



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

April 10, 2014

Mr. Joseph 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 PROBLEM IDENTIFICATION AND  
RESOLUTION INSPECTION REPORT 05000259/2014007, 05000260/2014007  
AND 05000296/2014007**

Dear Mr. Shea:

On February 28, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution biennial inspection at your Browns Ferry Nuclear Plant, Units 1, 2, and 3. On February 28, 2014, the NRC inspection team discussed the results of this inspection with Mr. Keith J. Polson and other members of your staff. Following completion of additional post-inspection analysis of the inspection findings and review of additional information by the NRC in the Region II office, a final exit was held by telephone with Mr. M. Oliver on April 3, 2014, to provide an update on changes to the preliminary inspection findings. The inspection team documented the results of this inspection in the enclosed inspection report.

Based on the inspection sample, the inspection team determined that your staff's implementation of the corrective action program supported nuclear safety. In reviewing your corrective action program, the team assessed how well your staff identified problems at a low threshold, your staff's implementation of the station's process for prioritizing and evaluating these problems, and the effectiveness of corrective actions taken by the station to resolve these problems. In each of these areas, the team determined that your staff's performance was adequate to support nuclear safety.

The team also evaluated other processes your staff used to identify issues for resolution. These included your use of audits and self-assessments to identify latent problems and your incorporation of lessons learned from industry operating experience into station programs, processes, and procedures. The team determined that your station's performance in each of these areas supported nuclear safety.

Finally, the team determined that your station's management maintains a safety-conscious work environment adequate to support nuclear safety. Based on the team's observations, your employees are willing to raise concerns related to nuclear safety through at least one of the several means available.

However, the enclosed inspection report discusses one NRC-identified finding and one licensee-identified finding of very low safety significance (Green) identified during this inspection. These two findings were determined to involve violations of NRC requirements.

The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or the 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.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the 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 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,

***/Ryan Taylor RA for/***

Steven D. Rose, Branch Chief  
Reactor Projects Branch 7  
Division of Reactor Projects

Docket Nos.: 50-259, 50-260, 50-296

License Nos.: DPR-33, DPR-52, DPR-68

Enclosure: Inspection Report 05000259/2014007, 05000260/2014007 and 05000296/2014007  
w/Attachment: Supplemental Information

cc Distribution via ListServ

The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or the 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.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the 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 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,  
**/Ryan Taylor RA for/**

Steven D. Rose, Branch Chief  
 Reactor Projects Branch 7  
 Division of Reactor Projects

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

Enclosure: Inspection Report 05000259/2014007, 05000260/2014007 and 05000296/2014007  
 w/Attachment: Supplemental Information

cc Distribution via ListServ

PUBLICLY AVAILABLE       NON-PUBLICLY AVAILABLE       SENSITIVE       NON-SENSITIVE  
 ADAMS:  Yes      ACCESSION NUMBER: \_\_\_\_\_       SUNSI REVIEW COMPLETE       FORM 665 ATTACHED

OFFICE	RII:DRP	RII:DRP	RII:DRP	RII:DRS	RII:DFFI	RII:DRP	RII:DRP
SIGNATURE	RRR /RA/	Via email	Via email	Via email	Via email	CRK /RA for/	SDR /RA/
NAME	RRodriguez	TStephen	BBishop	DLanyi	NPitoniak	JBartley	SRose
DATE	04/03/2014	04/03/2014	04/03/2014	04/03/2014	04/02/2014	04/10/2014	04/08/2014
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: S:\DRP\RPB7\PI&R\INSPECTION REPORTS\BROWNS FERRY\BROWNS FERRY PIR REPORT 2014007.DOCX

J. Shea

3

Letter to J. Shea from Steven D. Rose dated April 10, 2014

SUBJECT: BROWNS FERRY NUCLEAR PLANT - NRC PROBLEM IDENTIFICATION AND  
RESOLUTION INSPECTION REPORT 05000259/2014007, 05000260/2014007  
AND 05000296/2014007

DISTRIBUTION:

C. Evans, RII

L. Douglas, RII

OE Mail

RIDSNRRDIRS

PUBLIC

RidsNrrPMBrownsFerry Resource

**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket No.: 50-259, 50-260, 50-296

License No.: DRP-33, DRP-52, DRP-68

Report No.: 05000259/2014007, 05000260/2014007, 05000296/2014007

Licensee: Tennessee Valley Authority (TVA)

Facility: Browns Ferry Nuclear Plant, Units 1, 2, and 3

Location: Corner of Shaw and Nuclear Plant Roads  
Athens, AL 35611

Dates: February 3 – 7, 2014  
February 24 – 28, 2014

Inspectors: R. Rodriguez, Senior Project Inspector, Team Leader  
T. Stephen, Resident Inspector, Browns Ferry  
B. Bishop, Project Engineer  
D. Lanyi, Operations Engineer  
N. Pitoniak, Fuel Facility Inspector

Approved by: Steven D. Rose, Branch Chief,  
Reactor Projects Branch 7  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000259/2014007, 05000260/2014007, 05000296/2014007; February 3 – 28, 2014; Browns Ferry Nuclear Plant, Units 1, 2, and 3; Biennial Inspection of the Problem Identification and Resolution Program.

The inspection was conducted by a senior project inspector, a project engineer, a resident inspector, an operations engineer, and a fuel facility inspector. One finding of very low safety significance (Green) was identified during this inspection. 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. The Cross-cutting aspect is 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. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

### Identification and Resolution of Problems

The inspectors concluded that, in general, problems were properly identified, evaluated, prioritized, and corrected. The licensee was effective at identifying problems and entering them into the corrective action program (CAP) for resolution, as evidenced by the relatively few number of deficiencies identified by external organizations (including the NRC) that had not been previously identified by the licensee, during the review period. Generally, prioritization and evaluation of issues were adequate, formal root cause evaluations for significant problems were adequate, and corrective actions specified for problems were acceptable. Overall, corrective actions developed and implemented for issues were generally effective and implemented in a timely manner. However, the team did identify deficiencies in the areas of prioritization and evaluation of identified problems.

The inspectors determined that overall audits and self-assessments were adequate in identifying deficiencies and areas for improvement in the CAP, and appropriate corrective actions were developed to address the issues identified. Operating experience usage was found to be generally acceptable and integrated into the licensee's processes for performing and managing work, and plant operations.

Based on discussions and interviews conducted with plant employees from various departments, the inspectors determined that personnel at the site felt free to raise safety concerns to management and use the CAP to resolve those concerns.

### A. NRC-Identified and Self-Revealing Findings

#### **Cornerstone: Mitigating Systems**

Green: An NRC identified non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, was identified for the licensee's failure to adequately identify the root cause for a significant condition adverse to quality as defined in NPG-SPP-22.302 Revision 1,

Enclosure

“Corrective Action Program Screening and Oversight.” Specifically, the licensee initially failed to identify the root cause of the failure of the 1B Standby Liquid Control (SLC) Pump breaker that resulted in the equipment exceeding the Technical Specification Limiting Condition for Operation. The issue was documented in the licensee’s corrective action program as Service Request (SR) 851718.

This performance deficiency was more than minor since it adversely affected the Reactor Safety Mitigating Systems cornerstone objective of availability and reliability of affected equipment. Specifically, the failure to determine the cause of a crack in the breaker’s phase arc chute that fatigued over time impacted the ability to assign effective corrective actions to prevent recurrence and challenges the reliability of the safety-related equipment to provide required reactivity control capability when required for accident mitigation. The inspectors evaluated the risk of this finding using Manual Chapter 0609, Appendix A, Significance Determination Process (SDP) for Findings at Power. This determination was based on the evaluation that the inoperable equipment did not concurrently affect a single reactor protection system (RPS) trip signal to initiate a reactor scram, nor did it involve control manipulations that unintentionally added positive reactivity or result in a mismanagement of reactivity by operators. The finding had a cross-cutting aspect in the area of Problem Identification and Resolution, in the component of Evaluation, since the licensee failed to thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance (P.2). (Section 4OA2.1.c)

B. Licensee-Identified Findings

A violation of very low safety significance (Green) was identified by the licensee and reviewed by the NRC. Corrective actions taken or planned by the licensee have been entered into the licensee’s corrective action program. This violation and corrective action tracking number are listed in Section 4OA7 of this report.

## REPORT DETAILS

### 4. OTHER ACTIVITIES

#### 4OA2 Problem Identification and Resolution

##### .1 Corrective Action Program Effectiveness

###### a. Inspection Scope

The inspectors reviewed the licensee's CAP procedures which described the administrative process for initiating and resolving problems primarily use of problem evaluation reports (PERs) and service requests (SRs). To verify that problems were being properly identified, appropriately characterized, and entered into the CAP, the inspectors reviewed PERs that had been issued between March 2012 and January 2014, including a detailed review of selected PERs associated with the following risk-significant systems: Emergency Diesel Generators (EDGs), High Pressure Injection Coolant Injection (HPCI), Control Room Ventilation and the Condensate and Feedwater System. Where possible, the inspectors independently verified that the corrective actions were implemented as intended. The inspectors also reviewed selected common causes and generic concerns associated with root cause evaluations to determine if they had been appropriately addressed. To help ensure that samples were reviewed across all cornerstones of safety identified in the NRC's Reactor Oversight Process (ROP), the inspectors selected a representative number of PERs that were identified and assigned to the major plant departments, including emergency preparedness, health physics, chemistry, and security. These PERs were reviewed to assess each department's threshold for identifying and documenting plant problems, thoroughness of evaluations, and adequacy of corrective actions. The inspectors reviewed selected PERs, verified corrective actions were implemented, and attended meetings where PERs were screened for significance to determine whether the licensee was identifying, accurately characterizing, and entering problems into the CAP at an appropriate threshold.

The inspectors conducted plant walk-downs of equipment associated with the selected systems and other plant areas to assess the material condition and to look for any deficiencies that had not been previously entered into the CAP. The inspectors reviewed PERs, maintenance history, completed work orders (WOs) for the systems, and reviewed associated system health reports. These reviews were performed to verify that problems were being properly identified, appropriately characterized, and entered into the CAP. Items reviewed generally covered a two-year period of time; however, in accordance with the inspection procedure, a five-year review was performed for selected systems for age-dependent issues.

Control room walk-downs were also performed to assess the main control room (MCR) deficiency list and to ascertain if deficiencies were entered into the CAP. Operator Workarounds and Operator Burden screenings were reviewed, and the inspectors verified compensatory measures for deficient equipment which were being implemented in the field.



The inspectors conducted a detailed review of selected PERs to assess the adequacy of the root-cause and apparent-cause evaluations of the problems identified. The inspectors reviewed these evaluations against the issues discussed in the PERs and the guidance in licensee procedure NPG-SPP-03.1.6, "Root Cause Evaluation," and NPG-SPP-03.1.5, "Apparent Cause Evaluation." The inspectors assessed if the licensee had adequately determined the cause(s) of identified problems, and had adequately addressed operability, reportability, common cause, generic concerns, extent-of-condition, and extent-of-cause. The review also assessed if the licensee had appropriately identified and prioritized corrective actions to prevent recurrence.

The inspectors reviewed selected industry operating experience items, including NRC generic communications to verify that they had been appropriately evaluated for applicability and that issues identified through these reviews had been entered into the CAP.

The inspectors reviewed site trend reports to determine if the licensee effectively trended identified issues and initiated appropriate corrective actions when adverse trends were identified.

The inspector's reviewed licensee audits and self-assessments, including those which focused on problem identification and resolution programs and processes, to verify that findings were entered into the CAP and to verify that these audits and assessments were consistent with the NRC's assessment of the licensee's CAP. The inspectors attended various plant meetings to observe management oversight functions of the corrective action process. These included PER Screening Committee (PSC) meetings and Corrective Action Review Board (CARB) meetings.

Documents reviewed are listed in the Attachment.

b. Assessment

Problem Identification

The inspectors determined that the licensee was generally effective in identifying problems and entering them into the CAP and there was a low threshold for entering issues into the CAP. This conclusion was based on a review of the requirements for initiating PERs as described in licensee procedures NPG-SPP-03.1, "Corrective Action Program," management's expectation that employees were encouraged to initiate PERs for any reason, and the relatively few number of deficiencies identified by inspectors during plant walkdowns not already entered into the CAP. Site management was actively involved in the CAP and focused appropriate attention on significant plant issues.

Based on reviews and walkdowns of accessible portions of the selected systems, the inspectors determined that system deficiencies were being identified and placed in the CAP.

### Problem Prioritization and Evaluation

Based on the review of PERs sampled by the inspection team during the onsite period, the inspectors concluded that problems were generally prioritized and evaluated in accordance with the licensee's CAP procedures as described in the PER severity level determination guidance in NPG-SPP-03.1, "Corrective Action Program." Each PER was assigned a severity level by the PER Screening Committee meeting, and adequate consideration was given to system or component operability and associated plant risk.

The inspectors determined that station personnel had conducted root cause and apparent cause analyses in compliance with the licensee's CAP procedures and assigned cause determinations were appropriate, considering the significance of the issues being evaluated. A variety of formal causal-analysis techniques were used to evaluate PERs depending on the type and complexity of the issue consistent with procedures NPG-SPP-03.1.5, "Apparent Cause Evaluations," and NPG-SPP-03.1.6, "Root Cause Analysis."

The team identified a performance deficiency associated with the licensee's prioritization and evaluation of issues. This issue was screened in accordance with Manual Chapter 0612, Issue Screening.

- PER 718400 identified that some unannounced notification test of the Emergency Response Organization were determined not to be "outside normal working hours." The team asked for the times that the drills actually occurred for the last year. When responding to the question, the licensee identified that there were no off-hour drills conducted during the 3<sup>rd</sup> quarter of 2012 as required by the Facilitation of the Alert and Notification System and Notification System Tests (EPDP-10). Failure to meet the procedural requirement to perform an unannounced off-hours test each quarter was a performance deficiency. This performance deficiency was considered minor because quarterly drills occurred and did meet the off-hours requirement during the other 3 quarters of 2012, therefore the Emergency Preparedness cornerstone was not adversely affected. SR 848715 was written to document that condition.

### Effectiveness of Corrective Actions

Based on a review of corrective action documents, interviews with licensee staff, and verification of completed corrective actions, the inspectors determined that overall, corrective actions were timely, commensurate with the safety significance of the issues, and effective, in that conditions adverse to quality were corrected and non-recurring. For significant conditions adverse to quality, the corrective actions directly addressed the cause and effectively prevented recurrence in that a review of performance indicators, PERs, and effectiveness reviews demonstrated that the significant conditions adverse to quality had not recurred. Effectiveness reviews for corrective actions to prevent recurrence (CAPRs) were sufficient to ensure corrective actions were properly implemented and were effective.

#### c. Findings

Enclosure

Introduction: An NRC identified Green Non-Cited Violation of 10 CFR Part 50 Appendix B, Criterion XVI, Corrective Action, was identified for the licensee's failure to adequately identify the root cause for a significant condition adverse to quality as defined in NPG-SPP-22.302 Revision 1, "Corrective Action Program Screening and Oversight." Specifically, the licensee initially failed to identify the root cause of the failure of the 1B Standby Liquid Control (SLC) Pump breaker that resulted in the equipment exceeding the Technical Specification Limiting Condition for Operation. The issue was documented in the licensee's corrective action program as Service Request (SR) 851718.

Description: On February 13, 2013, the 1B SLC Pump motor breaker was required to be manually tripped by an Auxiliary Unit Operator (AUO). Investigation revealed that the "A" Phase arc chute was broken and resulted in nonconductive material that prevented contact closure between the contacts for one phase on the breaker and its matching contacts on the breaker cubicle. The Past Operability Evaluation determined that the supply breaker had been inoperable since the last successful performance of the functional test on November 20, 2012. The root cause analysis (RCA) PER 791685, Revision 1, determined that the root cause was an undetected crack in the breaker's phase arc chute that fatigued over time. The breakers evaluated are GE AK Beakers containing ceramic arc chutes. The breaker arc chutes are visually inspected during the performance of procedures EPI-0-000-BKR003, "General Electric Type AK 15/25 Circuit Breakers and Switchgear Maintenance," and EPI-0-000BKR009, "Checkout and Test of GE Type AK 15/25 Circuit Breakers After Overhaul," during scheduled preventive maintenance activities. The breakers are located in both harsh and non-harsh environments throughout the plant. The initial root cause analysis established 7 Corrective Actions to Prevent Recurrence (CAPRs) to address the root cause of an undetected crack in the breaker's phase arc chute fatigued over time. CAPRs 2-7 addressed tracking of the replacement of the subject style breakers throughout the plant that are located in non-harsh environments. CAPR-1 addressed performing a second visual inspection of the subject style breaker arc chutes in accordance with procedures EPI-0-000-BKR003 and EPI-0-000-BKR009 for those breakers in harsh environments that will not be replaced. The Initial RCA identified that no change was required to the method of performing the visual inspection as the procedure was adequate as written and specifically stated that no human performance issues existed. The performance of a second visual inspection provided no reasonable assurance that a breaker with an undetectable crack would be identified following maintenance based on the root cause identified in RCA 791685, Revision 1. The inspectors questioned the adequacy of CAPR-1 based on the wording of the root cause identified, specifically that no human performance issue was identified or suspected. The licensee subsequently performed and completed Revision 2 to RCA 791685 establishing the root cause as "a crack in the breaker's arc chute caused during transport due to a human performance error. "

Analysis: The licensee's failure to adequately identify and document the cause of the condition was a performance deficiency. This performance deficiency was more than minor since it adversely affects the Reactor Safety Mitigating Systems cornerstone objective of availability and reliability of affected equipment. Specifically, the failure to determine the cause of the crack in the breaker's phase arc chute that fatigued over time impacts the ability to assign effective corrective actions to prevent recurrence and

Enclosure

challenges the reliability of the safety-related equipment to provide required reactivity control capability when required for accident mitigation. In accordance with the NRC Inspection Manual Chapter 0609.04, Initial Characterization of Findings, dated June 19, 2012, and 0609 Appendix A, The Significance Determination Process (SDP) for Findings At-Power, dated July 1, 2012, the finding was determined to be of very low safety significance (Green). This determination was based on the evaluation that the inoperable equipment did not concurrently affect a single reactor protection system (RPS) trip signal to initiate a reactor scram, nor did it involve control manipulations that unintentionally added positive reactivity or result in a mismanagement of reactivity by operators. The finding had a cross-cutting aspect in the area of Problem Identification and Resolution, in the component of Evaluation, since the licensee failed to thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance (P.2).

Enforcement: 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, requires, in part, that "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition." Contrary to the above, from February 13, 2013 to February 28, 2014, the licensee failed to adequately identify and document the cause of the condition resulting in the failure of the 1B SLC Pump breaker and subsequent inoperability that exceeded Technical Specification Limiting Conditions for Operation required durations. Because this finding is of very low safety significance and has been entered into the CAP as SR 851718, this violation is being treated as an NCV consistent with Section 2.3.2.a of the NRC Enforcement Policy. (05000259/2014-007-01, Failure to Identify the Root Cause of the Failure of the 1B Standby Liquid Control Pump Breaker)

.2 Use of Operating Experience

a. Inspection Scope

The inspectors examined licensee programs for reviewing industry operating experience, reviewed licensee procedure NPG SPP-02.3, "Operating Experience Program," reviewed the licensee's operating experience database to assess the effectiveness of how external and internal operating experience data was handled at the plant. In addition, the inspectors selected operating experience documents (e.g., NRC generic communications, 10 CFR Part 21 reports, licensee event reports, vendor notifications, and plant internal operating experience items, etc.), which had been issued since March 2012 to verify whether the licensee had appropriately evaluated each notification for applicability to the Browns Ferry Nuclear plant, and whether issues identified through these reviews were entered into the CAP.

Documents reviewed are listed in the Attachment.

b. Assessment

Based on a review of documentation related to the review of operating experience issues, the inspectors determined that the licensee was generally effective in screening operating experience for applicability to the plant. Industry operating experience (OE) was evaluated by plant OE Coordinators and relevant information was then forwarded to the applicable department for further action or informational purposes. OE issues requiring action were entered into the CAP for tracking and closure. In addition, operating experience was included in root cause evaluations in accordance with licensee procedure NPG-SPP 22.306, "Root Cause Analysis."

c. Findings

No findings were identified.

.3 Self-Assessments and Audits

a. Inspection Scope

The inspectors reviewed audit reports and self-assessment reports, including those which focused on problem identification and resolution, to assess the thoroughness and self-criticism of the licensee's audits and self-assessments, and to verify that problems identified through those activities were appropriately prioritized and entered into the CAP for resolution in accordance with licensee procedures NPG-SPP-03.1.11, "NPG Self-Assessment Program," and NPG-SPP-03.1.12, "NPG Benchmarking Program."

Documents reviewed are listed in the Attachment.

b. Assessment

The inspectors determined that the scopes of assessments and audits were adequate. Self-assessments were generally detailed and critical, as evidenced by findings consistent with the inspector's independent review. The inspectors verified that PERs were created to document all areas for improvement and findings resulting from the self-assessments and verified that actions were completed consistently with those recommendations. Generally, the licensee performed evaluations that were technically accurate. Site trend reports were thorough and a low threshold was established for evaluation of potential trends, as evidenced by the PERs reviewed that were initiated as a result of adverse trends.

c. Findings

No findings were identified.

#### .4 Safety-Conscious Work Environment

##### a. Inspection Scope

The inspectors randomly interviewed several on-site workers regarding their knowledge of the corrective action program at the Browns Ferry Nuclear Plant and their willingness to write PERs or raise safety concerns. During technical discussions with members of the plant staff, the inspectors conducted interviews to develop a general perspective of the safety-conscious work environment at the site. The interviews were also conducted to determine if any conditions existed that would cause employees to be reluctant to raise safety concerns. The inspectors reviewed the licensee's Employee Concerns Program (ECP) and interviewed the ECP manager. Additionally, the inspectors reviewed a sample of ECP issues to verify that concerns were properly reviewed and that identified deficiencies were resolved and entered into the CAP when appropriate.

Documents reviewed are listed in the Attachment.

##### b. Assessment

Based on the interviews conducted and the PERs reviewed, the inspectors determined that licensee management emphasized the need for all employees to identify and report problems using the appropriate methods established within the administrative programs, including the CAP and ECP. These methods were readily accessible to all employees. Based on discussions conducted with a sample of plant employees from various departments, the inspectors determined that employees felt free to raise issues, and that management encouraged employees to place issues into the CAP for resolution. The inspectors did not identify any reluctance on the part of the licensee staff to report safety concerns.

##### c. Findings

No findings were identified.

#### 4OA6 Meetings, Including Exit

On February 28, 2014, the inspectors presented the inspection results to Mr. Keith J. Polson and other members of the site staff. The inspectors confirmed that all proprietary information examined during the inspection had been returned to the licensee. Following completion of additional post-inspection analysis of the inspection findings and review of additional information by the NRC in the Region II office, a final exit was held by telephone with Mr. M. Oliver on April 3, 2014, to provide an update on changes to the preliminary inspection findings.

#### 4OA7 Licensee Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and constituted a violation of NRC requirements which met the criteria of Section 2.3.2 of the NRC Enforcement Policy for being dispositioned as Non-Cited Violations.

10 CFR 50, Appendix B, Criterion III, "Design Control," states, in part that, measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. These measures shall include provisions to assure that deviations from such standards are controlled. Engineering Document Change 69623 modified plant drawings to add a Furminite injection fitting to 2-FCV-73-81, HPCI Steam Line Warm-up Valve.

Contrary to the above, on May 15, 2009, following maintenance performed on 2-FCV-73-81, the licensee failed to reinstall the Furminite injection fitting to the valve resulting in a steam leak determined to exceed the allowable leakage to maintain operability per Technical Specification 3.6.1.3. Using IMC 0609, Appendix H, "Containment Integrity Significance Determination Process," the inspectors determined the violation was of very low safety significance (Green) because the penetration was considered a small line (1 to 2 inches) and not expected to contribute to the Large Early Release Frequency. This violation was documented in the licensee's corrective action program as PER 56687.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

## KEY POINTS OF CONTACT

### Licensee personnel:

S. Austin, Site Licensing  
C. Bennett, Site Licensing  
J. Barker, Operations Support Superintendent  
T. Bohanan, Control Room Supervisor  
S. Bono, Plant Manager  
S. Burgess, Licensing  
D. Campbell, Operations Manager  
J. Colvin, Engineering Programs  
P. Donahue, Engineering  
G. Doyle, 95003 Team Director  
P. Giancatamino, Quality Assurance  
I. Hagins-Dyer, Senior Program Manager TVA Employee Concerns  
S. Hunnewell, Engineering Director  
D. Jernigan, SVP Support Services  
D. Laing, Training Director  
M. Marks, Operator Workaround Coordinator  
M. Oliver, Site Licensing  
K. Polson, Site Senior Vice President  
T. Scott, PI Manager  
P. Wilson, Corporate Licensing

### NRC personnel:

D. Dumbaker, Senior Resident Inspector  
S. Rose, Chief, Branch 7, Division of Reactor Projects

## LIST OF REPORT ITEMS

### Opened and Closed

05000259/2014-007-01	NCV	Failure to Identify the Root Cause of the Failure of the 1B Standby Liquid Control Pump Breaker (Section 4OA2.1.c)
----------------------	-----	--

### Closed

None

### Discussed

None



## LIST OF DOCUMENTS REVIEWED

### Procedures:

0-OI-18, Fuel Oil System, Rev. 54  
0-OI-77C, Radwaste Filter and Demineralizer system, Rev. 42  
0-OI-77E, Solid Radwaste, Rev. 46  
0-SI-4.11.B.2.b, Diesel Driven Fire Pump Fuel Oil Quality Check, Rev. 29  
0-SR-3.8.3.3, Quarterly Fuel-Oil Quality Determination of Unit 0 Diesel Generator's 7-Day Storage Tank Supply, Rev. 12  
0-TI-158, Representative/Bottom Sampling of the Diesel Generator 7-Day Tank Fuel Oil, Rev. 25  
0-TI-389, Raw Water Fouling and Corrosion Control, Rev. 18  
0-TI-395, Breaker Testing and Maintenance Program, Rev. 10  
0-TI-597, Fuel Oil Chemistry, Rev. 0  
0-TI-603, Chemistry Control, Rev. 0  
0-TI-615, Inaccessible Medium Voltage Cables, Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program, Rev. 0  
0-TI-619, Electrical Cables not subject to EQ, Rev. 0  
0-TI-622, Accessible Non-Environmentally Qualified cables and connections, Rev. 0  
0-TI-623, Buried piping and Tanks Inspection, Rev. 0  
0-TI-626, One-Time Inspection, Rev. 0  
1-SI.4.11.C.1.c, Unit 1 Simulated actuation of fire protection systems, Rev. 42  
3-SI-4.11.C.1.c, Unit 3 Simulated actuation of fire protection systems, Rev. 32  
BFN-ODM-4.16, Operator Workarounds/Burdens/Challenges, Rev. 4  
EPI-0-000-BKR003, General Electric Type AK-15/25 Circuit Breakers and Switch Gear Maintenance, Rev. 80  
EPI-0-000-BKR009, Inspection, Test and Checkout of 250 VDC and 480 VAC GE Model AKR-50 Circuit Breakers, Rev. 14  
NEDP-8, Technical Evaluation for Procurement of Material and Services, Rev. 23  
NPG SPP-02.3, Operating Experience Program, Rev. 7  
NPG-SPP 22.300, Corrective Action Program, Rev. 0  
NPG-SPP 22.305, Apparent Cause Evaluations, Rev. 0  
NPG-SPP 22.306, Root Cause Analysis, Rev. 1  
NPG-SPP-22.302, Corrective Action Program Screening and Oversight, Rev. 1  
NPG-SPP-22.303, PER Analysis Actions Closures and Approvals, Rev. 1  
NPG-SPP-03.1.4, Corrective Action Program, Rev. 13  
NPG-SPP 03.1.5, Apparent Cause Evaluations, Rev. 9  
NPG-SPP 03.1.6, Root Cause Analysis, Rev. 8  
NPG-SPP-03.1.11, NPG Self-Assessment Program, Rev. 2  
NPG-SPP-03.1.12, NPG Benchmarking Program, Rev. 0  
NPG-SPP 03.1, Corrective Action Program, Rev. 7

N-UT-26, Ultrasonic Examination for wall thinning conditions, Rev. 27

OPDP-1, Conduct of Operations, Rev. 31

OPDP-8, Operability Determination Process and Limiting Conditions for Operation Tracking,  
Rev. 16

Problem Evaluation Reports (PER):

146665, 203537, 207876, 210437, 218493, 233981, 234151, 239313, 241903, 351673, 372047,  
496592, 505551, 507721, 509589, 514755, 514846, 514894, 514944, 514976, 514991, 515211,  
515325, 515337, 515376, 515448, 516736, 517290, 517768, 518756, 518851, 518960, 520312,  
520483, 520871, 520876, 521539, 523715, 526318, 527311, 529008, 529543, 535962, 537096,  
537850, 538266, 538791, 539040, 542943, 548413, 549899, 549901, 552218, 555445, 557346,  
561615, 561694, 562303, 562958, 563499, 564211, 564744, 566655, 566687, 567742, 567744,  
567747, 567748, 575371, 576814, 577448, 581478, 590305, 592811, 596707, 598774, 599320,  
599537, 600150, 602163, 603544, 604603, 611052, 614448, 615315, 616450, 624796, 626060,  
629212, 633006, 635775, 643085, 643878, 646607, 651102, 661328, 665217, 671314, 671358,  
673549, 674502, 675461, 679304, 681667, 684115, 689792, 695119, 696780, 698870, 701405,  
702578, 704964, 705614, 710206, 715087, 718400, 721024, 721623, 722559, 722859, 729152,  
731570, 733699, 734582, 735824, 735838, 736954, 737784, 738548, 740212, 740270, 740640,  
740742, 751300, 751433, 755713, 764718, 769577, 771620, 771653, 771664, 771672, 772092,  
772100, 779907, 780893, 783069, 784087, 784106, 784148, 784156, 784586, 791685, 792159,  
792410, 794807, 796530, 796537, 796576, 797157, 797168, 797185, 797570, 797618, 797698,  
797742, 805013, 809182, 817310, 819501, 822199, 824720, 831429, 852561

Service Request (SR):

221600, 551199, 743949, 845969, 845989, 845997, 849081, 851167

Work Orders (WO):

110757064, 110775759, 110829593, 110951620, 111003075, 111229336, 112254075,  
112289451, 112781739, 113419864, 113515087, 114446596, 114469088, 114469097,  
114469105, 114469114, 114469130, 115052074, 144469160, 08-713467-000, 09-715284-000,  
09-719818-000, 09-719821-000, 09-719883-000, 09-720421-000

Audits and Self-Assessments:

BFN-WC-S-13-009, Compliance with Work Management Processes/Procedures – Assessment  
Report, September 19, 2013

BFN-OPS-S-13-010, Operator Workarounds, Burdens, and Challenges Snapshot Self –  
Assessment Report, September 30, 2013

SSA1302, TVA Quality Assurance - Nuclear Power Group - Browns Ferry Nuclear Plant –  
Corrective Action Program - Audit Report, March 4, 2013

SSA1303, TVA Quality Assurance - Nuclear Power Group - Browns Ferry Nuclear Plant –  
Licensing/Employee Concerns Program - Audit Report, April 12, 2013

SSA1305, TVA Quality Assurance - Nuclear Power Group - Browns Ferry Nuclear Plant –  
Emergency Preparedness - Audit Report, May 14, 2013

SSA1308, TVA Quality Assurance - Nuclear Power Group - Browns Ferry Nuclear Plant –  
Operations - Audit Report, June 24, 2013

Miscellaneous Documents:

0-TI-565, One Time Inspection Procedure, Rev. 6  
 0-TI-597, Aging Management Program Basis Document Fuel Oil Chemistry Program, Rev 0  
 0-TI-628, Carbon Steel/Raw Uncontrolled Water Monitoring Program, Rev. 0  
 2-08-002-0073, BFN -2-FCV-073-081, HPCI Steam Line Warmup Valve Around FCV-73-3, Rev. 0  
 2-12-003-0073, BFN -2-FCV-073-081, HPCI Steam Line Warmup Valve Around FCV-73-3, Rev. 0  
 Aging Management Program Notebook, dated January 30, 2014  
 Analysis of Site Performance for the Period July 1 to September 30, 2013  
 BFN Safety Culture Continuous Improvement and Sustainability Plan, dated July 2013  
 BFN-NOER-13-049, Trend in EECW piping through wall leaks, dated May 3, 2013  
 BFN Aging Management Program Notebook, Fuel Oil Chemistry Program, Rev. 0  
 BFN-TRN-S-012-034, Operability Determination/Functional Evaluation Training Effectiveness, dated April 10, 2012  
 Browns Ferry 90-Day Response to NRC Bulletin 2012-01, "Design Vulnerability in Electric Power System," dated October 25, 2012  
 BFN response to the NRC for RIS 2013-06, dated July 8, 2013  
 BFN response to RIS 2012-07, dated July 16, 2012  
 BFN 90 Day Response to NRC Bulletin 2012-01, dated October 25, 2012  
 Browns Ferry UFSAR Appendix O, Amendment 25  
 NDN-000-000-2010-0001, BFN Probabilistic Risk Assessment - Summary Document, Rev. 5  
 CI-13.1, Chemistry Program, Rev. 46  
 CI-130, Diesel Fuel Oil Testing and Monitoring Program, Rev. 29  
 CI-137, Raw Water Chemical Treatment, Rev. 22  
 Commitment Number NCO040006062, One time inspection of Emergency Diesel Generator (EDG) Tank wall thickness, Rev 0  
 Corrective Action Review Board (CARB) minutes 6/21/13  
 Corrective Action Review Board (CARB) minutes 6/19/13  
 Corrective Action Review Board (CARB) minutes 5/31/13  
 DG-M5.2.1, Corrosion/Erosion Allowance for Determination of Minimum Wall Thickness in Carbon Steel Piping, Rev. 3  
 DWG 0-47W310-5, Mechanical Tanks (EDG 7 day tank), Rev. 0  
 EDC 66108, Design change for RHR heat exchanger floating head assemblies, Rev. A  
 EDG 7 day tank inspection results for EDG "3C" dated June 17, 2008  
 EDG 7 day tank inspection results for EDG "A" dated June 11, 2008  
 Engineering PER backlog reduction status, dated 2/26/2014  
 EPRI BWR Chemistry Control Guidelines, Rev 0  
 EPRI NP 5769, Degradation and Failure of Bolting in Nuclear Power Plants, Volume 1  
 EPRI NSAC-202L, Recommendations for an effective Flow Accelerated Corrosion (FAC) control program, Rev. 4  
 Fire Protection Plan Volume 1, Rev. 18  
 Freeze protection walkdown results with work orders assigned, dated 2/26/2014  
 GL 89-13, Inspection records for "3D" Residual Heat Removal (RHR) Room Cooler, dated April 12, 2012  
 Graph of tritium in groundwater wells, dated February 25, 2013  
 Groundwater well sample results, dated November 5, 2013  
 NDQ 0999920011, Seismic Class I System Piping Boundaries, Rev. 60

NDQ 0999920011, Attachment 1 Seismic Class 1 system piping drawings, Rev 60  
NUREG 1801 Generic Aging Lessons Learned (GALL) report, Rev. 2  
Purchase documentation for EDG 7 day tanks, dated October 8, 1969  
System 031, A/C Heating CREV Health Report 3<sup>rd</sup> Quarter 2013  
System identification number listing, dated February 7, 2014  
SITE -Equipment Reliability Management Review Meeting Minutes, dated January 7, 2014  
TVA Cause Evaluation Handbook, Rev. 5  
TVA internal routing of RIS 2013-12, dated August 23, 2013  
TVA internal routing of RIS 2012-09, dated August 14, 2012  
TVA internal routing of RIS 2012-07, dated June 18, 2012  
TVA internal routing of RIS 2012-06, dated April 20, 2012  
TVA internal routing of RIS 2012-04, dated April 22, 2012  
TVA internal routing of NRC Bulletin 2012-01, dated July 31, 2012  
TVA internal routing of IN 2013-19, dated October 2, 2013  
TVA internal routing of IN 2013-14, dated September 5, 2013  
TVA internal routing of IN 2013-05, dated March 21, 2013  
Unit 3 drywell liner inspection schedule, dated February 14, 2014

SRs written as part of this inspection:

845666, Aging Program Element 10 Enhancement  
845667, Aging Program Element 1 Enhancement  
845888, PM for RCIC  
845969, EDG 3B Supply Piping Leak  
845989, EDG 3C Battery Support Corrosion  
845997, EDG 3C Kiene Valve Covers Missing  
851718, CAPR deficiency with RCA 791685  
851942, Interim Effectiveness Reviews for PER 555445 ineffective