



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION IV
1600 E. LAMAR BLVD
ARLINGTON, TX 76011-4511

February 8, 2018

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 05000458/2017004

Dear Mr. Maguire:

On December 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your River Bend Station, Unit 1. On January 10, 2018, 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 one finding of very low safety significance (Green) in this report. This finding involved a violation of NRC requirements. Further, inspectors documented two licensee-identified violations, which were determined to be of very low safety significance, in this report. 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 the 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.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA M. Haire for/

Jason W. Kozal, Chief
Project Branch C
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000458/2017004
w/ Attachment: Supplemental Information

RIVER BEND STATION – NRC INTEGRATED INSPECTION REPORT 05000458/2017004 –
 DATED February 8, 2018

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000458
License: NPF-47
Report: 05000458/2017004
Licensee: Entergy Operations, Inc.
Facility: River Bend Station
Location: 5485 U.S. Highway 61N
St. Francisville, LA 70775
Dates: October 1 through December 31, 2017
Inspectors: J. Sowa, Senior Resident Inspector
B. Parks, Resident Inspector
M. Hayes, Operations Engineer
H. Freeman, Senior Reactor Inspector
Approved By: J. Kozal, Chief
Project Branch C
Division of Reactor Projects

SUMMARY

IR 05000458/2017004; 10/01/2017 – 12/31/2017; River Bend Station; Follow-up of Events and Notices of Enforcement Discretion

The inspection activities described in this report were performed between October 1 and December 31, 2017, by the resident inspectors at River Bend Station and an inspector from the NRC's Region IV office. One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. Additionally, NRC inspectors documented two licensee-identified violations of very low safety significance in this report. The significance of inspection findings is indicated by their color (i.e., Green, greater than Green, White, Yellow, or Red), determined using NRC Inspection Manual Chapter 0609, "Significance Determination Process," dated April 29, 2015. Their cross-cutting aspects are determined using NRC Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas," dated December 4, 2014. 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," dated July 2016.

Cornerstone: Mitigating Systems

- Green. The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 5.4, "Procedures," associated with the licensee's failure to properly pre-plan and perform maintenance on safety-related components in accordance with documented instructions appropriate to the circumstances. Specifically, upon loosening the set screw of a safety-related valve in the high pressure core spray system during maintenance, the licensee failed to torque the set screw to the value required by the vendor manual, which prevented the valve from fully closing when required and rendered the system inoperable. Corrective actions included restoring high pressure core spray system operability by manually closing the valve, conducting appropriate repairs, and incorporating the proper torque value into the model work order instruction for future maintenance and reassembly (Condition Report CR-RBS-2017-02773).

The failure to pre-plan and perform maintenance on safety-related components in accordance with documented instructions appropriate to the circumstances 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 properly torque the set screw on valve E22-MOVF023 led to a condition in which the high pressure core spray system was rendered inoperable when the valve was opened in conjunction with surveillance testing. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter 0609, "Significance Determination Process." Using NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2 – "Mitigating Systems Screening Questions," the inspectors determined that the finding was of very low safety significance (Green) because it did not represent an actual loss of function of at least a single train for greater than its technical specification outage time and it did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety significant in accordance with the licensee's Maintenance Rule program for greater than 24 hours. The performance

deficiency, which occurred in 1996, was not representative of current performance. Therefore, no cross-cutting aspect was assigned. (Section 4OA3.1)

Licensee-Identified Violations

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

PLANT STATUS

River Bend Station began and ended the inspection period at 100 percent reactor thermal power.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

On October 12, 2017, the inspectors completed an inspection of the station's readiness for seasonal extreme weather conditions. The inspectors reviewed the licensee's adverse weather procedures for seasonal low temperatures and evaluated the licensee's implementation of these procedures. The inspectors verified that prior to the onset of freezing weather, the licensee had corrected weather-related equipment deficiencies identified during the previous seasonal extreme cold weather season.

The inspectors selected three risk-significant systems that were required to be protected from the cold weather:

- emergency diesel generators
- control building heating, ventilation, and air conditioning
- instrument air system

The inspectors reviewed the licensee's procedures and design information to ensure the systems would remain functional when challenged by the adverse weather conditions. The inspectors verified that operator actions described in the licensee's procedures were adequate to maintain readiness of these systems. The inspectors walked down portions of these systems to verify the physical condition of the adverse weather protection features.

These activities constitute one sample of readiness for seasonal adverse weather, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

Partial Walkdown

a. Inspection Scope

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

- October 20, 2017, high pressure core spray
- November 15, 2017, Division I emergency diesel generator
- December 3, 2017, Division III emergency diesel generator

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.

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:

- October 20, 2017, high pressure core spray pump room, fire area AB-2/Z-1
- November 1, 2017, Division II emergency diesel generator room, fire area DG-4/Z-1
- November 15, 2017, Division I emergency diesel generator room, fire area DG-6/Z-1
- December 3, 2017, Division III emergency diesel generator room, fire area DG-5/Z-1

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.

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

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On October 18, 2017, the inspectors observed simulator training for an operating crew. 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

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 returning to steady state full power after a rod sequence adjustment. The inspectors observed the operators' performance of the following activities:

- October 8, 2017, return to steady state full power

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.

.3 Annual Review of Requalification Examination Results

a. Inspection Scope

The inspectors conducted an in-office review of the annual requalification training program to determine the results of this program.

On October 25, 2017, the licensee informed the inspectors of the following River Bend Station operating test results:

- 6 of 6 crews passed the simulator portion of the operating test
- 44 of 44 licensed operators passed the simulator portion of the operating test
- 44 of 44 licensed operators passed the job performance measure portion of the operating test

There were no remediations performed for the River Bend Station operating test.

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

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

Routine Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed one instance of a degraded performance or condition of safety-significant structures, systems, and components (SSCs):

- December 15, 2017, emergency diesel generators, 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 one maintenance effectiveness sample, 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 one risk assessment performed by the licensee prior to changes in plant configuration and the risk management actions taken by the licensee in response to elevated risk:

- October 11, 2017, yellow risk condition during reactor core isolation cooling surveillance testing

The inspectors verified that this risk assessment was 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 assessment and verified that the licensee implemented appropriate risk management actions based on the results of the assessment.

The inspectors verified that the licensee appropriately developed and followed a work plan for these activities. The inspectors verified that the licensee took precautions to minimize the impact of the work activities on unaffected SSCs.

These activities constitute completion of one maintenance risk assessments and emergent work control inspection sample, 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 two operability determinations that the licensee performed for degraded or nonconforming SSCs:

- October 5, 2017, operability determination of Division I emergency diesel generator after lube oil leak discovered during surveillance testing (CR-RBS-2017-07076)
- October 24, 2017, operability determination of Division I emergency diesel generator and Division I standby service water upon repair of a jacket water leak discovered during Division I emergency diesel generator surveillance testing (CR-RBS-2017-07080)

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 two operability and functionality review samples, as defined in Inspection Procedure 71111.15.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed two post-maintenance testing activities that affected risk-significant SSCs:

- October 11, work order (WO) 52628232, "EGS-EG1A 60 DPM Water Leak from Weld Above #6 Cylinder," operability run of Division I emergency diesel generator following repair of jacket water leak
- October 17, 2017, WO 00486362, "Perform Operability Testing E33-MOVF008," following maintenance on Division I main steam positive leakage control system isolation valve E33-MOVF008

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 two 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 one risk-significant surveillance test and reviewed test results to verify that this test adequately demonstrated that the SSCs were capable of performing their safety functions:

Other surveillance tests:

- October 4, 2017, STP-309-0203, "Division III Diesel Generator Operability Test," performed on September 25, 2017

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

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

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

Training Evolution Observation

a. Inspection Scope

On November 14, 2017, the inspectors observed a focused drill of the emergency response organization from the alternate emergency operations facility that included implementation of the licensee's emergency plan. The inspectors verified that the licensee's emergency classifications, offsite notifications, and protective action recommendations were appropriate and timely. The inspectors verified that any emergency preparedness weaknesses were appropriately identified by the evaluators and entered into the corrective action program for resolution.

These activities constitute completion of one training observation sample, as defined in Inspection Procedure 71114.06.

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 Reactor Coolant System Specific Activity (BI01)

a. Inspection Scope

The inspectors reviewed the licensee's reactor coolant system chemistry sample analyses for the period of October 2016 through September 2017 to verify the accuracy and completeness of the reported data. The inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample on December 22, 2017. 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 reactor coolant system specific activity performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Reactor Coolant System Total Leakage (BI02)

a. Inspection Scope

The inspectors reviewed the licensee's records of reactor coolant system total leakage for the period of October 2016 through September 2017 to verify the accuracy and completeness of the reported data. The inspectors observed the performance of the RCS leakage surveillance procedure on December 21, 2017. 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 reactor coolant system leakage performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

40A2 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 Semiannual Trend Review

a. Inspection Scope

The inspectors reviewed the licensee's corrective action program, performance indicators, system health reports, causal analyses, and other documentation to identify

trends that might indicate the existence of a more significant safety issue. The inspectors verified that the licensee was taking corrective actions to address identified adverse trends.

These activities constituted completion of one semiannual trend review sample, as defined in Inspection Procedure 71152.

b. Observations and Assessments

In the second quarter of 2017, the inspectors identified an adverse trend in the area of oversight of contractor maintenance. Examples of failures in this area, each of which involved errors on the part of contractor personnel, included a failure to properly restore the lineup of the penetration valve leakage control system after valve replacement, a failure to correctly land leads associated with control room main steam flow indicators, and a failure to properly install a tee compression fitting in the electrohydraulic control system, which ultimately resulted in a steam leak and a reactor scram.

After a review of subsequent events, the inspectors identified a broader adverse trend in the area of control of maintenance in general including maintenance performed by station personnel. Examples of failures to properly control maintenance by station personnel include:

- April 2017: failure to properly restore the control room fresh air system after maintenance during the February outage, resulting in a period of inoperability and an NRC violation documented in inspection report 05000458/2017002 (ADAMS Accession No. 17219A645)
- May 2017: addition of incorrectly specified lube oil to the Division III diesel generator, resulting in a period of inoperability and a licensee-identified NRC violation documented in inspection report 05000458/2017002 (ADAMS Accession No. 17219A645)
- June 2017: addition of incorrectly specified lube oil into control building chiller "A"
- June 2017: excessive torquing of the residual heat removal shutdown cooling isolation valve packing gland after the February outage, adversely impacting the valve's operability
- August 2017: installation of an incorrectly specified relay in the feedwater level control system during the February outage, resulting in a reactor scram
- October 2017: issuance of inadequate tagout boundaries for maintenance on a flange in the piping line of a control rod drive pump, followed by a failure to recognize that the piping line was pressurized prior to loosening a plug on the flange, resulting in a leak.

The licensee has documented the trend and implemented corrective actions to address it. The trend appears to have slowed down in the third and fourth quarters; however, these quarters are being compared to a period in the first half of the year in which the station underwent a refueling outage that created greater opportunities for work control problems to manifest.

c. Findings

No findings were identified.

40A3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report (LER) 05000458/2017-004-00, "Loss of High Pressure Core Spray Safety Function During Surveillance Due to Malfunction of Test Return Valve"

a. Inspection Scope

On March 23, 2017, while the plant was operating at 100 percent power, the high pressure core spray (HPCS) system was declared inoperable due to a malfunction in the test return valve to the suppression pool, E22-MOVF023. As a result of the malfunction, the valve was unable to fully close, which rendered the HPCS system inoperable. The inspectors reviewed the LER associated with the event and determined that the report adequately documented the summary of the event, including the cause of the event and potential safety consequences. The inspectors issued a finding for the licensee's failure to properly pre-plan and perform maintenance on safety-related components in accordance with documented instructions appropriate to the circumstances. LER 05000458/2017-004-00 is closed.

b. Findings

Introduction. The inspectors reviewed a Green, self-revealed, non-cited violation of Technical Specification 5.4, "Procedures," associated with the licensee's failure to properly pre-plan and perform maintenance on safety-related components in accordance with documented instructions appropriate to the circumstances. Specifically, upon loosening the set screw of a safety-related valve in the HPCS system during maintenance, the licensee failed to torque the set screw to the value required by the vendor manual.

Description. On March 23, 2017, while the plant was operating at 100 percent power, the HPCS system was declared inoperable due to a malfunction in the test return valve to the suppression pool, E22-MOVF023. The test return valve had been opened in conjunction with quarterly surveillance testing on the HPCS system. When the valve was given a "close" signal, it failed to fully close. The valve position lights in the control room indicated closed, but system flow parameters confirmed that the valve was partially open.

An operator inspected the valve and reported that the anti-rotation device on the actuator failed, preventing the valve from fully closing. The dislodgement of the anti-rotation device caused a displacement of the limit switches that provide valve position indication to the control room. The displacement of these switches explains why the valve indicated closed in the control room despite being partially open.

The valve has a safety function to close upon a HPCS initiation signal in order to prevent diversion of injection flow back to the suppression pool. Additionally, the valve lies within the containment pressure boundary and is required to close in order to provide primary containment isolation. With the valve unable to fully close on a "close" signal, both of these functions were impaired, and the system was declared inoperable.

It was later discovered that a set screw on the actuator had loosened, which allowed the anti-rotation device to slip down the valve stem. When the anti-rotation device slipped far enough down, the retainer keys fell out, allowing the valve stem to disengage from the anti-rotation device. A review of the valve's maintenance history indicated that the anti-rotation device had been loosened during a scheduled maintenance task in 1996. The vendor manual required the set screw to be torqued to 60 foot-pounds, but the work procedure for the maintenance task failed to specify that value. Consequently, the set screw was not properly torqued and was able to loosen over time until the anti-rotation device slipped.

Analysis. The failure to pre-plan and perform maintenance on safety-related components in accordance with documented instructions appropriate to the circumstances 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 properly torque the set screw on valve E22-MOVF023 led to a condition in which the HPCS system was rendered inoperable when the valve was opened in conjunction with surveillance testing.

The inspectors screened the finding in accordance with NRC Inspection Manual Chapter 0609, "Significance Determination Process." Using NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2 – "Mitigating Systems Screening Questions," the inspectors determined that the finding was of very low safety significance (Green) because it did not represent an actual loss of function of at least a single train for greater than its technical specification outage time, and it did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety significant in accordance with the licensee's Maintenance Rule program for greater than 24 hours. The performance deficiency, which occurred in 1996, was not representative of current performance. Therefore, no cross-cutting aspect was assigned.

Enforcement. Technical Specification 5.4, "Procedures," requires, in part, that procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2. Section 9.a of Appendix A to Regulatory Guide 1.33, Revision 2, requires, in part, that maintenance that can affect the performance of safety-related equipment be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances.

Contrary to the above, in 1996, the licensee did not ensure that maintenance that can affect the performance of safety-related equipment was performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Specifically, the licensee conducted maintenance using a work procedure that lacked an instruction to torque the set screw on a safety-related valve to the value specified in the vendor manual. The licensee entered this condition into their corrective action program as Condition Report CR-RBS-2017-02773. The licensee restored compliance by manually closing the valve, conducting appropriate repairs, and incorporating the proper torque value into the model work order instruction for future maintenance and reassembly. Because this violation was of very low safety significance

(Green) and the licensee entered the issue into their 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 05000458/2017004-01, "Loss of High Pressure Core Spray Safety Function during Surveillance Due to Malfunction of Test Return Valve."

.2 (Closed) LER 05000458/2017-006-00, "Use of Inappropriate Procedure to Sample Oil from Control Building Chillers Impairs Chiller Standby Feature and Leads to Inoperability of Safety-Related Systems"

a. Inspection Scope

On January 31, 2017, the licensee sought to complete remote shutdown system control circuit operability testing for switches associated with the control building air conditioning system. The testing is performed on a 6-year periodicity and is used, in part, to satisfy 10 CFR 50 Appendix R requirements. The licensee realized that the testing could not be completed for control building chiller C because the procedure needed to be revised to reflect changes associated with a digital modification that had been installed on the chiller in 2014.

As a corrective action, the licensee ordered an extent of condition review to determine whether procedure changes needed to be made to reflect modifications of the other three control building chillers. During this extent of condition review, the licensee discovered an issue with the way the chiller lube oil pump circuit is wired in the digital modification. The licensee identified that when the control switch for the chiller lube oil pump is placed in run, the pump will start, but the associated chiller will receive an unexpected differential oil pressure error. When the chiller is in standby, this error blocks the chiller from automatically starting on a valid start signal.

The licensee reviewed procedures for operation of the control building chiller and determined that the control switch for the chiller lube oil pump is normally in auto. By procedure, the switch is only taken to run for the purpose of oil sampling. If the licensee were to sample the oil of a chiller while it is in standby, the licensee would need to take the switch to run, which would have the effect of impairing the automatic start capability of the chiller.

The licensee reviewed operating history for the chillers and identified that on February 2, 2015, and August 3, 2015, with chiller C aligned to standby, the chiller oil pump switch for chiller C was taken to run to support an oil sample. Similarly, on March 21, 2017, with chiller D in standby, the chiller oil pump switch for chiller D was taken to run to support an oil sample. The licensee concluded that in each of these instances, when the licensee took the chiller oil pump switches to run, the licensee unintentionally blocked the automatic start capability of the chillers. Consequently, the licensee impaired the required support function of the chilled water system and rendered safety-related systems supported by that function, to include the HPCS system, inoperable.

The inspectors reviewed the LER associated with the event and determined that the report adequately documented the summary of the event, including the cause of the event and potential safety consequences. The inspectors documented a licensee-identified violation for the licensee's failure to ensure that maintenance that can affect the performance of safety-related equipment was performed in accordance with written procedures, documented instructions, or drawings appropriate to the

circumstances. Specifically, the licensee sampled oil from chillers C and D using a written procedure that was not appropriate to the circumstances in that it lacked a precaution against taking the switch for a chiller oil pump to run while the associated chiller was aligned to standby, a precaution that was necessary in light of the digital modification to the system. LER 05000458/2017-006-00 is closed.

b. Findings

A licensee-identified violation is documented in Section 40A7.

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

40A6 Meetings, Including Exit

Exit Meeting Summary

On January 10, 2018, the inspectors presented the integrated 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.

40A7 Licensee-Identified Violations

The following licensee-identified violations of NRC requirements were determined to be of very low safety significance (Green) and meet the NRC Enforcement Policy criteria for being dispositioned as non-cited violations:

- Technical Specification 5.4, "Procedures," requires, in part, that procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2. Section 9.a of Appendix A to Regulatory Guide 1.33, Revision 2, requires, in part, that maintenance that can affect the performance of safety-related equipment be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to the above, on February 2, 2015, August 3, 2015, and March 21, 2017, the licensee failed to ensure that maintenance that can affect the performance of safety-related equipment was performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Specifically, the licensee sampled oil from chillers C and D using a written procedure that was not appropriate to the circumstances in that it lacked a precaution against taking the switch for a chiller oil pump to run while the associated chiller was aligned to standby, a precaution that was needed in light of a recent modification to the system. This error resulted in the temporary inoperability of the control building chilled water system. This finding was determined 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 licensee entered this issue into their corrective action program as Condition Report CR-RBS-2017-00728.
- Title 10 CFR Part 50.47(b)(2), "Onsite Emergency Organization," requires, in part, that adequate staffing to provide initial facility accident response in key functional areas is maintained at all times. Contrary to the above, on multiple occasions from

September 2016 to August 2017, the licensee failed to maintain adequate staffing to provide initial facility accident response in key functional areas. Specifically, as a result of a personnel error in the maintenance department, the licensee assigned individuals to be members of the emergency response organization (ERO) when those individuals had not completed all required training in accordance with scheduled periodicities. This finding was determined to be of very low safety significance (Green) because the failure resulted from personnel error in the implementation of an appropriate staffing process rather than a failure to have an appropriate staffing process in place, because the failure did not cause ERO staffing levels to fall below minimum staffing levels in more than one ERO functional area, and because emergency preparedness responsibility for any key ERO member functions did not go unassigned. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2017-06008.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Askew, Manager, Supply Chain
D. Burnett, Director, Emergency Planning, Entergy South
M. Chase, Director, Regulatory & Performance Improvement
B. Cole, Corporate Radiation Protection
R. Conner, Manager, Nuclear Oversight
R. Cook, Manager, Security
K. Crissman, Senior Manager, Production
D. Durocher, Supervisor, Code Program
J. Ewing, Supervisor, Reactor Engineering
B. Ford, Senior Manager, Fleet Regulatory Assurance
J. Henderson, Manager, Systems & Components Engineering
J. Hurst, Manager, Emergency Preparedness
B. Johns, Licensing Specialist, Regulatory Assurance
G. Kimich, Initial Exam Development Lead
C. King, Superintendent, Maintenance Support
R. Leasure, Superintendent, Radiation Protection
P. Lucky, Manager, Performance Improvement
W. Maguire, Site Vice President
J. McCoy, Assistant Manager, Operations
R. Northrop, Licensed Operator Requalification Program Lead
J. O'Connor, Senior Manager, Maintenance
S. Peterkin, Manager, Radiation Protection
M. Ponzio, Manager, Chemistry
M. Runion, Senior Manager, Site Projects and Maintenance Services
D. Sandlin, Manager, Design & Program Engineering
T. Schenk, Manager, Regulatory Assurance
K. Stupak, Manager, Training
S. Vazquez, Director, Engineering
T. Venable, Manager, Operations
S. Vercelli, General Manager, Plant Operations
J. Wilson, Manager, Chemistry

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000458/2017004-01 NCV Loss of High Pressure Core Spray Safety Function During Surveillance Due to Malfunction of Test Return Valve (Section 4OA3.1)

Closed

05000458/2017-004-00 LER Loss of High Pressure Core Spray Safety Function During Surveillance Due to Malfunction of Test Return Valve (Section 4OA3.1)

05000458/2017-006-00 LER Potential Loss of Safety Function of Onsite Power Sources due to Inadvertent Inoperability of Control Building Chiller (Section 4OA3.2)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Condition Report (CR)

CR-RBS-2016-07075

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AOP-0029	Severe Weather Operation	039
OSP-0043	Freeze Protection and Temperature Maintenance	033

Section 1R04: Equipment Alignment

Condition Report (CR)

CR-RBS-2017-01164 CR-RBS-2017-02303 CR-RBS-2017-05457

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
SOP-0030	High Pressure Core Spray	32
SOP-0052	HPCS Diesel Generator (SYS #309)	57
SOP-0053	Standby Diesel Generator and Auxiliaries	337

Section 1R05: Fire Protection

Calculation

<u>Number</u>	<u>Title</u>	<u>Revision</u>
G13.18.12.2-022	River Bend Station Combustible Loading	005

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AB-070-506	HPCS Pump Room Fire Area AB-2/Z-1	4
DG-098-050	Diesel Generator B Room Fire Area DG-4/Z-1	3
DG-098-052	Diesel Generator C Room Fire Area DG-5/Z-1	4
DG-098-054	Diesel Generator A Room Fire Area DG-6/Z-1	4

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

Condition Report (CR)

CR-RBS-2017-07174

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
RSMS-OPS-0439	Lesson Plan: Head Flange Seal Leak, Loss of RPS Bus B with Failure to Transfer to Alternate	08
RSMS-OPS-0595	Lesson Plan: Steam Cooling	01

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-OP-115	Conduct of Operations	021
GOP-0005	Plant Maneuvering	328

Section 1R12: Maintenance Effectiveness

Condition Reports (CRs)

CR-RBS-2016-03522	CR-RBS-2017-03705	CR-RBS-2017-04275	CR-RBS-2017-04438
CR-RBS-2017-07080	CR-RBS-2017-07111	CR-RBS-2017-07532	

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-DC-203	Maintenance Rule Program	3
EN-DC-204	Maintenance Rule Scope and Basis	4
EN-DC-205	Maintenance Rule Monitoring	6
EN-DC-206	Maintenance Rule (A)(1) Process	3
SOP-0053	Standby Diesel Generator and Auxiliaries	338

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Condition Reports (CRs)

CR-RBS-2017-07237

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ADM-0096	Risk Management Program Implementation and On-line Maintenance Risk Assessment	326
EN-WM-104	On Line Risk Assessment	15

Section 1R15: Operability Determinations and Functionality Assessments

Calculation

<u>Number</u>	<u>Title</u>	<u>Revision</u>
G13.18.2.6*39	Lube Oil Consumption for Division I, II, III Diesel Generator	000

Condition Reports (CRs)

CR-RBS-1999-02018 CR-RBS-2000-00452 CR-RBS-2002-00672 CR-RBS-2007-03766
CR-RBS-2017-03636 CR-RBS-2017-07076 CR-RBS-2017-07080

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-OP-104	Operability Determination Process	13
OSP-0066	Extensive Damage Mitigation Procedure	29

Section 1R19: Post-Maintenance Testing

Condition Reports (CRs)

CR-RBS-2017-07162 CR-RBS-2017-07182

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
SOP-0011	Main Steam System	036
SOP-0034	MSIV Sealing System (Positive Leakage Control) and Penetration Valve Leakage Control	015
STP-208-6301	Division I MSIV Leakage Control Quarterly Valve Operability Test	008
STP-309-0611	Division I Diesel Generator 24 Hour Run	47

Work Orders (WOs)

WO 00469400 WO 00486362 WO 52628232

Section 1R22: Surveillance Testing

Condition Reports (CRs)

CR-RBS-2016-07278 CR-RBS-2017-07038

Procedure

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STP-309-0203	Division III Diesel Generator Operability Test	328

Work Orders (WOs)

WO 00469495 WO 00471727 WO 00479712

Section 1EP6: Drill Evaluation

Procedure

<u>Number</u>	<u>Title</u>	<u>Revision</u>
RDRL-EP-FD-04	Focused Drill Scenario	2

Section 40A1: Performance Indicator Verification

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
NEI 99-02	Regulatory Assessment Performance Indicator Guideline	7
RBF1-17-0124	Electronic Submittal of Third Quarter 2017 NRC Performance Indicator Information	October 23, 2017
STP-000-0001	Daily Operating Logs	82

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
COP-0001	Sampling Via Various Balance of Plant Systems	24
COP-0032	Startup and Operation of the Reactor Sample Panel	11
CSP-0006	Chemistry Surveillance and Scheduling System	44
EN-LI-114	Performance Indicator Process	9

Section 40A2: Problem Identification and Resolution

Condition Reports (CRs)

CR-RBS-2017-03082	CR-RBS-2017-04128	CR-RBS-2017-04470	CR-RBS-2017-05033
CR-RBS-2017-06118	CR-RBS-2017-06643	CR-RBS-2017-07326	

Procedure

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-MA-101	Conduct of Maintenance	23

Section 40A3: Follow-up of Events and Notices of Enforcement Discretion

Condition Reports (CRs)

CR-RBS-2015-02660	CR-RBS-2017-00728	CR-RBS-2017-02733	CR-RBS-2017-03977
CR-RBS-2017-07606			

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OSP-0602	Remote Shutdown System Control Circuit Operability Test (Switches 43-1HVCN30, 43-1HVCN31, 43-1HVCN32, and 43-1HVKA01)	006

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STP-203-6305	HPCS Quarterly Pump and Valve Operability Test	029

Work Orders (WOs)

WO 00389047	WO 00389048	WO 00470632	WO 52762705
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