065 CR-RBS-2016-00086 CR-RBS-2016-00149 CR-RBS-2016-03361

Drawings

Number	Title	Revision
PID-22-01A	System 403 HVAC Containment Building	9
PID-22-01B	System 403 HVAC Containment Building	16
PID-22-01D	System 409 HVAC Auxiliary Building	15
PID-22-01E	System 409 HVAC Auxiliary Building	15
PID-22-06A	System 406 HVAC Fuel Building	15
PID-22-06B	System 406 HVAC Fuel Building	10

Miscellaneous Documents

Number	Title	Revision/Date
Apparent Cause Evaluation (CR-RBS-2016-03361)	HVK-CHL1C Control Building Chiller C Tripped on High Inboard Bearing Oil Temperature	0
Standing Order #304	Guidance on Divisional Inoperability of Control Building Chilled Water System	9
Standing Order #324	Interim Operating Guidance for Control Building Chillers	1

Training Document

Number	Title	Revision
R-STM-0409	Auxiliary Building HVAC System	6