UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

February 11, 2015

EA-09-009
EA-09-203

Mr. J.W. Shea
Vice President, Nuclear Licensing
Tennessee Valley Authority
1101 Market Street, LP 3D-C
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT 05000259/2014005, 05000260/2014005, AND 05000296/2014005

Dear Mr. Shea:

On December 31, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Browns Ferry Nuclear Plant, Units 1, 2, and 3. On January 26, 2015, the NRC inspectors discussed the results of this inspection with Mr. K. Polson 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 involved violations of NRC requirements. Further, inspectors documented a licensee-identified violation which was determined to be Severity Level IV in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest the violations or significance of these NCVs, 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 II; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC resident inspector at the Browns Ferry Nuclear Plant.

In addition, if you disagree with a cross-cutting aspect assignment or 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 II, and the NRC resident inspector at the Browns Ferry Nuclear Plant.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390, “Public Inspections, Exemptions, Requests for Withholding,” of the NRC’s “Rules of Practice,” a copy of this letter, its enclosure, and your response (if any), will be available electronically for public inspection in the

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Sincerely,

/RA/

Michael F. King, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Docket Nos.: 50-259, 50-260, 50-296
License Nos.: DPR-33, DPR-52, DPR-68

Enclosure: NRC Integrated Inspection Report 05000259/2014005,
05000260/2014005 and 05000296/2014005

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Letter to Joseph W. Shea from Michael F. King February 11, 2015.

SUBJECT: BROWNS FERRY NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT 05000259/2014005, 05000260/2014005, AND 05000296/2014005

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-259, 50-260, 50-296
License Nos.:	DPR-33, DPR-52, DPR-68
Report No.:	05000259/2014005, 05000260/2014005, 05000296/2014005
Licensee:	Tennessee Valley Authority (TVA)
Facility:	Browns Ferry Nuclear Plant, Units 1, 2, and 3
Location:	Corner of Shaw and Nuclear Plant Road Athens, AL 35611
Dates:	October 1, 2014, through December 31, 2014
Inspectors:	D. Dumbacher, Senior Resident Inspector C. Scott, Acting Senior Resident Inspector T. Stephen, Resident Inspector A. Ruh, Resident Inspector R. Baldwin, Senior Operations Engineer M. Coursey, Reactor Inspector P. Cooper, Reactor Inspector J. Hamman, Resident Inspector L. Jarriel, Agency Allegation Advisor S. Morrow, Human Factors Engineer
Approved by:	Michael F. King, Chief Reactor Projects Branch 6 Division of Reactor Projects

Enclosure

SUMMARY

IR 05000259/2014005, 05000260/2014005, 05000296/2014005; 10/01/2014–12/31/2014; Browns Ferry Nuclear Plant, Units 1, 2 and 3; Flood Protection Measures, and Post Maintenance Testing.

The report covered a three month period of inspection by resident and regional inspectors. Two findings, one NRC identified and one self-revealing, were identified. The significance of inspection findings are indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using IMC 0609, "Significance Determination Process" dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within the Cross Cutting Areas" dated January 1, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated July 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

NRC Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. An NRC-identified finding (FIN) was identified for the licensee's failure to evaluate continued operation should the crack in a pedestal in the A RHRSW pump room degrade further and failure to provide justification why continued monitoring is not required. This was a requirement per licensee procedure NEDP-22 Operability Determinations and Functional Evaluations, section 3.2.2.G.4.a.(2).

  This finding was more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, without sufficient monitoring, the crack had the potential to propagate until the pumps in the RHRSW pump room became inoperable in a probable maximum flood (PMF) event without the licensee's knowledge. This finding is associated with the mitigating systems cornerstone. The finding was screened using Inspection Manual Chapter (IMC) 0609 Appendix A, Exhibit 2, issued June 19, 2012 and was determined to be green because all the technical specification components in the A RHRSW pump room were determined to maintain their operability. The licensee's immediate corrective action was to commence bi-weekly monitoring of the crack until repairs could be made. The cause of this finding was directly related to the cross cutting aspect of the Evaluation attribute of the Problem Identification and Resolution area because the licensee's action to address the cause and extent of condition of the crack did not address the safety aspect of crack propagation. [P.2] (Section 1R06)

- Green. A self-revealing non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XI, Test Control, was identified for the licensee's failure to have a test program that assured testing would verify Unit 1 Automatic Depressurization System (ADS) valve 1-PCV-1-19 would perform satisfactorily in service. Specifically, the licensee failed to verify and check the proper configuration and performance of ADS valve 1-PCV-1-19 with a satisfactory post maintenance test as required by NPG-SPP-06.3, Pre/Post-Maintenance

Testing. On October 30, 2014 operators discovered that valve 1-PCV-1-19 would not open as required. Troubleshooting revealed that the control air line accumulator to 1-PCV-1-19 was misconfigured and aligned instead to, non-ADS, steam relief valve 1-PCV-1-18. The licensee entered into the licensee's corrective action program as PER 952082.

The finding was more than minor because it was associated with the mitigating systems cornerstone attribute of Configuration Control, 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 perform an adequate post maintenance test prevented the discovery of the improper installation of ADS valve 1-PCV-1-19 control air line and allowed the inoperability of the valve to exist undetected during plant operation. Using IMC 0609.04, Initial Characterization of Findings and IMC 0609 Appendix A, Exhibit 2 Mitigating Systems screening questions, the finding screened as very low safety significance (Green). The finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time and did not represent an actual loss of function of one or more non-technical specification equipment for greater than 24 hours. This finding does not have a cross-cutting aspect because the lack of proper post maintenance testing to verify the configuration of the ADS air line was made in November 2006 and was not reflective of current performance. (Section 1R19)

Licensee Identified Violations

- Violations of very low safety significance 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.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at 100 percent of rated thermal power (RTP) except for 4 planned and 1 unplanned downpower. On October 3rd, an unplanned downpower to 52 percent was needed to mitigate a lowering main condenser vacuum caused by a steam jet air ejector malfunction. Later that day, Unit 1 shutdown for refueling outage U1R10. The Unit restarted on October 29th and returned to 100 percent power on November 6th. A planned downpower to 60 percent on December 13th occurred for Electrohydraulic control (EHC) leak repairs. Planned downpowers for rod pattern adjustments occurred on November 15th, December 14th and December 15th. Power remained at 100 percent for the remainder of the quarter.

Unit 2 operated at 100 percent of RTP except for 4 planned and 1 unplanned downpowers. The unplanned downpower to 93 percent occurred on December 27th due to failure of the control system for level on the 2B1 and 2B2 feed water heaters. On October 10th and 31st, November 22nd, and December 13th planned downpowers occurred for rod pattern adjustments. Power remained at 100 percent for the remainder of the quarter.

Unit 3 operated at 100 percent of RTP except for 4 planned and 2 unplanned downpowers. An unplanned downpower to 41 percent power occurred on October 15th due to a 3B recirculation pump control power card failure. An unplanned downpower to 93 percent occurred on December 17th to troubleshoot a faulty turbine control valve. Planned downpowers occurred on October 17th, November 21st and 24th, and December 5th for control rod and condenser waterbox maintenance. Power remained at 100 percent for the remainder of the quarter.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

.1 Partial Walkdown

a. Inspection Scope

The inspectors conducted partial equipment alignment walkdowns to evaluate the operability of selected redundant trains or backup systems, listed below, while the other train or subsystem was inoperable or out of service. The inspectors reviewed the functional systems descriptions, Updated Final Safety Analysis Report (UFSAR), system operating procedures, and Technical Specifications (TS) to determine correct system lineups for the current plant conditions. The inspectors performed walkdowns of the systems to verify that critical components were properly aligned and to identify any discrepancies which could affect operability of the redundant train or backup system. This activity constituted three Equipment Alignment Partial Walkdown inspection samples.

- Unit 1 Core Spray (CS) system Loop II with Loop I out of service for maintenance while an Operation with the Potential to Drain the Reactor Vessel (OPDRV) was in progress
- Unit 1 Residual Heat Removal (RHR) system Loop I with Loop II out of service for maintenance
- Unit 1 CS system Loop I with Loop II out of service for maintenance

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Fire Protection Tours

a. Inspection Scope

The inspectors reviewed licensee procedures for transient combustibles and fire protection impairments, and conducted a walkdown of the fire areas (FA) and fire zones (FZ) listed below. Selected FAs/FZs were examined in order to verify licensee control of transient combustibles and ignition sources; the material condition of fire protection equipment and fire barriers; and operational lineup and operational condition of fire protection features or measures. The inspectors verified that selected fire protection impairments were identified and controlled in accordance with procedures. The inspectors reviewed applicable portions of the Fire Protection Report, Volumes 1 and 2, including the applicable Fire Hazards Analysis, and Pre-Fire Plan drawings, to verify that the necessary firefighting equipment, such as fire extinguishers, hose stations, ladders, and communications equipment, was in place. This activity constituted four Fire Protection Walkdown inspection samples.

- Unit 1, Reactor Building, Verification of compensatory measures during a fire protection header maintenance outage (WO 113965328)
- Unit 2, Control Building, elevation 593, auxiliary instrument room 2, DC equipment room 2 battery board room 2, battery room 2, communications battery room, communications battery board room, communications room, control bay corridor. (Fire Area 16)
- Unit 3, Control Building, elevation 593, computer room, auxiliary instrument room 3, battery board room 3, battery room 3, control bay corridor. (Fire Area 16)
- Unit 1, Reactor Building, elevation 621, electric board room 1A, 250 volt battery room and a walkdown of the November 7, 2014 clearance order that isolated HPCI suppression water. (Fire Area 5)

b. Findings

No findings were identified.

1R06 Flood Protection Measures

.1 Internal Flood Protection

a. Inspection Scope

The inspectors performed a walkdown of the four Residual Heat Removal Service Water (RHRSW) pump rooms. The inspectors reviewed selected completed preventive maintenance procedures, work orders, and surveillance procedures to verify that actions were completed within the specified frequency and in accordance with design basis documents. This activity constituted one Internal Flood Protection inspection sample.

b. Finding

Introduction: An NRC-identified finding (FIN) was identified for the licensee's failure to evaluate continued operation should the crack in a pedestal in the A RHRSW pump room degrade further and failure to provide justification why continued monitoring is not required. This was a requirement per licensee procedure NEDP-22 Operability Determinations and Functional Evaluations, section 3.2.2.G.4.a.(2).

Description: The RHRSW pump rooms are designed to minimize leakage into the rooms during a Probable Maximum Flood (PMF) event to maintain the RHRSW and EECW pumps in the rooms operable. The area below the RHRSW pump rooms is assumed to completely flood during a PMF event thus causing pressure to be created on the underside of the rooms.

During a routine inspection of the A RHRSW pump room on September 30, 2014, the resident inspectors discovered a crack on the grout for an access cover that allowed standing water in the room to flow to the area below the room. The crack was mostly on the surface, but a portion that was approximately 6 inches long by 1/16 inch wide went all the way through the grout creating a leak path into the room during a PMF event. The licensee analyzed, in PER 940113, the additional leakage into the room during a PMF event as 27.7 gpm. This was within the excess capacity of the sump pumps.

During a follow up inspection of the A RHRSW pump room on November 4, 2014, the resident inspectors observed that the cracks affecting the floor function had propagated significantly. The licensee evaluated the increased crack size and determined additional PMF leakage into the room would be approximately 54.4 gpm which was approximately double that analyzed in September 30, 2014. The leakage was within the sump pump capacity. Between September 30, 2014 and November 4, 2014, the crack size had increased in length from 6 inches long to 12 inches long as measured by the licensee's staff. The licensee commenced bi-weekly monitoring of the crack propagation in mid-November 2014.

Licensee procedure NEDP-22 Operability Determinations and Functional Evaluations section 3.2.2.4.a.(2) required, in part, the licensee to evaluate continued operation should the degraded or nonconforming condition degrade further and describe any margin management methods and/or controls to monitor the condition until corrected or

to provide justification as to why monitoring is not required. The inspectors identified the Prompt Determination of Operability (PDO) neither evaluated the need for any compensatory or monitoring actions nor did it provide justification as to why monitoring was not required.

Analysis: The licensee's failure to evaluate continued operation and provide justification why continued monitoring was not required in accordance with NEDP-22 Operability Determinations and Functional Evaluations section 3.2.2.4.a.(2) was a performance deficiency (PD). This finding was more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, without sufficient monitoring, the crack had the potential to propagate until the pumps in the RHRSW pump room became inoperable in a PMF event without the licensee's knowledge. This finding is associated with the mitigating systems cornerstone. The finding was screened using Inspection Manual Chapter (IMC) 0609 Appendix A, Exhibit 2, issued June 19, 2012 and was determined to be green because all the technical specification components in the A RHRSW pump room were determined to maintain their operability. The licensee's immediate corrective action was to commence bi-weekly monitoring of the crack until repairs could be made. The cause of this finding was directly related to the cross cutting aspect of the Evaluation attribute of the Problem Identification and Resolution area because the licensee actions to address the cause and extent of condition of the crack did not address the safety aspect of crack propagation. [P.2]

Enforcement: This finding does not involve enforcement action because no violation of a regulatory requirement was identified. Because this finding does not involve a violation and is of very low safety significance, it is identified as a FIN [05000259/260/296/2014005-01], Failure to Perform Required Continued Monitoring of a Degraded Condition.

1R08 Inservice Inspection Activities (71111.08G, Unit 3)

a. Inspection Scope

Non-Destructive Examination Activities and Welding Activities: From October 13, 2014, to October 17, 2014, the inspectors conducted an onsite review of the implementation of the licensee's Inservice Inspection (ISI) Program for monitoring degradation of the reactor coolant system (RCS), emergency feedwater systems, risk-significant piping and components, and containment systems in Unit 1. The inspectors' activities included a review of non-destructive examinations (NDEs) to evaluate compliance with the applicable edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section XI (Code of record: 2001 Edition with 2003 Addenda) and Section V (Nondestructive Examination); and to verify that indications and defects (if present) were appropriately evaluated and dispositioned, in accordance with the requirements of the ASME Code, Section XI, acceptance standards.

The inspectors directly observed the following NDE, mandated by the ASME Code, to evaluate compliance with the ASME Code Section XI and Section V requirements, and if any indications and defects were detected, to evaluate if they were dispositioned in accordance with the ASME Code, or an NRC-approved alternative requirement.

- Ultrasonic Testing (UT) (Phased Array) Exam of THPCI 1-7 Carbon Steel Pipe to Elbow weld, 14-inch diameter, Class 2
- UT of GFW-1-15 Carbon Steel Tee to Elbow weld, 12-inch diameter piping (Augmented exam)
- Magnetic Particle Testing of 1-47B456-97-IA Reactor Core Isolation Cooling Carbon Steel Welded Attachment, Class 3
- Enhanced Visual Examination (EVT-1) of Core Spray Sparger CS1-187 T-Box, (Augmented exam)
- EVT-1 of Core Spray Sparger CS2-R-189 T-Box, (Augmented exam)
- EVT-1 of Jet Pump Wedge 1-01, (Augmented exam)

The inspectors reviewed records of the following NDEs, mandated by the ASME Code Section XI, to evaluate compliance with the ASME Code Section XI and Section V requirements, and if any indications and defects were detected, to evaluate if they were dispositioned in accordance with the ASME Code, or an NRC-approved alternative requirement.

- UT of DRHR 1-2 Dissimilar Metal Weld, 24 inch, Class 2

The inspectors reviewed associated documents for the welding activities, referenced below, in order to evaluate compliance with procedures and the ASME Code. The inspectors reviewed the work order, repair and replacement plan, weld data sheets, welding procedures, procedure qualification records (PQRs), welder performance qualification records, and NDE reports.

- Welding Package for EECW-1-027-1&2
- Welding Package for EECW-1-023-6
- Welding Package for RFW-1-029-001

During non-destructive surface and volumetric examinations performed since the previous refueling outage; the licensee did not identify any relevant indications that were analytically evaluated, and accepted for continued service. Therefore, no NRC review was completed for this inspection procedure attribute.

Identification and Resolution of Problems: The inspectors performed a review of samples of ISI-related problems, which were identified by the licensee and entered into the corrective action program (CAP) as Problem Evaluation Reports (PERs). The inspectors reviewed the PERs to confirm the licensee had appropriately described the scope of the problem, and had initiated corrective actions. The review also included the licensee's consideration and assessment of operating experience events applicable to the plant. The inspectors performed this review to ensure compliance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" requirements. The corrective action documents reviewed by the inspectors are listed in the report Attachment.

b. Finding

No findings were identified.

1R11 Licensed Operator Requalification and Performance

.1 Licensed Operator Requalification

a. Inspection Scope

On October 1, 2014, the inspectors observed a licensed operator training session for an operating crew according to the Unit 1 Simulator Exercise Guide (SEG) OPL173S255, Just In Time Start-up, Shutdown and/or Hydrostatic Testing Training, Revision 10.

The inspectors specifically evaluated the following attributes related to the operating crew's performance:

- Clarity and formality of communication
- Ability to take timely action to safely control the unit
- Prioritization, interpretation, and verification of alarms
- Correct use and implementation of procedures including Abnormal Operating Instructions (AOIs), Emergency Operating Instructions (EOIs) and Safe Shutdown Instructions (SSI)
- Timely control board operation and manipulation, including high-risk operator actions
- Timely oversight and direction provided by the shift supervisor, including ability to identify and implement appropriate technical specifications actions such as reporting and emergency plan actions and notifications
- Group dynamics involved in crew performance

This activity constituted one Observation of Requalification Activity inspection sample.

b. Finding

No findings were identified.

.2 Control Room Observations

a. Inspection Scope

Inspectors observed and assessed licensed operator performance in the plant and main control room, particularly during periods of heightened activity or risk and where the activities could affect plant safety. Inspectors reviewed various licensee policies and procedures covering Conduct of Operations, Plant Operations and Power Maneuvering.

Inspectors utilized activities such as post maintenance testing, surveillance testing and other activities to focus on the following conduct of operations as appropriate;

- Operator compliance and use of procedures.

- Control board manipulations.
- Communication between crew members.
- Use and interpretation of plant instruments, indications and alarms.
- Use of human error prevention techniques.
- Documentation of activities, including initials and sign-offs in procedures.
- Supervision of activities, including risk and reactivity management.
- Pre-job briefs.

This activity constituted one Control Room Observation inspection sample.

b. Findings

No findings were identified.

.3 Annual Review of Licensee Requalification Examination Results:

a. Inspection Scope

On September 24, 2014, the licensee completed the annual requalification operating examinations required to be administered to all licensed operators in accordance with Title 10 of the Code of Federal Regulations 55.59(a)(2), "Requalification Requirements," of the NRC's "Operator's Licenses." The inspectors performed an in-office review of the overall pass/fail results of the individual operating examinations and the crew simulator operating examinations in accordance with Inspection Procedure (IP) 71111.11, "Licensed Operator Requalification Program." These results were compared to the thresholds established in Section 3.02, "Requalification Examination Results," of IP 71111.11. This activity constituted one inspection sample.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

.1 Routine

a. Inspection Scope

The inspectors reviewed the specific structures, systems and components (SSC) within the scope of the Maintenance Rule (MR) (10CFR50.65) with regard to some or all of the following attributes, as applicable: (1) Appropriate work practices; (2) Identifying and addressing common cause failures; (3) Scoping in accordance with 10 CFR 50.65(b) of the MR; (4) Characterizing reliability issues for performance monitoring; (5) Tracking unavailability for performance monitoring; (6) Balancing reliability and unavailability; (7) Trending key parameters for condition monitoring; (8) System classification and reclassification in accordance with 10 CFR 50.65(a)(1) or (a)(2); (9) Appropriateness of

performance criteria in accordance with 10 CFR 50.65(a)(2); and (10) Appropriateness and adequacy of 10 CFR 50.65 (a)(1) goals, monitoring and corrective actions. The inspectors compared the licensee's performance against site procedures. The inspectors reviewed, as applicable, work orders, surveillance records, PERs, system health reports, engineering evaluations, and MR expert panel minutes; and attended MR expert panel meetings to verify that regulatory and procedural requirements were met. This activity constituted one Maintenance Effectiveness inspection samples.

- Unit 0 Alternate Decay Heat Removal (ADHR) System

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

For planned online work and/or emergent work that affected the combinations of risk significant systems listed below, the inspectors examined on-line maintenance risk assessments, and actions taken to plan and/or control work activities to effectively manage and minimize risk. The inspectors verified that risk assessments and applicable risk management actions (RMA) were conducted as required by 10 CFR 50.65(a)(4) applicable plant procedures. As applicable, the inspectors verified the actual in-plant configurations to ensure accuracy of the licensee's risk assessments and adequacy of RMA implementations. This activity constituted five Maintenance Risk Assessment inspection samples.

- October 9, 2014, Unit 1 in Yellow Risk with ADHR inoperable during fuel movement, RHR Pump 1A and Diesel Generator 'A' unavailable for testing and 1 A fuel pool cooling pump unavailable
- October 10, 2014, Unit 1 in Yellow risk due to an Operation with the Potential to Drain the Reactor Vessel (OPDRV) due to replacement of 24 Local Power Range Monitors. The 'A' 4kV shutdown board, Residual Heat Removal (RHR) system Loop I, and Core Spray (CS) system Loop I were out of service due to maintenance.
- October 14, 2014, Unit 1 in Yellow risk due to an OPDRV due to replacement of the B recirculation pump seal with RHR Loop I and CS Loop I out of service due to maintenance. RHR Loop II shutdown cooling was unavailable due to testing. The ADHR system was providing core cooling.
- October 21, 2014, Unit 1 in Yellow risk due to reactor vessel drain down during a refueling outage
- October 25, 2014, Unit 1 in Yellow risk due to an elevated pressure test while on shutdown cooling

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessment

a. Inspection Scope

The inspectors reviewed the operability/functional evaluations listed below to verify technical adequacy and ensure that the licensee had adequately assessed TS operability. The inspectors reviewed applicable sections of the UFSAR to verify that the system or component remained available to perform its intended function. In addition, where appropriate, the inspectors reviewed licensee procedures to ensure that the licensee's evaluation met procedure requirements. Where applicable, inspectors examined the implementation of compensatory measures to verify that they achieved the intended purpose and that the measures were adequately controlled. The inspectors reviewed PERs on a daily basis to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. This activity constituted four Operability Evaluation inspection samples.

- Missed Standby Liquid Control (SLC) surveillance SR 3.1.7.7 for Units 2 and 3 (PERs 949766 and 949751)
- Cracks in grout for a valve access hatch in the A RHRSW pump room (PERs 940113 and 953658)
- HPCI turbine to main pump coupling under-torqued (PER 951732)
- Technical Specification LCO 3.0.3 Bases, Possible use of operational convenience to permit HPCI testing during startup

b. Findings

No findings were identified.

1R18 Plant Modifications

.1 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed Temporary Modification (TMOD) # BFN-1-2014-016 to swap the control air, wiring, temperature indications, acoustic sensors, and computer monitoring of main steam relief valves 1-PCV-1-18 and 1PCV-1-1-19. The accumulator intended for the Automatic Depressurization System (ADS) function was aligned to the PCV-1-18 versus the PCV-1-19 necessitating the temporary modification. The inspectors attended the Plant Operations Review Committee meeting and reviewed the modification package, work orders, PERs, wiring diagrams, and post modification testing results.

This activity constitutes one Temporary Plant Modification sample.

b. Findings

No findings were identified.

.2 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed a portion of a Permanent Modification (DCN 71329) to the B train of RHRSW piping in the intake building. The modification was part of the licensee response to NRC order EA 12-049 as a result of the lessons learned from the March 2011 accident at the Fukushima Dai-ichi power plant. The modification was performed to add a FLEX capability to supply water from the Forebay, south-east of the intake building to the RHRSW and EECW headers inside the intake building. The FLEX capability would provide a means to maintain or restore core cooling, containment cooling and spent fuel pool cooling capability for a beyond design basis external event. The inspectors reviewed this modification work orders, drawings, and seismic calculations and verified the design and installation in the field.

This activity constitutes one Permanent Plant Modification sample.

b. Findings

No findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors witnessed and reviewed post-maintenance tests (PMT) listed below to verify that procedures and test activities confirmed Structure, System, or Component (SSC) operability and functional capability following the described maintenance. The inspectors reviewed the licensee's completed test procedures to ensure any of the SSC safety function(s) that may have been affected were adequately tested, that the acceptance criteria were consistent with information in the applicable licensing basis and/or design basis documents. The inspectors witnessed and/or reviewed the test data, to verify that test results adequately demonstrated restoration of the affected safety function(s). The inspectors verified that problems associated with PMTs were identified and entered into the CAP. This activity constituted five Post Maintenance Test inspection samples.

- Post maintenance testing of the Unit 1 Reactor Pressure Vessel (RPV) following RPV flange weld repairs (WO 114207589)
- Post maintenance testing of TMOD BFN-1-2014-016 to rewire Unit 1 ADS valve 1-PCV-001-0018 (WO 116286718)
- Post maintenance testing of the Unit 1 HPCI following tightening of the pump to turbine shaft coupling (WO 114787418)

- Post maintenance testing of Unit 1 Core Spray pump following motor replacement (WO 115262317)
- Post maintenance testing of Unit 1 Local Power Range Monitors following replacement twenty-four assemblies (WO 114101564)

b. Findings

Introduction: A self-revealing Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XI, Test Control, was identified for the licensee's failure to have a test program that assured testing would verify Unit 1 Automatic Depressurization System (ADS) valve 1-PCV-1-19 would perform satisfactorily in service. Specifically, the licensee failed to verify and check the proper configuration and performance of ADS valve 1-PCV-1-19 with a satisfactory post maintenance test as required by NPG-SPP-06.3, Pre/Post-Maintenance Testing.

Description: Six of the 13 safety related Main Steam Relief Valves are available to be opened automatically as part of the Emergency Core Cooling System (ECCS). Each of the six valves is equipped with an air accumulator and check valve arrangement. The accumulators are to assure that the valves can be held open following failure of the normal air supply, and they are sized to contain sufficient air for a minimum of five valve operations. On October 30, 2014, operators were performing Technical Specification surveillance 1-SR-3.4.3.2, Main Steam Relief Valve Manual Cycle Test and discovered that valve 1-PCV-1-19 would not open as required. Troubleshooting revealed that the control air line accumulator to 1-PCV-1-19 was misconfigured and aligned instead to, non-ADS, steam relief valve 1-PCV-1-18 during 2006 maintenance for the Unit 1 Restart. Because of another unrelated misconfiguration, no steam relief valve actuated as the air line that was piped to 1-PCV-1-19 had manual valve 1-SHV-032-2519 unintentionally closed. TVA procedure NPG-SPP-06.3, Pre/Post-Maintenance Testing (PMT), step 3.2.1.6 required PMT on all maintenance that affects the engineered or design function of a system or component such as pressure, flow rate, etc. These combined misconfigurations revealed that Browns Ferry staff had never verified and checked the proper performance of the ADS accumulator function of valve 1-PCV-1-19 through satisfactory PMT since the control valve air line accumulator was misaligned. The Browns Ferry past operability evaluation, described in PER 952082, determined that the misalignment of the control air hoses occurred under WO 02-010199-063 on November 22, 2006. Browns Ferry Unit 1 was in a shutdown mode until May 2007.

Analysis: The licensee's failure to verify and check the proper configuration and performance of ADS valve 1-PCV-1-19 with a satisfactory post maintenance test as required by NPG-SPP-06.3, was a performance deficiency. The finding was more than minor because it was associated with the mitigating systems cornerstone attribute of Configuration Control, 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 perform an adequate post maintenance test prevented the discovery of the improper installation of ADS valve 1-PCV-1-19 control air line and allowed the inoperability of the valve to exist undetected during plant operation. Using IMC 0609.04, Initial Characterization of Findings and IMC 0609 Appendix A, Exhibit 2 Mitigating Systems screening questions, the finding

screened as very low safety significance (Green). The finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time and did not represent an actual loss of function of one or more non-technical specification equipment for greater than 24 hours. This finding does not have a cross-cutting aspect because the performance deficiency occurred in November 2006 and was not reflective of current performance.

Enforcement: Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion XI, "Test Control," requires, in part, that a test program shall be established to assure that all testing required to demonstrate that systems, structures, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements contained in applicable design documents. Contrary to the above, from November 22, 2006 through October 30, 2014, the licensee did not identify and perform proof testing (a PMT) to demonstrate that the Automatic Depressurization System would perform satisfactorily in service. Specifically, testing did not ensure the air accumulator tank for 1-PCV-1-19 would operate as designed in the event normal air supply was unavailable. This resulted in the failure to identify the misalignment of the air system and associated inoperability of the valve. The licensee performed, as corrective action, temporary modification TMOD BFN-1-2014-016 to rewire Unit 1 steam relief valve 1- PCV-001-0018 to perform the ADS function of valve 1-PCV-1-19 on November 7, 2014. Because this finding is of very low safety significance and was entered into the licensee's corrective action program as PER 952082, the violation is being treated as a non-cited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000259/2014005-02, "Failure to Demonstrate Satisfactory Performance of the Automatic Depressurization System Air Accumulators."

1R20 Refueling and Other Outage Activities

.1 Unit 1 Refueling Outage U1R10

a. Inspection Scope

From October 4, through October 31, 2014, the inspectors examined the refueling outage activities to verify that they were conducted in accordance with Technical Specifications (TS), applicable plant procedures, and the licensee's outage risk assessment and management plans. The inspectors monitored critical plant parameters and observed operator control of plant conditions through Cold Shutdown (Mode 4) and Refueling (Mode 5). This activity constituted one Refueling and Other Outage Activities inspection sample. Some of the significant outage activities specifically reviewed and/or witnessed by the inspectors were as follows:

Outage Risk Assessment
Prior to the beginning of the refueling outage, the inspectors attended outage risk assessment team meetings and reviewed the Outage Risk Assessment Report. The inspectors reviewed the daily Refueling Outage Reports, including the Outage Risk Assessment Management (ORAM) Safety Function Status, and regularly attended the daily outage status meetings. The inspectors frequently discussed risk conditions and

protected equipment with operations and outage management personnel to assess licensee awareness of actual risk conditions and mitigation strategies.

Shutdown and Cooldown Process
The inspectors witnessed the shutdown and cooldown of Unit 1 in accordance with applicable licensee procedures.

Decay Heat Removal
The inspectors reviewed licensee procedures for normal and alternate decay heat removal and conducted main control room panel and in-plant walkdowns of system and components to verify correct system alignment. During planned evolutions that resulted in increased outage risk conditions for shutdown cooling, inspectors verified that the plant conditions and systems identified in the risk mitigation strategy were available. In addition, the inspectors reviewed controls implemented to ensure that outage work was not impacting the ability of operators to operate spent fuel pool cooling, RHR shutdown cooling, and/or ADHR system.

Critical Outage Activities
The inspectors examined outage activities to verify that they were conducted in accordance with Technical Specifications, licensee procedures, and the licensee's outage risk control plan. Some of the more significant inspection activities accomplished by the inspectors were as follows:

- Walked down selected safety-related equipment clearance and associated with tagout numbers:
    1) 1-075-0023A; Core Spray Loop I outage
    2) 1-075-0021; Core Spray Pump 1B
    3) 1-074-0005; RHR Loop II outage
- Verified Reactor Coolant System (RCS) inventory controls, specifically, the makeup methods used during operations with the potential to drain the reactor vessel (OPDRV's)
- Verified electrical systems availability and alignment
- Monitored important control room plant parameters (e.g., RCS pressure, level, flow, and temperature) and Technical Specification compliance during the various shutdown modes of operation, and mode transitions
- Evaluated implementation of reactivity controls
- Reviewed control of containment penetrations and overall integrity
- Examined foreign material exclusion controls particularly in proximity to and around the reactor cavity, equipment pit, and spent fuel pool
- Performed routine tours of the control room, reactor building, refueling floor and drywell
- Verified the licensee was managing fatigue by performing a sample review of schedules and work hours of outage personnel. There were no fatigue assessments, waiver requests, or self-declarations performed during the outage.

Reactor Vessel Disassembly and Refueling Activities
The inspectors witnessed selected activities associated with reactor vessel disassembly, and reactor cavity flood-up and drain down. On numerous occasions, the inspectors witnessed fuel handling operations during the reactor core fuel shuffles performed in accordance with Technical Specifications and applicable operating procedures addressing refueling operations (in vessel), operations in the spent fuel pool, and fuel movement operations during refueling.

Drywell Closeout
On October 27, 2014, the inspectors reviewed the licensee's conduct of their drywell closeout procedure and performed an independent detailed closeout inspection of the drywell.

Restart Activities
The inspectors observed the reactor approach to criticality and power ascension during reactor startup, power ascension, and reactor heatup.

Corrective Action Program
The inspectors reviewed PERs generated during the refueling outage and attended management review committee meetings to verify that initiation thresholds, priorities, mode holds, operability concerns and significance levels were adequately addressed. Resolution and implementation of corrective actions of several PERs were also reviewed for completeness.

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors witnessed portions of, and/or reviewed completed test data for the following surveillance tests of risk-significant and/or safety-related systems to verify that the tests met technical specification surveillance requirements, UFSAR commitments, and in-service testing and licensee procedure requirements. The inspectors' review confirmed whether the testing effectively demonstrated that the SSCs were operationally capable of performing their intended safety functions and fulfilled the intent of the associated surveillance requirement. This activity constituted two Routine Surveillance Tests and one Containment Isolation Valve Test.

Routine Surveillance Tests:
- MSI-1-073-GOV001, High Pressure Coolant Injection (HPCI) Turbine Overspeed Trip Test, Rev 11, (WO 115116033)
- 1-SR-3.1.7.7, Standby Liquid Control, (WO 115288672)

Containment Isolation Valve

- Main Steam Isolation Valve (MSIV) Local Leak Rate Testing (LLRT), (WO 114818983)

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Cornerstone: Mitigating Systems

a. Inspection Scope

The inspectors reviewed the licensee's procedures and methods for compiling and reporting the following Performance Indicators (PIs). The inspectors examined the licensee's PI data for the specific PIs listed below for the fourth quarter 2013 through the third quarter of 2014. The inspectors reviewed the licensee's data and graphical representations as reported to the NRC to verify that the data was correctly reported. The inspectors validated this data against relevant licensee records (e.g., PERs, Daily Operator Logs, Plan of the Day, Licensee Event Reports, etc.), and assessed any reported problems regarding implementation of the PI program. The inspectors verified that the PI data was appropriately captured, calculated correctly, and discrepancies resolved. The inspectors used the Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, to ensure that industry reporting guidelines were appropriately applied. This activity constituted nine performance indicator inspection samples.

- Unit 1 Unplanned Scrams
- Unit 2 Unplanned Scrams
- Unit 3 Unplanned Scrams
- Unit 1 Unplanned Power Changes
- Unit 2 Unplanned Power Changes
- Unit 3 Unplanned Power Changes
- Unit 1 Unplanned Scrams with Complications
- Unit 2 Unplanned Scrams with Complications
- Unit 3 Unplanned Scrams with Complications

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution of Problems

.1 Review of items entered into the Corrective Action Program:

a. Inspection Scope

As required by Inspection Procedure 71152, “Identification and Resolution of Problems,” and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee’s CAP. This review was accomplished by reviewing daily PER and Service Request (SR) reports, and periodically attending Corrective Action Review Board (CARB) and PER Screening Committee (PSC) meetings.

b. Findings

No findings were identified.

.2 Focused Annual Sample Review – Operator Work Arounds (OWA):

a. Inspection Scope

The inspectors conducted a review of existing OWA to verify that the licensee was identifying OWAs at an appropriate threshold, entering them into the corrective action program, establishing adequate compensatory measures, prioritizing resolution of the problem, and implementing appropriate corrective actions in a timely manner commensurate with its safety significance. At the time of the inspection a total of 65 OWAs were active, which was a reduction of 22 from the inspection that was conducted last year. The inspectors examined all active OWAs listed in the Limiting Condition of Operation Tracking (LCOTR) Log, and reviewed them against the guidance in BFN-ODM-4.16, Operator Workarounds/Burdens/Challenges. This activity constituted one Operator Workaround sample.

b. Findings

No findings were identified.

.3 Semi-annual Trend Review

As required by Inspection Procedure 71152, the inspectors performed a review of the licensee’s CAP and other associated programs and documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors’ review was focused on repetitive equipment issues, but also included licensee trending efforts and licensee human performance results. The inspectors’ review nominally considered the six-month period of July through December 2014, the inspectors reviewed licensee trend reports and the Integrated Trend Reports from May 1, 2014, to August 30, 2014 in order to determine the existence of any adverse trends that the licensee may not have previously identified. This inspection constituted one Semi-annual Trend Review inspection sample. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified. The licensee had identified trends and appropriately addressed them in their CAP. The inspectors observed that the licensee had performed a detailed review. The licensee routinely reviewed cause codes, involved organizations, key words, and system links to identify potential trends in their data. The inspectors compared the licensee process results with the results of the inspectors' daily screening. Trends that have been identified by the inspectors and reported to the licensee were appropriately entered into the licensee's trending program.

Noteworthy Licensee identified trends included the following:

- PER 936769 The Engineering second trimester assessment identified that only 8 PERs were initiated to identify trends and that none were initiated by Engineering

- PER 905301 and Self Assessment BFN-LIC–S-14-004 documented an emerging trend in incomplete or inaccurate information being identified in historical License Amendment requests

- PER 920847, initiated by Quality Assurance, documented 10 examples of NRC identified minor violations over three quarters that were corrected but not entered into the licensee's CAP for evaluation

- PER 956715 identified a Cognitive Trend associated with over 10 Preventative Maintenance deferrals over a 2 month period

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

.1 (Closed) Licensee Event Report (LER) 50-259/2014-003-00 Turbine Generator Neutral Overvoltage Causes a Reactor Scram

a. Inspection Scope

LER 05000259/2014-003-00 Turbine Generator Neutral Overvoltage Causes a Reactor Scram described the event and the root cause analysis following the Unit 1 reactor scram that occurred on August 26, 2014. The inspectors reviewed the post scram analysis that supported the conclusions made in the root cause analysis. The inspectors reviewed the licensee event report associated with this event and determined that the report adequately documented the summary of the event including the cause of the event and potential safety consequences. This LER is closed.

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000259/2014-004-00, Main Steam Isolation Valves (MSIV) Leaking in Excess of Technical Specification Requirements

a. Inspection Scope

On October 4, 2014, Valves 1-FCV-001-0027 and 0052 each failed to meet the Technical Specification Surveillance Requirement 3.6.1.3.10 local leak rate limit of 100 standard cubic feet per hour (scfh) when tested during refueling outage U1R10. These 1B and 1D Outboard MSIVs had last been tested successfully on October 21, 2012. The October 4, 2014 test results were 114.7 and 158.7 scfh for 1B and 1D MSIVs. The cause of the excessive leakage was attributed to inadequate packing and a non-uniform scale buildup. The packing had been installed in 2008 prior to a MSIV maintenance program change that occurred in 2012. The program change recognized that without adequate packing preload the packing will relax over time. Corrective actions were to replace the packing and remove the scale buildup. The valves were then successfully retested. The inspectors reviewed the licensee event report associated with this event and determined that the report adequately documented the summary of the event including the cause of the event and potential safety consequences. This LER is closed.

b. Findings

Enforcement actions are discussed in section 4OA7.

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

4OA5 Other Activities

.1 Temporary Instruction 2515/189, Inspection to Determine Compliance of Dynamic Restraint (Snubber) Program with 10 CFR 50.55a Regulatory Requirements for Inservice Examination and Testing of Snubbers

a. Inspection Scope

The inspector conducted an onsite review of the implementation of the licensee's snubber program, in accordance with Temporary Instruction (TI) 2515/189, to verify that the program was in compliance with the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a, as discussed in Regulatory Information Summary (RIS) 2010-06, "Inservice Inspection and Testing of Dynamic Restraints (Snubbers)." The inspector reviewed the licensee's actions taken as a result of RIS 2010-06, which included a relief request submitted to the NRC, for its second 10-year Inservice Inspection (ISI) interval pertaining to the examination and testing requirements of snubbers. The inspector conducted an independent walkdown to evaluate compliance with licensee's program requirements. The inspector reviewed the methodology for snubber population selection, and selected 12 snubbers to review based on risk-informed insights, performance history, plant conditions, snubber classification, and accessibility to verify the visual examination of the selected snubbers was performed during every refueling outage of the current 10-year interval. For the selected snubbers, the inspector reviewed the visual test records during the current 10-year ISI interval to

verify these activities were in accordance with the previously approved relief request. The inspector also observed in-process bench testing of one of the selected snubbers, and verified that the test parameters met the acceptance criteria specified in the procedure. The inspector reviewed the process for snubber service-life monitoring, and determined that the selected snubbers were being monitored and maintained. Additionally, the inspector verified that the current, as well as a sample of past degraded or non-conforming conditions, were properly identified and corrected in accordance with the licensee's corrective action program (CAP).

b. Findings

No findings were identified.

.2 Periodic Resident Inspector Review of INPO Evaluations

a. Inspection Scope

The inspectors and Branch Chief reviewed the Institute of Nuclear Power Operations (INPO) Interim Evaluation of Browns Ferry Nuclear Plant dated October 8, 2014. The report was reviewed to ensure that issues identified were consistent with the NRC perspectives of licensee performance and to verify if any significant safety issues were identified that required further NRC follow-up.

.3 Follow-up On Alternative Dispute Resolution Confirmatory Orders (IP 92702) (EA-09-009, EA-09-203)

a. Inspection Scope

During the inspection period the inspectors completed a review of TVA's completion of Confirmatory Order for Office of Investigation Report Nos. 2-2006-025 & 2-2009-003, item numbers 3, 4, 6, and 10. These individual items are considered closed.

3. By no later than the end of calendar year 2013, TVA shall perform two (2) independent safety culture assessments comparable to the independent survey conducted in February 2009. The surveys shall be administered in approximately two-year intervals. TVA shall assess and evaluate the results compared with the results of the prior years' surveys. TVA shall make the results of each survey and the planned corrective actions available for NRC review within sixty (60) calendar days after the development of the planned corrective actions.

4. Through the end of calendar year 2013 and on approximately a quarterly basis, TVA shall continue to analyze SCWE trends and develop planned actions, as appropriate.

6. Through calendar year 2013, TVA shall conduct "Town Hall"-type meetings at least annually at its nuclear power plants and corporate office with TVA and

contractor employees which address topics of interest, including a discussion on TVA's policy regarding fostering a Safety Conscious Work Environment (SCWE).

10. TVA's annual online computer-based training course initiative, which discusses the components of a nuclear safety culture, what is meant by a SCWE, and the avenues available to raise concerns, shall be maintained through calendar year 2013.

The inspectors also performed a follow-up review of TVA's implementation of Confirmatory Order for Office of Investigation Report Nos. 2-2006-025 & 2-2009-003, item number 1. This item remains closed.

1. By no later than ninety (90) calendar days after the issuance of this Confirmatory Order, TVA shall implement a process to review proposed licensee adverse employment actions at TVA's nuclear plant sites before actions are taken to determine whether the proposed action comports with employee protection regulations, and whether the proposed actions could negatively impact the SCWE.

b. Findings

No findings were identified.

The inspectors noted that Watts Bar Unit 1 personnel participated in the Synergy assessments in 2011 and 2013. Watts Bar Unit 2 conducted other assessments related to safety culture and safety conscious work environment (SCWE) during the time period from 2011 to 2013. In particular, the assessments performed by Douglas Levanway in 2011 and 2013 and the annual SCWE surveys performed by Bechtel's Employee Concerns Program contained elements that were similar to, or permissible substitutes for, the methods used to conduct the Synergy assessments. The Team identified some weaknesses in each of the assessment methodologies when compared to the Synergy assessments; however, collectively the assessments performed at Watts Bar Unit 2 are comparable to the assessments performed at the rest of the TVA nuclear fleet. These assessments allowed for opportunities to identify safety culture weaknesses at Watts Bar Unit 2 and trend issues over time. There is also evidence that Watts Bar Unit 2 had corrective actions to address weaknesses identified by the assessments. Therefore, this item is closed for Watts Bar Units 1 and 2.

Although the NRC has completed its planned follow-up inspections, the subject Confirmatory Order and requirements remain in effect throughout the life of the subject licenses.

4OA6 Meetings, Including Exit

On January 26, 2015, the resident inspectors presented the quarterly inspection results to Mr. Keith Polson, Site Vice President, and other members of the licensee's staff, who acknowledged the findings. The inspectors verified that all proprietary information was returned to the licensee.

4OA7 Licensee-Identified Violations

The following Severity Level IV violation was identified by the licensee and is a violation of NRC requirements which meet the criteria of the NRC Enforcement Policy, for being dispositioned as a Non-Cited Violation.

On October 4, 2014, 1B and 1D Outboard MSIVs leak rate test results were found to be above allowed limits at 114.7 and 158.7 standard cubic feet per hour (scfh). Technical Specification 3.6.1.3 D, "Primary Containment Isolation Valves (PCIVs)," requires, in part, that MSIV leakage meet the leak rate limit of 100 scfh to be operable in Modes 1, 2, and 3. Technical Specification 3.6.1.3, Required Action D.1, requires that when MSIV leak rates are not met that they be restored within 4 hours or be in Mode 3 within 12 hours and Mode 4 within 36 hours. Contrary to the above, since the last successful leak rate test on October 21, 2012, the 1B and 1D Outboard MSIVs became inoperable and action was not taken to restore the leakage rate within limits. The Inboard valves leak rate was sufficiently low to maintain the pathway isolation function. This violation was identified by the licensee and entered in the licensee's corrective action program as PER 940890. Traditional enforcement was applicable because no performance deficiency was identified in association with this violation. The licensee had not had sufficient time to perform planned corrective actions developed from previous vendor improvement recommendations. Per the NRC Enforcement Policy section 6.1(d)1 this was determined to be a Severity Level IV violation.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee
K. Polson, Site Vice President
S. Bono, General Plant Manager
J. Paul, Nuclear Site Licensing Manager
L. Hughes, Manager Operations
D. Campbell, Superintendent of Operations
L. Slizewski, Ops Shift Manager
R. Guthrie, System Engineer
M. Roy, Maintenance Rule Coordinator
A. Yarborough, Assistant Director for Site Engineering
M. Oliver, Licensing Engineer
E. Bates, Licensing Engineer
P. Campbell, System Engineer
S. Samaras, Civil Engineer
S. Cornish, Civil Engineer
J. Lacasse, System Engineer
L. Vandiver, Probabilistic Risk Analysis Engineer
D. Campbell, Operations Superintendent
J. Kulisek, Emergency Preparedness Manager
M. Rasmussen, Work Control Manager
T. Richter, Fire Operations Shift Supervisor
M. Acker, Licensing
F. Nilsen, Site Engineer ISI/NDE
F. Froscello, ISI/ISO
G. Dudley, Site Welding Engineer

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None

Opened and Closed

05000259,260,296/2014005-01	FIN	Failure to Perform Required Continued Monitoring of a Degraded Condition (Section 1R06)
05000259/2014005-02	NCV	Failure to Demonstrate Satisfactory Performance of the Automatic Depressurization System Air Accumulators (Section 1R19)

Closed

2515/189	TI	Inspection to Determine Compliance of Dynamic Restraint (Snubber) Program with 10 CFR 50.55a, "Regulatory Requirements for Inservice Examination and Testing of Snubbers" (Section 4OA5.1)
05000259/2014-003-00	LER	Turbine Generator Neutral Overvoltage Causes a Reactor Scram (Section 4OA3.1)
05000259/2014-004-00	LER	Main Steam Isolation Valves Leaking in Excess of Technical Specification Requirements (Section 4OA3.2)
05000259, 260, 296-00	ORD	12/29/2009 Confirmatory Order Action 3 (Section 4OA5.3)
05000259, 260, 296-00	ORD	12/29/2009 Confirmatory Order Action 4 (Section 4OA5.3)
05000259, 260, 296-00	ORD	12/29/2009 Confirmatory Order Action 6 (Section 4OA5.3)
05000259, 260, 296-00	ORD	12/29/2009 Confirmatory Order Action 10 (Section 4OA5.3)

Discussed

05000259, 260, 296-00	ORD	12/29/2009 Confirmatory Order Action 1 (Section 4OA5.3)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment
1-OI-74, Residual Heat Removal System, Rev 90
1-OI-75, Core Spray System, Rev 30
FSAR Chapter 6 (Emergency Core Cooling Systems), Amendment 25

Section 1R05: Fire Protection
Fire Protection Report Volume 1, Rev 20
Fire Protection Report Volume 2, Rev 52
NPG-SPP 18.4.7 Control of Transient Combustibles, Rev 5
Drawing 1-47E850-2 Flow Diagram Fire Protection and Raw Service Water, Rev 31
WO 113965328 Fire Protection Header shutoff to Unit 1 Reactor Building

Section 1R06: Flooding Protection
NEDP-22 Operability Determinations and Functional Evaluations, Rev 15
PDO for PER 940113
PDO for PER 940113 and 953658
WO 116209167 Cracks in grout inside A RHRSW pump room

Section 1R08: In Service Inspection
Corrective Action Documents
PER 630481
PER 638157
PER 649416
PER 659922

Drawings
Sketch No. CS-Sparger-C & D, Core Spray Sparger Detail C & D Sparger
Sketch No. JP-VIP-41, Jet PumpVIP-41 Weld ID Layout

Procedures
PDI-UT-1, Generic Procedure for the UT Examination of Ferritic Pipe Welds, Rev. E
54-ISI-363-007, Remote Underwater In-Vessel Visual Inspection of Reactor Pressure Vessel Internals, Components, and Associated Repairs in Boiling Water Reactors, Rev. 07
Detailed Weld Procedure Specifications (DWPS) – GT18-O-1-N, Rev. 3
DWPS ASME/ANSI – GT88-O-1-N, Rev. 5
DWPS ASME/ANSI – GT11-O-1-N, Rev. 2
N-UT-76, Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds, Rev. 09
N-MT-6, Magnetic Particle Examination for ASME and ANSI Code Components and Welds, Rev. 34
N-UT-64, Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds, Rev. 13
N-UT-84, Procedure for the Phased Array Ultrasonic Examination of Austenitic and Ferritic Pipe Welds, Rev. 3

Other Documents
EPRI PDI-UT-1 NDE Certification, Welch, M., dated 2/13/13

EPRI PDI-UT-1 NDE Certification, Maclean, D., dated 2/13/13
EPRI PDI-UT-1 NDE Certification, Kleinjan, M., dated 2/13/13
EPRI PDI-UT-2 NDE Certification, Welch, M., dated 2/13/13
EPRI PDI-UT-2 NDE Certification, Maclean, D., dated 2/13/13
EPRI PDI-UT-2 NDE Certification, Kleinjan, M., dated 2/13/13
Visual Acuity Exam Record, Maclean, D., 1/6/2014
Visual Acuity Exam Record, Kleinjan, M., 1/31/2014
Visual Acuity Exam Record, Marcus, C., 1/10/2014
Visual Acuity Exam Record, Compton, B., 1/6/2014
IHI Southwest Technologies Certificate of Qualification, Marcus, C., 2/5/2015
IHI Southwest Technologies Certificate of Qualification, Compton, B., 2/6/2014
IHI Southwest Technologies Certificate of Qualification, Maclean, D., 6/24/2014
IHI Southwest Technologies Certificate of Qualification, Kleinjan, M., 6/24/2014
Krautkramer Transducer Certification for S/N SE1657, dated 8/30/2012
Krautkramer Transducer Certification for S/N 01W0HW, dated 9/23/2008
GE Sensing and Inspection Technologies Certificate of Conformity for S/N SE0819, dated 10/15/2009
Certificate of Calibration for Phasor XS Phased Array Instrument S/N 01VX4L, dated January 06, 2014
Report of Calibration for Krautkramer USN 60 Asset ID E36306, dated 09/19/2014
Weld Map # EECW-1-027-1&2, Rev. A
Weld Map # EECW-1-023-6, Rev. B
Weld Map # RFW-1-029-001, Sheet 1, Original
Welder Performance Qualification Record for Wiggins, B., dated 2/5/14
Welder Performance Qualification Record for Whitten, A., dated 5/22/14
Welder Performance Qualification Record for Albright, R., dated 12/05/13
Welder Performance Qualification Record for Hilleary, W., dated 10/6/14
Welder Performance Qualification Record for Jones, B., dated 9/19/14
Welder Performance Qualification Record for Gautney, J., dated 2/25/14
Welder Performance Qualification Record for Bookout, R., dated 1/23/14
Welder Performance Qualification Record for Owens, R., dated 7/25/14
Welder Performance Qualification Record for Potts, K., dated 7/08/14
Welder Performance Qualification Record for Lawrence, B., dated 7/3/14
Weld Data Sheets for Weld ID RFW-1-029-1, dated 10/16/14
Weld Data Sheets for Weld ID EECW-1-027-1&2, dated 10/01/2014
Weld Data Sheets for Weld ID EECW-1-023-6, dated 9/30/14
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Section 4OA2: Identification and Resolution of Problems
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Section 4OA3: Event Follow-up
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LIST OF ACRONYMS

ADAMS	-	Agencywide Document Access and Management System
ADS	-	Automatic Depressurization System
ARM	-	area radiation monitor
CAD	-	containment air dilution
CAP	-	corrective action program
CCW	-	condenser circulating water
CFR	-	Code of Federal Regulations
COC	-	certificate of compliance
CRD	-	control rod drive
CS	-	core spray
DCN	-	design change notice
EECW	-	emergency equipment cooling water
EDG	-	emergency diesel generator
FE	-	functional evaluation
FPR	-	Fire Protection Report
FSAR	-	Final Safety Analysis Report
HPCI	-	high pressure coolant injection
IMC	-	Inspection Manual Chapter
LER	-	licensee event report
NCV	-	non-cited violation
NRC	-	U.S. Nuclear Regulatory Commission
ODCM	-	Off-Site Dose Calculation Manual
PER	-	problem evaluation report
PCIV	-	primary containment isolation valve
PI	-	performance indicator
RCE	-	Root Cause Evaluation
RCIC	-	reactor core isolation cooling
RCW	-	Raw Cooling Water
REMP	-	Radiological Environmental Monitoring Program
RG	-	Regulatory Guide
RHR	-	residual heat removal
RHRSW	-	residual heat removal service water
RTP	-	rated thermal power
RPS	-	reactor protection system
RWP	-	radiation work permit
SDP	-	significance determination process
SBGT	-	standby gas treatment
SLC	-	standby liquid control
SNM	-	special nuclear material
SRV	-	safety relief valve
SSC	-	structure, system, or component
TI	-	Temporary Instruction
TIP	-	transverse in-core probe
TRM	-	Technical Requirements Manual
TS	-	Technical Specification(s)
UFSAR	-	Updated Final Safety Analysis Report
URI	-	unresolved item
WO	-	work order