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

August 11, 2015

Mr. Eric W. Olson, 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 05000458/2015002

Dear Mr. Olson:

On June 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your River Bend Station, Unit 1. On July 14, 2015, the NRC inspectors discussed the results of this inspection with Mr. Carl Rich, General Manager, Plant Operations, and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

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

If you contest the violation or significance of this non-cited violation, 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, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC resident inspector at the River Bend Station.

If you disagree with a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV; and the NRC resident inspector at 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.: 50-458
License No.: NPF-47

Enclosure:
Inspection Report 05000458/2015002
w/ Attachment: Supplemental Information

cc w/ encl: Electronic Distribution for River Bend Station

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Letter to Eric W. Olson from Gregory G. Warnick, dated August 11, 2015

SUBJECT: RIVER BEND STATION – NRC INTEGRATED INSPECTION REPORT 05000458/2015002

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REGION IV

Docket:	05000458
License:	NPF-47
Report:	05000458/2015002
Licensee:	Entergy Operations, Inc.
Facility:	River Bend Station, Unit 1
Location:	5485 U.S. Highway 61N St. Francisville, LA 70775
Dates:	April 1 through June 30, 2015
Inspectors:	J. Sowa, Senior Resident Inspector A. Barrett, Resident Inspector B. Parks, Project Engineer J. Jacobson, Senior Reactor Operations Engineer, NRO/DCIP/EVIB J. Ortega-Luciano, Reactor Operations Engineer, NRO/DCIP/MVIB R. Laura, Senior Reactor Operations Engineer, NRO/DCIP/QVIB J. Braisted, Reactor Inspector, RIV/DRS/EB1 L. Micewski, Reactor Inspector, NRO/DCIP/MVIB
Approved By:	G. Warnick, Chief Project Branch C Division of Reactor Projects

SUMMARY

IR 05000458/2015002; 04/01/2015 - 06/30/2015; River Bend Station; Integrated Resident and Regional Report; Problem Identification and Resolution; Other Activities - Inspection of Commercial-Grade Dedication Programs

The inspection activities described in this report were performed between April 1 and June 30, 2015, by the resident inspectors at River Bend Station, an inspector from the NRC's Region IV office, and inspectors from NRC Headquarters. Two findings of very low safety significance (Green) are documented in this report. One of these findings involved a violation of NRC requirements. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using 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: Initiating Events

- Green. The inspectors reviewed a finding for the licensee's failure to raise the overvoltage setpoint on the reactor protection system A motor generator set when the output of the generator was raised. This resulted in a reduction of the operating margin between the overvoltage trip setpoint and normal operating voltage. As a result, a spike in the output of the A motor generator on February 24, 2015, exceeded the overvoltage trip setpoint and caused the reactor protection system motor generator set output breaker to open which resulted in a loss of shutdown cooling while the reactor was shut down for refueling operations. With spent fuel in the reactor vessel, reactor coolant temperature increased 6.4 degrees until reactor protection system A was re-energized and shutdown cooling was restored. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2015-01216.

  The performance deficiency is more than minor, and therefore a finding, because it is associated with the Initiating Events Cornerstone attribute of configuration control, and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the tripping of the reactor protection system A motor generator set output breaker, resulted in a loss of power to the reactor protection system. This subsequently caused a loss of shutdown cooling and decay heat removal while the plant was shut down for a refueling outage. The inspectors initially screened the finding in accordance with Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process." The inspectors used NRC Inspection Manual 0609, Appendix G, "Shutdown Operations Significance Determination Process," dated May 5, 2014, to evaluate the significance of the finding. The finding did not require a quantitative assessment because adequate mitigating equipment remained available and the finding did not constitute a loss of control, as defined in Appendix G. Therefore, the finding screened as Green. A cross-cutting aspect to this finding is not being assigned as this performance deficiency occurred in 1988 and therefore is not indicative of current licensee performance. (Section 4OA2)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to verify the adequacy of the design of replacement accumulators, 18 of which were installed in the control rod drive system at the River Bend Station. The accumulators were reverse-engineered, purchased from a commercial supplier (Tobul Accumulator), and dedicated for use as a basic component; however, the licensee's technical justification for the acceptability of the reverse-engineered component, contained in Equivalency Evaluation 98-0632-000 was inadequate. The equivalency evaluation failed to verify the adequacy of critical design parameters related to the performance of the accumulators, such as flow rates, leakage rates, pressure ranges of operation, stroke times, temperature ranges of operation, and seismic qualification. This finding was entered into the licensee's corrective action program as Condition Report CR-RBS-2014-03118.

  The performance deficiency is more than minor, and therefore a finding, because it is 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, at the time of installation, the licensee had not taken sufficient actions to ensure that the accumulators could reliably provide the motive force to insert control rods upon a scram initiation signal under all design basis conditions. The inspectors determined the finding to be of very low safety significance (Green) in accordance with Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012. Using Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined that the finding screened as Green because it did not affect other diverse methods of reactor shutdown; it did not involve manipulations that added positive reactivity to the reactor core; it did not affect control rod scram time testing data; and it did not result in the mismanagement of reactivity by the operators. A cross-cutting aspect to this finding is not being assigned as this performance deficiency occurred in 1998 and therefore is not indicative of current licensee performance. (Section 4OA5)

PLANT STATUS

River Bend Station began the inspection period with operators performing power ascension activities following refueling outage 18 until 100 percent reactor thermal power was reached on April 3, 2015. It departed from full power as follows:

- On June 1, 2015, an automatic scram occurred due to loss of instrumentation panel VBN-834 that caused feed pumps A and C to trip on low suction resulting in a Level 3 low level scram.

- On June 7, 2015, a reactor startup was performed following a forced maintenance outage. The operators continued power ascension activities and reactor power was at 75% at the end of the inspection period with ascension to 100 percent thermal power in progress.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Summer Readiness for Offsite and Alternate AC Power Systems

a. Inspection Scope

On April 30, 2015, the inspectors completed an inspection of the station's off-site and alternate-ac power systems. The inspectors inspected the material condition of these systems, including transformers and other switchyard equipment to verify that plant features and procedures were appropriate for operation and continued availability of off-site and alternate-ac power systems. The inspectors reviewed outstanding work orders and open condition reports for these systems. The inspectors walked down the switchyard to observe the material condition of equipment providing off-site power sources. The inspectors assessed corrective actions for identified degraded conditions and verified that the licensee had considered the degraded conditions in its risk evaluations and had established appropriate compensatory measures.

These activities constituted one sample of summer readiness of off-site and alternate-ac power systems, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

On April 13, 2015, the inspectors completed an inspection of the station's readiness for impending adverse weather conditions. The inspectors reviewed plant design features,

the licensee's procedures to respond to tornadoes and high winds, and the licensee's planned implementation of these procedures. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant.

These activities constituted one sample of readiness for impending adverse weather conditions, 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:

- April 13, 2015, Division II standby service water system following maintenance
- May 19, 2015, Division I emergency diesel generator while Division II emergency diesel generator out of service for maintenance
- June 5, 2015, Division I 125 volt dc power system prior to reactor startup

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 constituted 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:

- April 13, 2015, standby cooling tower, pump room A, fire area PH-1/Z-1
- April 13, 2015, standby cooling tower, pump room B, fire area PH-2/Z-1

- April 24, 2015, control building, 136-foot elevation, fire area C-25
- April 24, 2015, battery 1A room, fire area C-18

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 constituted 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 April 9, 2015, the inspectors completed an inspection of underground bunkers susceptible to flooding. The inspectors selected two underground electrical manholes that contained risk-significant or multiple-train cables whose failure could disable risk-significant equipment:

- Electrical manhole 1EMH609
- Electrical manhole 1EMH613

The inspectors observed the material condition of the cables and splices contained in the electrical manholes and looked for evidence of cable degradation due to water intrusion. The inspectors verified that the cables and vaults met design requirements.

These activities constituted completion of one bunker/manhole sample, as defined in Inspection Procedure 71111.06.

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 April 21, 2015, 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 constituted 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 June 7, 2015, 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 while performing a reactor startup following a forced maintenance outage.

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

These activities constituted 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 three instances of degraded performance or condition of safety-related structures, systems, and components:

- May 22, 2015, Division II emergency diesel generator, corrosion accumulation on fuel oil storage tank vent
- June 10, 2015, reactor heat removal system, failure of line fill pump
- June 22, 2015, instrument air system failures

The inspectors reviewed the extent of condition of possible common cause structures, systems, and components 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 structures, systems, and components. 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 constituted completion of three 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:

- April 27, 2015, severe weather including tornado warnings in the area
- May 20, 2015, maintenance on Division II standby liquid control pump concurrent with Division II emergency diesel generator maintenance
- May 25, 2015, severe weather concurrent with Division III emergency diesel generator out of service for maintenance

The inspectors verified that these risk assessment 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.

Additionally, on April 22, 2015, the inspectors also observed portions of emergent transformer yard work that had the potential to cause an initiating event.

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 structures, systems, and components.

These activities constituted completion of four 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 four operability determinations that the licensee performed for degraded or nonconforming structures, systems, and components:

- April 14, 2015, operability determination on control building door 116-22 (CR-RBS-2015-02788)

- May 20, 2015, operability determination associated with Division II emergency core cooling system line fill pump inservice testing failure (CR-RBS-2015-03762)

- May 26, 2015, operability determination on standby liquid control pump B out-of-tolerance motor bearing (CR-RBS-2015-03766)

- June 23, 2015, operability determination on a turbine bypass valve fast-acting solenoid valve failure (CR-RBS-2015-03817)

The inspectors reviewed the timeliness and technical adequacy of the licensee's evaluations. Where the licensee determined the degraded structures, systems, and components 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 structures, systems, and components.

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

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Temporary Modifications

a. Inspection Scope

On May 28, 2015, the inspectors reviewed a temporary plant modification to bypass reactor protection system A motor generator set field flash card during steady state operations that affected risk-significant structures, systems, and components.

The inspectors verified that the licensee had installed this temporary modification in accordance with technically adequate design documents. The inspectors verified that this modification did not adversely impact the operability or availability of affected structures, systems, and components. The inspectors reviewed design documentation and plant procedures affected by the modification to verify the licensee maintained configuration control.

These activities constituted completion of one sample of temporary modifications, as defined in Inspection Procedure 71111.18.

b. Findings

No findings were identified.

.2 Permanent Modifications

a. Inspection Scope

On May 20, 2015, the inspectors reviewed a permanent plant modification to adjust the over voltage setpoint and increase operating margin on reactor protection system motor generator set A that affected risk-significant structures, systems, and components.

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 functionality of the structures, systems, and components as modified.

These activities constituted 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 six post-maintenance testing activities that affected risk-significant structures, systems, and components:

- April 27, 2015, WO 00346642, “Leak Testing Following Stem Replacement and Stuffing Box Rework of Feedwater Regulating Valve F001A”
- April 27, 2015, WO 00346643, “Leak Testing Following Stem Replacement and Stuffing Box Rework of Feedwater Regulating Valve F001C”
- May 8, 2015, WO 00402091, “Seal Leak on Vault Refrigerant Compressor B”
- May 8, 2015, WO 00412986, “Repair of Off Gas Post Treatment Sample Pump”
- May 14, 2015, WO 00395502, “Clean and Repack Standby Liquid Control Pump Motor Bearings”
- May 26, 2015, WO 00414599, “Division II EDG fuel strainer transfer handle leaking fuel oil”

The inspectors reviewed licensing- and design-basis documents for the structures, systems, and components 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 structures, systems, and components.

These activities constituted completion of six 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 nine risk-significant surveillance tests and reviewed test results to verify that these tests adequately demonstrated that the structures, systems, and components were capable of performing their safety functions.

Inservice tests:

- May 1, 2015, STP-201-6310, “SLC Pump and Valve Operability Test,” performed on April 30, 2015

Reactor coolant system leak detection tests:

- June 9, 2015, STP-207-4250, “RCS-Identified and Unidentified Leakage Detection System,” performed on June 1, 2015

Other surveillance tests:

- April 6, 2015, STP-309-0203, “Division III Diesel Generator Operability Test,” performed on March 29, 2015
- April 13, 2015, STP-057-3800, “Local Leak Rate Test – Outage Summation,” performed on March 25, 2015
- April 20, 2015, STP-740-3001, “Control Room Envelope Habitability Assessment,” performed on April 13, 2015
- April 20, 2015, STP-740-3002, “Control Room Envelope Tracer Gas Test,” performed on April 13, 2015
- April 28, 2015, STP-057-7205, “Drywell Door System Leak Rate Test,” performed on March 25, 2015
- May 7, 2015, STP-309-0611, “Division I Diesel Generator 24 Hour Run,” performed on May 4, 2015
- May 15, 2015, STP-410-6312, “Division II Control Building Chilled Water Pump and Valve Operability Test,” performed on May 15, 2015

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 test satisfied appropriate acceptance criteria. The inspectors verified that the licensee restored the operability of the affected structures, systems, and components following testing.

These activities constituted completion of nine 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 May 27, 2015, the inspectors observed simulator-based licensed operator requalification training that included implementation of the licensee's emergency plan. The inspectors verified that the licensee's emergency classifications, off-site 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 constituted 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 Safety System Functional Failures (MS05)

a. Inspection Scope

For the period of April 2014 through March 2015, the inspectors reviewed licensee event reports, maintenance rule evaluations, and other records that could indicate whether safety system functional failures had occurred. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG-1022, "Event

Reporting Guidelines: 10 CFR 50.72 and 50.73," Revision 3, to determine the accuracy of the data reported.

These activities constituted verification of the safety system functional failures performance indicator for Unit 1, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index: Emergency AC Power Systems (MS06)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of April 2014 through March 2015 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 constituted verification of the mitigating system performance index for emergency ac power systems for Unit 1, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index: High Pressure Injection Systems (MS07)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of April 2014 through March 2015 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 constituted verification of the mitigating system performance index for high pressure injection systems for Unit 1, 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 Semiannual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify adverse trends. The inspectors focused their review on maintenance effectiveness, but also considered the results of daily corrective action item screening discussed in Section 4OA2.1, above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 7-month period of December 2014 through June 2015; although, some examples expanded beyond those dates where the scope of the trend warranted.

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

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

b. Observations and Assessments

No findings were identified, however the inspectors identified an adverse trend in regards to system leakage at the station. After qualitatively determining that several condition reports identified leaks in the plant, the inspectors performed keyword searches and out of 5,420 for the inspection period, found 583 condition reports with the key word "leak." Out of these results, the inspectors found 66 condition reports that had been classified as adverse conditions of low significance or higher. Although some of these leaks appear to be repetitive, the inspectors identified only four condition reports classified as adverse and requiring a causal evaluation. Further review of these identified a number of significant condition reports worthy of mentioning below, classified as either general system leakage, interfacing-system leakage (leakage from one system to another), or system-contained leakage (inability to isolate systems for repairs or other actions). The identified trend indicated a potential decline in station performance in regards to preventative maintenance and corrective actions.

General System Leakage
CR-RBS-2015-00280 – seal leakage on isophase bus ducting
CR-RBS-2015-02264 – gate pool seal leakage during refueling operations
CR-RBS-2015-00057 – emergency diesel generator intercooler oil leakage
CR-RBS-2015-00164 – scram outlet valve packing leak
CR-RBS-2015-00477 – reactor core isolation cooling (RCIC) steam leak on drain pot isolation valve packing
CR-RBS-2015-00574 – safety-related service water valve packing leak
CR-RBS-2015-00744 – improper use of storage drums resulted in leakage
CR-RBS-2015-00782 – emergency diesel generator tubing air leak
CR-RBS-2015-00858 – packing leaks on main steam isolation valves (MSIV)
CR-RBS-2015-01011 – emergency diesel generator control panel air leak
CR-RBS-2015-01463 – scram accumulator check valve leakage
CR-RBS-2015-01680 – main steam leakage control system leaking service water
CR-RBS-2015-01853 – safety-related cooling damper actuator failed leak test
CR-RBS-2015-02317 – scram accumulator check valve leakage
CR-RBS-2015-02327 – scram accumulator drain valve leakage
CR-RBS-2015-02757 – feed water pump seal leakage
CR-RBS-2015-03091 – fire water pump oil leak
CR-RBS-2015-04408 – electric driven fire water pump seal leakage
CR-RBS-2015-04817 – emergency diesel generator exhaust leak (repetitive)

Interfacing-system Leakage
CR-RBS-2014-06461 – reactor plant closed cooling water (RPCCW) system leakage into service water system
CR-RBS-2015-02496 – scram discharge pressure increase due to condensate system valve leakage
CR-RBS-2015-03611 – ultimate heat sink impacts due to RPCCW leakage into service water

System-contained Leakage
CR-RBS-2015-00641 – significant feedwater regulating valve leakage
CR-RBS-2015-00839 – leaking boundary valves prevent required firewater inspections
CR-RBS-2015-01165 – alternate depressurization system leakage
CR-RBS-2015-01307 – RCIC isolation valve leakage
CR-RBS-2015-01323 – containment purge system isolation leakage
CR-RBS-2015-01359 – MSIV drain valve leakage
CR-RBS-2015-01464 – interior steam leakage on low pressure steam turbines
CR-RBS-2015-02378 – inclined fuel transfer system blind flange leakage
CR-RBS-2015-03231 – high pressure core spray system isolation valve leakage

In addition, in CR-RBS-2015-04511 and CR-RBS-2015-04060, the station's condition review group identified an adverse trend in valve packing leaks on the feedwater and control drive systems.

.3 Annual Follow-up of Selected Issues

a. Inspection Scope

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

- On February 24, 2015, the reactor protection system A motor generator set output breaker unexpectedly opened which resulted in a loss of shutdown cooling while the plant was shut down for refueling operations.

  The inspectors assessed the licensee's problem identification threshold, cause analyses, extent of condition reviews and compensatory actions. The inspectors verified that the licensee appropriately prioritized the planned corrective actions and that these actions were adequate to address the equipment issues associated with reactor protection system motor generator set output breaker spurious trips and subsequent loss of the associated division of the reactor protection system. Specifically, the station implemented modifications to the field flash circuits and overvoltage protection relays to address recurring problems with the motor generator sets. The motor generator sets were removed from service as the primary power supplies for the reactor protection system and were designated for use as backup power supplies until a modification can be installed to replace the motor generator sets with new, more reliable equipment.

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

b. Findings

Introduction. The inspectors reviewed a Green finding for the licensee's failure to raise the overvoltage setpoint on the reactor protection system A motor generator set when the output of the generator was raised. This resulted in a reduction of the operating margin between the overvoltage trip setpoint and normal operating voltage. As a result, a spike in the output of the A motor generator on February 24, 2015, exceeded the overvoltage trip setpoint and caused the reactor protection system motor generator set output breaker to open, which resulted in a loss of shutdown cooling while the reactor was shut down for refueling operations. With spent fuel in the reactor vessel, reactor coolant temperature increased 6.4 degrees until reactor protection system A was re-energized and shutdown cooling was restored.

Description. On February 24, 2015, the plant was in Mode 5 with the reactor head removed for defueling operations. No spent fuel had been removed from the reactor. The reactor cavity water level was greater than 23 feet. Residual heat removal pump A was in service and aligned to provide shutdown cooling and removal of reactor decay heat. The A motor generator set unexpectedly tripped causing a loss of power to reactor protection system A. A loss of power to reactor protection system A resulted in isolation of the inservice shutdown cooling inboard and outboard isolation valves E-12-MOVF008 and E-12-MOVF009, which was an expected response to the loss of reactor protection system A. The isolation of these shutdown cooling valves caused a loss of decay heat removal. As a result, reactor coolant temperature rose 6.4 degrees before operators were able to re-energize reactor protection system A from the alternate power supply and restore shutdown cooling. This occurred approximately 12 minutes later.

The station conducted a failure modes analysis and root cause analysis and determined the overvoltage setpoint of the A motor generator set had been exceeded which resulted in the tripping of the reactor protection system motor generator set A output breaker and subsequent loss of shutdown cooling. The station concluded that the overvoltage setpoint of 129.4 volts was too low for the normal operating output voltage of 124 volts. The station reviewed the original vendor report that detailed overvoltage trip setpoint recommendations and testing. The vendor, General Electric, recommended the station set the overvoltage setpoint low enough to prevent damage to the motor generator set, but also high enough to avoid trips during load changes. General Electric selected an overvoltage trip setpoint of 131.5 volts for the reactor protection system A motor generator set. The General Electric tests were performed with a nominal operating voltage of 120 volts, which resulted in an 11.5-volt margin between operating voltage and trip setpoint. The station failed to consider that the normal operating voltage of the reactor protection system A motor generator set installed onsite had an operating voltage of 124.6 volts. When the trip setpoint of 129.4 volts was selected, the station reduced their operating margin to 4.8 volts, which was insufficient to withstand voltage changes of 10 volts without causing the motor generator set A output breaker to open. Engineering Evaluation and Request (EEAR) 88-C0316 raised the reactor protection system A motor generator set operating voltage to 124 volts in 1988. The station did not consider the recommendations by General Electric detailed in the engineering change package and subsequently failed to raise the overvoltage protection setpoint during implementation of the modification.

Analysis. The failure to maintain adequate margin between operating voltage and overvoltage protection, on the reactor protection system A motor generator set, was a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it is associated with the Mitigating Systems Cornerstone attribute of configuration control, and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the tripping of the reactor protection system A motor generator set output breaker, resulted in a loss of power to the reactor protection system. This subsequently caused a loss of shutdown cooling and decay heat removal while the plant was shut down for a refueling outage. The inspectors initially screened the finding in accordance with Inspection Manual Chapter 0609, Appendix G, “Shutdown Operations Significance Determination Process.” The inspectors used NRC Inspection Manual 0609, Appendix G, “Shutdown Operations Significance Determination Process,” dated May 5, 2014, to evaluate the significance of the finding. The finding did not require a quantitative assessment because adequate mitigating equipment remained available and the finding did not constitute a loss of control, as defined in Appendix G. Therefore, the finding screened as Green. This performance deficiency occurred in 1988 and is not reflective of current licensee performance.

Enforcement. Enforcement action does not apply because the performance deficiency did not involve a violation of regulatory requirements. The finding is of very low safety significance, and the issue was entered into the licensee’s corrective action program as Condition Report CR-RBS-2015-01216: FIN 05000458/2015002-01, “Inadequate Operating Margin for Reactor Protection System A Motor Generator Set for Overvoltage Protection Results in Loss of Shutdown Cooling.”

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

(Closed) Licensee Event Report 05000458/2015-001-00: Operations Prohibited by Technical Specifications Due to Deficient Local Leak Rate Test Procedures Containing Erroneous Valve Alignments

On February 18, 2015, plant personnel discovered errors in the methodology to test main steam isolation valves local leak rates. The surveillance test procedure required the normally open packing leak-off line isolation valves to be closed during testing. This configuration could mask leakage through the leak-off lines. Title 10 CFR Part 50, Appendix B, Criterion V, states in part, that "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings." Contrary to this, the surveillance procedure set a system configuration that was not appropriate to the circumstances of the testing regime. The failure to perform an adequate surveillance test is a performance deficiency. The performance deficiency is minor because further testing by the licensee did not reveal leakage from the main steam isolation valves that exceeded the leakage limit. The licensee documented this deficiency in condition report CR-RBS-2015-01005. LER 2015-001-00 is closed.

These activities constituted completion of one event follow-up sample, as defined in Inspection Procedure 71153.

4OA5 Other Activities

Since the capability of components to perform properly under their full range of design basis conditions is often not tested during normal plant operations, reasonable assurance of such performance is provided through a quality assurance program that governs the development and implementation of component technical requirements. Appropriate quality assurance requirements are also imposed by NRC licensees on suppliers and sub suppliers to ensure manufactured components comply with their technical requirements. Inspection of procurement and commercial-grade dedication programs verifies that components are properly designed and manufactured, and as such, can be relied upon to perform their intended safety functions. Dedication is the process used to ensure that safety-related components purchased from commercial suppliers without approved nuclear quality assurance programs have been properly designed, manufactured, and tested.

.1 Inspection of Commercial-Grade Dedication Programs – Pilot Inspection (43004)

Review of Equivalency Evaluations

a. Inspection Scope

The inspectors reviewed a sample of Equivalency Evaluations performed by the licensee to assess the suitability of replacement components. Equivalency Evaluations are performed when the procurement involves a component considered not to be a "like-for-like" replacement. In performing this review, the inspectors assessed the adequacy in which the licensee had identified the critical characteristics of the replacement

components, and how the licensee had verified that the identified critical characteristics were met.

b. Findings

Failure to Maintain Design Control for 18 Upgraded Hydraulic Control Unit (HCU) Accumulators

Introduction. The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to establish measures for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of systems, structures, and components. Specifically, station personnel did not perform sufficient testing or analysis as necessary to verify critical design attributes when a reverse-engineering process was used during the commercial-grade dedication of upgraded HCU accumulators in the control rod drive system.

Description. The inspectors reviewed Purchase Order 10227209 and the commercial-grade dedication package for HCU accumulators that are located in the control rod drive system. The inspectors selected this commercial-grade dedication package to review based on the safety mission of the accumulators to provide energy to insert all control rods into the reactor in the event of a reactor scram. The accumulator is a piston type, vertical unit, with water on top and a gas charge on the bottom.

The original accumulators were made of carbon steel with a chrome lining and were supplied by General Electric (GE) as safety-related components. The original accumulators experienced pitting and flaking of the chrome lining that resulted in water leakage past the piston into the gas side of the accumulator. To address this problem, GE offered an upgraded version of the accumulator design using stainless steel instead of carbon steel. Rather than purchasing this upgraded design from GE, the licensee chose an alternate procurement strategy that was based upon the reverse engineering of the newer stainless version of the GE accumulator. This procurement strategy was documented in River Bend Equivalency Evaluation No. 98-0632-000. The licensee considered the reverse-engineered product to be an equivalent replacement of the original design.

To accomplish the reverse-engineering strategy, the licensee purchased an upgraded GE accumulator as a basic component and then sent the accumulator to a commercial supplier (Tobul Accumulator). The licensee tasked Tobul Accumulator with developing design specifications for the accumulator by taking measurements and assessing material compositions. Since Tobul was a commercial supplier that did not have an approved nuclear quality assurance program, the licensee then dedicated the components. The commercial-grade dedication process consisted of a hydrostatic test pursuant to ASME Section VIII requirements, measurements of critical dimensions identified by Tobul Accumulator, and metallurgical analysis of the accumulator cylinder, piston and end caps. The purchase order required test coupons of the material, which were sent out for independent material analysis.

Tobul Accumulator subcontracted out the chrome plating of the stainless steel cylinder of the upgraded accumulator to Techmetals. The licensee reviewed Techmetals' quality

manual and found it to be similar to a 10 CFR 50, Appendix B, Quality Assurance program. Techmetals is an ISO 9002 qualified supplier.

Overall, the inspectors identified several concerns associated with the licensee's procurement and dedication of these accumulators. Since the reversed engineered accumulator was not a "like-for-like" replacement and was essentially a new component, similarity could not be established back to the GE component. Consequently, the inspectors assessed the extent to which the design of the accumulator had been verified, either by the licensee or by Tobul, prior to being installed and declared operable, as required by Criterion III of Appendix B to 10 CFR Part 50 for components that perform a safety function.

The inspectors identified that other than ASME pressure ratings, dimensions, and material requirements, the equivalency evaluation did not address critical design and functional requirements for the accumulators. Design parameters that might be critical to the performance of the accumulators such as flow rates, leakage rates, pressure ranges of operation, stroke times, temperature ranges of operation, and seismic requirements were not addressed in the equivalency evaluation, nor was sufficient testing or analysis of the reverse-engineered accumulator performed as necessary to demonstrate that the component could meet all design requirements as part of the control rod drive system.

In addition, since the reverse-engineered accumulators were essentially a new product, credit could not be taken for any testing that may or may not have been done by GE to verify the design of its products. Slight differences in tolerances, manufacturing processes, or materials could impact the validity of any GE test data to the reverse-engineered component, and the licensee had not performed an evaluation of these differences.

Furthermore, neither Tobul nor the licensee apparently had access to the original GE design and manufacturing specifications. Consequently, it could not be determined at what end of the GE tolerance spectrum the individual measurements taken by Tobul were of the sample GE accumulator cylinder, piston and end caps. Since Tobul then added additional tolerance allowances onto the acquired measurements for manufacturing purposes, the resulting measurements plus tolerances could be outside the GE specifications. This was of concern to the inspectors as certain physical dimensions, such as the clearance between the accumulator piston and the cylinder walls, seal ring groves, plating thickness and finishing tolerances could be critical to the operation of the accumulator. In addition, there was no evidence in the equivalency evaluation that consideration was given to thermal expansion rates during development of the manufacturing tolerances for the accumulators. Such thermal expansion, which could occur during accident transients, could potentially cause binding of the accumulators and prevent proper operation. The inspectors also identified that since the chrome plating process used by GE was unknown to Tobul, it is unknown as to whether there were any specific manufacturing considerations associated with the chrome plating that were important to the overall performance of the product.

Lastly, the inspectors identified that the licensee had not taken sufficient actions to ensure the seismic qualification of the replacement accumulators, through either testing or analysis. This was of concern because the Tobul replacement accumulator was not identical to the upgraded safety-related HCU sold by GE. The inspectors noted that

there can be subtle differences in the design fabrication process such as a different center of mass, variance in roundness, surface preparation, surface heat treatment, plating process, etc., that could impact performance during and after a seismic event. The equivalency evaluation only addressed the seismic requirements by noting that the change in weight of the cylinder material (carbon steel to stainless steel) was relatively small and all original attachments and interfaces to the accumulator remained the same.

During the inspection, the licensee issued Condition Report RBS-2014-03118, dated June 26, 2014, to enter the NRC questions and concerns into the corrective action program. The condition report required an operability evaluation and reportability evaluation. Subsequent to the inspection, on July 15, 2015, the licensee provided the inspectors a copy of an operability evaluation concerning this issue, which included a much more detailed analysis of certain aspects of the accumulator design.

The operability evaluation provided additional evidence regarding the acceptability of the control rod drive accumulators, which was based primarily on normal stroke time testing of the control rods, operating history, and an analysis of thermal expansion rates of critical components. The evaluation also contained statements regarding the design basis of the control rod drive system, including minimum and maximum operating temperatures and pressures.

There was also a section in the operability evaluation that discussed the safety classification of the control rod drive accumulators. While it appears that ASME allows such components to be manufactured under ASME Section VIII, which is normally reserved for non-safety-related components, the inspectors noted that the ASME certification requirements normally apply only to the pressure retaining functions of the component and do not circumvent manufacturing and quality assurance requirements that apply to the safety-related functional aspects of the components, irrespective of their pressure retaining classification, as required by Appendix B to 10 CFR Part 50.

The inspectors determined that the additional information provided in the operability determination provided reasonable assurance that the replacement HCU accumulators could perform their intended safety functions; however, prior to the inspection this information did not exist and prior to the original installation of the HCUs, there was not sufficient basis to justify the acceptability of these components.

Analysis. The failure to use proper design verification methods when using a reverse-engineering process to replace 18 HCU accumulators with an upgraded design was a performance deficiency. The inspectors used Inspection Manual Chapter (IMC) 0612, “Power Reactor Inspection Reports,” Appendix B, “Issue Screening,” to determine that 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, at the time of installation, the licensee had not taken sufficient actions to ensure that the accumulators could reliably provide the motive force to insert control rods upon a scram initiation signal under all design basis conditions. The inspectors determined the finding to be of very low safety significance (Green) in accordance with Inspection Manual Chapter 0609, Appendix A, “The Significance Determination Process for Findings At-Power,” dated June 19, 2012. Using Exhibit 2, “Mitigating Systems Screening Questions,” the inspectors determined that the

finding screened as Green because it did not affect other diverse methods of reactor shutdown; it did not involve manipulations that added positive reactivity to the reactor core; it did not affect control rod scram time testing data; and it did not result in the mismanagement of reactivity by the operators. A cross-cutting aspect to this finding is not being assigned as this performance deficiency occurred in 1998 and therefore is not indicative of current licensee performance.

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires in part that the licensee establish measures to assure that applicable regulatory requirements and design bases be correctly translated into specifications and that design control be established for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simple calculation methods, or by the performance of a suitable testing program. Contrary to the above, since 1998, the licensee did not verify the adequacy of the design for 18 reverse-engineered HCU accumulators by either design reviews or testing. Because this violation was of very low safety significance (Green) and was entered into the licensee's corrective action program as Condition Report CR-RBS-2014-03118, this violation is being treated as a non-cited violation in accordance with section 2.3.2.a of the NRC Enforcement Policy: NCV 05000458/2015002-02, "Failure to Maintain Design Control for 18 Upgraded Hydraulic Control Unit Accumulators."

Review of Commercial-Grade Dedication Procedures

a. Inspection Scope

The inspectors reviewed the licensee's policies and procedures governing the implementation of its commercial-grade dedication program to verify compliance with 10 CFR Part 50, Appendix B. The inspectors reviewed the licensee's procedures EN-DC-306, "Commercial-grade Item Evaluation" and EN-DC-313, "Procurement Engineering Process," which provide the methodology for procuring and dedicating commercial-grade items to be used in the facility, including the development of critical characteristics and the respective acceptance criteria.

b. Findings

No findings were identified.

Review of Dedication and Testing Laboratory

a. Inspection Scope

The inspectors visited the facilities at River Bend Station used by the licensee as the laboratory where they perform commercial-grade dedication. During the tour of the laboratory, the inspectors interviewed several quality control (QC) inspectors and observed implementation of the licensee's program.

The inspectors reviewed the Procurement Engineering Evaluation (PEE) and the other related documentation associated with the item being dedicated that were provided to the QC inspectors. The inspectors observed the dedication of an Auxiliary Relay Type HEA61 for Grand Gulf Nuclear Station, a Single Row Radial Bearing for Waterford Steam Electric Station, and an emergency diesel generator fuel oil strainer for River

Bend Station. In addition, during the observation of the dedication activities the inspectors verified that the instrumentation used during the dedication was calibrated.

b. Findings

No findings were identified.

Review of Individual Commercial-Grade Dedication Packages

a. Inspection Scope

The inspectors interviewed responsible engineering personnel, and reviewed policies, procedures and records associated with the dedication of commercial-grade items to verify that activities associated with commercial-grade dedication met applicable regulatory requirements. The inspectors reviewed PEEs of commercial-grade items to verify the evaluations identified the associated safety functions, postulated failure modes that may adversely affect the safety functions, effects of the equipment failures, and critical characteristics of the equipment that provided reasonable assurance that the items would perform their intended safety function.

The inspectors reviewed the following purchase order documents to verify the requirements of the PEEs were correctly translated into specifications for purchase and dedication of commercial-grade items:

- 10317566 for a valve
- 10320490 for a ball bearing
- 10394830 for a thrust bearing
- 10411188 for a ball bearing
- 10387954 for a fuel injector assembly
- 10351594 for an undervoltage relay
- 10398987 for a diesel generator fuel oil strainer
- 10342917 for lubricant grease
- 10100984 for a mounting bracket and strap
- 10358865 for a 125 VDC control relay
- 10307490 for refurbishment of EDG fuel injection pumps

The inspectors reviewed records of receipt acceptance inspection to verify that the licensee had properly developed and implemented a plan for commercial-grade dedication.

b. Findings

No findings were identified.

Review of Items Procured for Plant Modifications

a. Inspection Scope

The inspectors reviewed the licensee's activities associated with commercial-grade components used in recent modifications to the plant. The inspectors reviewed a

sample of inputs to the River Bend Station commercial-grade dedication plans for plant modifications such as: 1) licensee Purchase Orders, 2) engineering analysis of safety function, 3) development of critical characteristics, and 4) test or methods of acceptance. The inspectors also reviewed the documentation demonstrating that seismic and environmental qualifications, as applicable, were maintained following the modifications.

The inspectors reviewed the following modification packages:

- Enertech centrifugal pump for the DFR-P5B auxiliary building floor drain sump (Procurement Engineering Evaluation 00083159)

- Tyco Electronics time delay relay for RCIC steam line high flow isolation (Engineering Change # 13112)

b. Findings

No findings were identified.

Review of Procurement Related Corrective Action Issues

a. Inspection Scope

The inspectors reviewed condition reports and corrective actions generated by the station utilizing search terms including “commercial-grade”, “receipt inspection”, and “dedication” to ensure that deficiencies or non-conformances related to commercial-grade items were identified and corrected. The inspectors reviewed condition reports of items that the station had identified as damaged or discrepant upon receipt to ensure proper disposition. The inspectors reviewed station self-assessments related to the Commercial-grade Dedication and Suspect Counterfeit / Fraudulent Item (SCFI) programs to ensure that the assessments were in compliance with the quality assurance program and to determine the effectiveness of the assessments. Additionally, the inspectors reviewed condition reports generated from these assessments and their corrective actions.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On June 26, 2014, the inspectors presented the NRC commercial-grade dedication pilot inspection results to Mr. E. Olson, Site Vice President, and other members of the licensee’s staff. The licensee acknowledged the findings during the meeting. Additional discussions were conducted on December 10, 2014, with the licensee’s staff concerning an operability evaluation that was performed associated with one of the inspection findings. While some proprietary information was reviewed during this inspection, no proprietary information was included in this report, and all proprietary information was either returned or destroyed.

On July 14, 2015, the inspectors presented the integrated inspection results to Mr. Carl Rich, General Manager, Plant Operations, 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

G. Bello, Quality Assurance Auditor
T. Brumfield, Director, Regulatory & Performance Improvement
G. Bush, Manager, Material, Procurement, and Contracts
J. Clark, Manager, Regulatory Assurance
B. Cole, Manager, Radiation Protection
F. Corley, Manager, Design & Program Engineering
K. Crissman, Senior Manager, Maintenance
D. Fletcher, Supervisor, Procurement
B. Ford, Senior Manager, Fleet Regulatory Assurance
T. Gates, Manager, Operations Support
K. Hallaran, Manager, Chemistry
J. Henderson, Assistant Manager, Operations
K. Huffstatler, Senior Licensing Specialist, Licensing
R. Leasure, Superintendent, Radiation Protection
P. Lucky, Manager, Performance Improvement
J. Maher, Manager, Systems & Components Engineering
P. O'Conner, Manager, Training
E. Olson, Site Vice President
T. Opet, Supervisor, Procurement Engineering
J. Patin, Sr. Procurement Engineering Specialist
J. Pennington, Supervisor, Supplier Quality Assurance
W. Renz, Director, Emergency Planning, Entergy South
J. Reynolds, Manager, Operations
C. Rich, General Manager, Plant Operations
T. Santy, Manager, Security
T. Schenk, Manager, Emergency Preparedness
S. Vazquez, Director, Engineering
J. Vukovics, Supervisor, Reactor Engineering
J. Wieging, Senior Manager, Production
R. Wszolek, Manager, Procurement Engineering & Commercial-grade Dedication
D. Yoes, Manager, Quality Assurance

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000458/2015-002-01	FIN	Inadequate Operating Margin for Reactor Protection System A Motor Generator Set for Overvoltage Protection Results in Loss of Shutdown Cooling (Section 4OA2)
05000458/2015-002-02	NCV	Failure to Maintain Design Control for 18 Upgraded Hydraulic Control Unit Accumulators (Section 4OA5)

Closed

05000458/2015-001-00	LER	Operations Prohibited by Technical Specifications Due to Deficient Local Leak Rate Test Procedures Containing Erroneous Valve Alignments (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Condition Report (CR)

CR-RBS-2005-03139

Miscellaneous Document

Number	Title	Date
RBG-46554	Response to Generic Letter 06-02, Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power	April 3, 2006

Procedure

Number	Title	Revision
AOP-0029	Severe Weather Operation	035
ENS-DC-199	Off Site Power Supply Design Requirements Nuclear Plant Interface Requirements	9
ENS-DC-201	ENS Transmission Grid Monitoring	6

Section 1R04: Equipment Alignment

Drawing

Number	Title	Revision
PID-09-10E	Engineering P & I Diagram System 256 Service Water - Standby	21

Procedures

Number	Title	Revision
SOP-0042	Standby Service Water System (SYS #256)	041
SOP-0049	125 VDC System (SYS #305)	033

Section 1R05: Fire Protection

Condition Report (CR)

CR-RBS-2015-03080

Procedures

Number	Title	Revision
AB-095-515	Unit Cooler HVR-UC2 Room Fire Area AB-4/Z-2	4
CB-116-133	Battery 1A Room Fire Area C-18	4
CB-116-134	Battery 1B Room Fire Area C-19	4
CB-136-138	Pre-Fire Strategies - Control Room Fire Area C-25	6
SP-118-450	Standby Cooling Tower Pump A Room Fire Area PH-1/Z-1	3
SP-118-451	Standby Cooling Tower Pump B Room Fire Area PH-2/Z-1	3

Section 1R06: Flood Protection Measures

Condition Reports (CRs)

CR-RBS-2015-02719 CR-RBS-2015-02722

Work Orders (WOs)

WO 52615607 WO 52615624

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

Training Document

Number	Title	Revision
RSMS-OPS-0428	Grid Instability - Drywell Steam Leak	7

Section 1R12: Maintenance Effectiveness

Condition Reports (CRs)

CR-RBS-2015-00566 CR-RBS-2015-00766

Work Orders (WOs)

WO 00293248 WO 00293249 WO 00293251 WO 00402812

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Condition Report (CR)

CR-RBS-2015-03793

Work Orders (WOs)

WO 00311666 WO 00311667 WO 52434594 WO 52589906 WO 52589908
WO 52611191

Section 1R15: Operability Determinations and Functionality Assessments

Condition Reports (CRs)

CR-RBS-2015-02788 CR-RBS-2015-03762 CR-RBS-2015-03766 CR-RBS-2015-03817

Engineering Document

EC 57844

Procedure

Number	Title	Revision
EN-OP-104	Operability Determination Process	8

Work Order (WO)

WO 00395503

Section 1R18: Plant Modifications

Engineering Documents

EC 054457 EC 054459

Work Orders (WOs)

WO 00398718 WO 00405430 WO 00410880

Section 1R19: Post-Maintenance Testing

Condition Reports (CRs)

CR-RBS-2008-06244 CR-RBS-2011-08491 CR-RBS-2012-05644 CR-RBS-2013-07524
CR-RBS-2015-02283 CR-RBS-2015-03741

Procedures

Number	Title	Revision
SOP-0053	Standby Diesel Generator and Auxiliaries (SYS #309)	332
STP-201-6310	SLC Pump and Valve Operability Test	309

System Design Criteria

Number	Title	Revision
SDC-201	Standby Liquid Control System Design Criteria	2

Work Orders (WOs)

WO 00343399	WO 00346642	WO 00346643	WO 00395502	WO 00402091
WO 00412986	WO 00414599			

Section 1R22: Surveillance Testing

Calculation

Number	Title	Revision
G13.18.3.6*019	HPCS (Division III) Diesel Generator Loading	303

Condition Reports (CRs)

CR-RBS-2004-01318	CR-RBS-2004-01430	CR-RBS-2004-01498	CR-RBS-2006-01222
CR-RBS-2008-05311	CR-RBS-2009-00983	CR-RBS-2010-01148	CR-RBS-2010-04524
CR-RBS-2011-04133	CR-RBS-2011-06839	CR-RBS-2012-03908	CR-RBS-2012-05043
CR-RBS-2012-05365	CR-RBS-2014-03210	CR-RBS-2015-02122	CR-RBS-2015-02363
CR-RBS-2015-02384	CR-RBS-2015-02467	CR-RBS-2015-02788	

Procedures

Number	Title	Revision
PEP-0026	Diesel Generator Operating Logs	014
STP-057-3800	Local Leak Rate Test - Outage Summation	13
STP-057-7205	Drywell Personnel Door Seal Air System Leak Rate Test (JRB-DRA4)	4
STP-201-6310	SLC Pump and Valve Operability Test	309
STP-207-4250	RCS-Identified and Unidentified Leakage Detection System (DFR-LT105/ESX105/LI105, DFR-LT107/ESX107/LI107, DFR-LT128/ESX128/LI128, DER-LT118/ESX118/LI118, DER-LT119/ESX119/LI119, E31-R618, DER-KC174)	019

Procedures

Number	Title	Revision
STP-309-0203	Division III Diesel Generator Operability Test	323
STP-309-0611	Division I Diesel Generator 24 Hour Run	045
STP-410-6312	Division II Control Building Chilled Water Pump and Valve Operability Test	019
STP-740-3001	Control Room Envelope Habitability Assessment	2
STP-740-3002	Control Room Envelope Tracer Gas Test	0

System Design Criteria

Number	Title	Revision
SDC-410	Control Building Chilled Water System	3

Work Orders (WOs)

WO 00392969 WO 00395441 WO 52497803 WO 52502291 WO 52609386

Section 1EP6: Drill Evaluation

Procedure

Number	Title	Revision
RDRL-EP-1501	Site Drill Scenario	00

Section 4OA1: Performance Indicator Verification

Condition Reports (CRs)

CR-RBS-2015-04144

Miscellaneous Documents

Title	Date
NRC Performance Indicators – 2nd Quarter	2014
NRC Performance Indicators – 3rd Quarter	2014
NRC Performance Indicators – 4th Quarter	2014
NRC Performance Indicators – 1st Quarter	2015

Procedure

Number	Title	Revision
EN-LI-114	Performance Indicator Process	6

Section 4OA2: Problem Identification and Resolution

Miscellaneous Documents

Title	Date
River Bend Station Aggregate Performance Review Report	October 2014 - December 2014

Condition Reports (CRs)

CR-RBS-2015-00280	CR-RBS-2015-02264	CR-RBS-2015-00057	CR-RBS-2015-00164
CR-RBS-2015-00477	CR-RBS-2015-00574	CR-RBS-2015-00744	CR-RBS-2015-00782
CR-RBS-2015-00858	CR-RBS-2015-01011	CR-RBS-2015-01463	CR-RBS-2015-01680
CR-RBS-2015-01853	CR-RBS-2015-02317	CR-RBS-2015-02327	CR-RBS-2015-02757
CR-RBS-2015-03091	CR-RBS-2015-04408	CR-RBS-2015-04817	CR-RBS-2014-06461
CR-RBS-2015-02496	CR-RBS-2015-03611	CR-RBS-2015-00641	CR-RBS-2015-00839
CR-RBS-2015-01165	CR-RBS-2015-01307	CR-RBS-2015-01323	CR-RBS-2015-01359
CR-RBS-2015-01464	CR-RBS-2015-02378	CR-RBS-2015-03231	

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

Condition Reports (CRs)

CR-RBS-2015-01005	CR-RBS-2015-01059

Drawings

Number	Title	Revision
PID-03-01A	System 109 Main Steam	18
PID-03-01C	System 109 Main Steam	29
PID-27-20A	System 208 MSIV Positive Leakage Control	9
PID-32-05B	System 609 Drains Floor & Equipment	18

NRC Document

Number	Title	Date
Generic Letter 87-09	Sections 3.0 and 4.0 of the Standard Technical Specifications (STS) on the Applicability of Limiting Conditions for Operation and Surveillance Requirements	June 4, 1987

Procedure Number	Title	Revision
STP-208-3608	'Combined' Steam Line MSIV's and Outboard Drain Valve Leak Rate Test and Inboard MSIV Inleakage Test	000

Section 4OA5: Other Activities

Procedures

Entergy Quality Assurance Manual, Revision 25 dated November 21, 2013

EN-MP-117, Standardized Purchasing Process, Revision 4 dated August 23, 2013

EN-MP-120, Material Receipt, revision 7 dated November 21, 2013

EN-MP-138, Commercial-grade Dedication Lab Conduct of Operation, Revision 1 dated November 21, 2013

EN-DC-306, Commercial-grade Item Evaluation, Revision 4 dated November 21, 2013

EN-DC-313, Procurement Engineering Process, Revision 10 dated January 2, 2014

TP-INJTR, Revision 1, dated June 24, 2013

EN-QV-111, Training and Certification of Inspection/Verification and Examination Personnel, Revision 13

Procurement Documents

PO 10317566 for Valve, Diaphragm, Packless, Brass Body, 1/2", 700psig, 1/2" ODS, Manual Operated

PO 10320490, Bearing, Ball, Angular Contact, Double row, 1.7717" ID, 3.9370" OD, 1.563" W

PO 10394830 for Bearing, Thrust, Cs, 1.510" Bore, 2.8590" O.D., 0.8438" Width

PO 10400595, for Relay, Aux, 125VDC, 125V Coil, open 1-3, Closed 1-6, Figure 8

PO 10411188 for Bearing, Ball, Single Row Radial Conrad, 2.1654" ID, 4.7244" OD, 1.1417" WD, Medium 300

Purchase Order #10387954, Revision 0, dated July 16, 2013, From Entergy to Engine Systems for repair/refurbish two fuel injectors

Purchase Order #10351594, Revision 0, dated May 31, 2012, From Entergy to Engine Systems for RELAY, UNDERVOLTAGE, 120 AC VOLTS, 3 PHASE

Purchase Order #1024527, Revision 002, dated February 6, 2010, From Entergy to Areva NP, Inc. for VALVE, GATE, GATE, F316 BODY, ASME CL2 SECTION III, NB, 1989 EDITION NOADD, 3/4", 1500, SW

Purchase Order #10278200, Revision 002, dated September 16, 2010, From Entergy to Enertech Engineering & Services Division for Centrifugal Pump

Procurement Engineering Evaluation (PEE) 129399 for Bearing, Ball, Single Row Radial Conrad, 2.1654" ID, 4.7244" OD, 1.1417" WD, medium 300

PEE 131149, for Relay, Aux, 125VDC, 125V Coil, open 1-3, Closed 1-6, Figure 8

PEE 103811, for Bearing, Thrust, Cs, 1.510" Bore, 2.8590" O.D., 0.8438" Width

PEE 121992 associated with Purchase Order #10387954 for Fuel Injector Assembly for HPCS Diesel Generator

PEE 39631 associated with Purchase Order #10351594 for UNDERVOLTAGE, 120 AC VOLTS, 3 PHASE

PEE 83159 associated with Purchase Order #10278200 for Centrifugal Pump

PEE 129416 associated with Purchase Order #10398987 for standby diesel generator fuel oil transfer pump discharge strainer

River Bend ER-98-0451, WSCN: RBN1P567000113 Please Evaluate This Trust bearing and Perform CGE

ER-RB-2002-0040-000, Revise Tolerances in CGE00234 for Timken Thrust bearing for Missile Protected Doors

Quality Control inspection- Summary data for PO 10394830

Certificate of Conformance from Enercon for Order #840384, customer Purchase Order #10278200 for Model 3171S centrifugal pump, dated September 27, 2010

Safety-related Certificate of Conformance from Engine Systems, Inc. for Order #3010072, customer Purchase Order #10351594 for undervoltage relay, dated November 5, 2012

Safety-related Certificate of Conformance from Engine Systems, Inc. for Order #8002175, customer Purchase Order #10351594 HPCS diesel fuel injector assembly refurbishment, dated September 25, 2013

Certificate of Conformance from Tyco Electronics, Inc. for Order #3012623565/1, customer Purchase Order #10225653 for time delay relay, .55-15 second, 24 VDC, dated July 17, 2009

Miscellaneous

GEH-2058B, Instructions for Auxiliary Relays Type HEA61

Condition Report LO-HQNLO-2014-00035, dated February 20, 2014

Tyco Electronics ETR Audit Data Sheet for Model #ETR14B3B004, customer Purchase Order #10225653, dated July 15, 2009

Tyco Electronics Test Data – Agastat GP Relay, Model #ETR14B3B004, customer Purchase Order #10225653, dated July 15, 2009

Tyco Electronics ETR Process Data Sheet for Model #ETR14B3B004, customer Purchase Order #10225653, dated July 15, 2009

Tyco Electronics Quality Audit Checklist for Model #ETR14B3B004, customer Purchase Order #10225653, dated July 13, 2009

Pall Corporation Document CQP0014, "Supplier Management," revision 001, dated October 8, 2012

Pall Corporation Drawing #5ESC10770-F-022, "Cartridge Filter," revision N, dated April 23, 1982

Gator Stamping, Inc. Drawing #G8174, "Ear Base Bracket," dated May 5, 2005

Gator Stamping, Inc. Drawing #G8175, "Top Cover," dated May 5, 2005

NUPIC Joint Audit Report #23531 for Supplier #2121, Pall Trinity Micro Corporation, dated February 28, 2013

RBS ER 00-0761, "Oil and Grease CGI Evaluation," revision 0, dated October 13, 2000

QC Inspection Report 0099306019 for "Lubricant, Grease, Mobilux EP 111, Tube," dated February 4, 2014

QC Inspection Report 0032028690 for "Bracket, Ear Base, Cold Rolled Steel, Plated with Zinc and Clear, Relay Strap ECR-0155," dated November 22, 2005

QC Inspection Report 0032028692, for "Cover, Top, 304 SST, Relay Strap ECR-0155," dated December 8, 2005

QC Inspection Report 1432174573, for "Pump, Centrifugal," dated October 5, 2010

Test Record #14S-018, "CGD Lab – Material Test Report for Mobilux EP 111," dated February 3, 2014

Test Record #05-056, "Bracket, Ear Base, CID 32028690, PO 10100984, Rec #5295, PE-EVAL 19555, PN G-8174, dated October 22, 2005

CGD for AGASTAT CONTROL RELAY strap plate for mounting on a socket ECR0095-001 (P/N ECR0155) – PE Eval 19217

Calculation #G13.18.6.1-E51*015, “Instrument Loop Uncertainty/Setpoint Determination RCIC Steam Line Flow High, Isolation Timers E51A-K65, E51A-K85,” dated May 30, 2012

VTD-C634-0291, “Cooper Group Parts List for Control Panel Assembly,” revision 02, dated January 24, 2006

Curtiss Wright Flow Control Company Drawing #MA 23292, “Seismic Stress Analysis Report for Entertech/Goulds Sump Water Pump Model 3171S, Size 1x1.5 – 8,” revision 0, dated September 14, 2010

General Electric Specification 21A9236, “Engine-Generator for High Pressure Core Spray System,” revision 5, dated December 19, 1986

Condition Reports (CR)

CR-HQN-2014-00329	CR-RBS-2011-05466	CR-RBS-2011-06366	CR-RBS-2011-06598
CR-RBS-2011-06959	CR-RBS-2011-07432	CR-RBS-2012-00146	CR-RBS-2012-01166
CR-RBS-2012-02622	CR-RBS-2012-03214	CR-RBS-2012-03325	CR-RBS-2012-03430
CR-RBS-2012-04986	CR-RBS-2012-05221	CR-RBS-2012-06837	CR-RBS-2012-07485
CR-RBS-2012-07516	CR-RBS-2013-00033	CR-RBS-2013-00750	CR-RBS-2013-01547
CR-RBS-2013-02178	CR-RBS-2013-02832	CR-RBS-2013-03747	CR-RBS-2013-04349
CR-RBS-2013-04489	CR-RBS-2013-04529	CR-RBS-2013-04706	CR-RBS-2013-05002
CR-RBS-2013-05016	CR-RBS-2013-05097	CR-RBS-2013-05915	CR-RBS-2013-06015
CR-RBS-2013-07104	CR-RBS-2014-00116	CR-RBS-2014-01091	CR-RBS-2014-01697
CR-RBS-2014-02384	CR-RBS-2014-02402	CR-RBS-2014-02412	CR-RBS-2014-02513
CR-RBS-2014-02531	CR-RBS-2014-02732	CR-RBS-2014-02847	CR-RBS-2014-02947
CR-RBS-2014-03009			

Purchase Orders (POs)

10237317	10293016	10377042

Procurement Engineering (PE) Evaluations

00059668	00083961	00130269

Quality Control (QC) Inspections

00020701	00027337

Receiving Inspection Report (RIR)

R-0010-13	95-RIR-00379

Miscellaneous

Supplier Performance Report, 1Q 2014

Report of Employee Qualifications, Receipt Inspector / Procurement Engineering Functions, June 24, 2014

LO-HQNLO-2014-00035, Pre-NRC Inspection, Focused Self-Assessment, Commercial-Grade Dedication (CGD) Program and Suspect, Counterfeit / Fraudulent Item (SCFI) Program

WT-WTHQN-2014-00009, CA Number 83, Annual Review of Saybolt LP, February 10, 2014

WT-WTHQN-2014-00009, CA Number 80, Annual Review of Rosemount Nuclear Instruments, February 10, 2014

FTK-ESPP-G00085, Procurement Engineering Functions, Revision 3

PR-PRHQN-2014-00191

Audits

NUPIC Audit 22931, ATC Nuclear, November 21, 2011

NUPIC Audit 23153, Engine Systems, Inc., November 21, 2012

NUPIC Audit 23716, Enertech, Curtiss-Wright Flow Control Corp, March 24, 2014