



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

March 25, 2016

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 05000259/2016007, 05000260/2016007  
AND 05000296/2016007**

Dear Mr. Shea:

On February 25, 2016, 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. The enclosed inspection report documents the inspection results, which were discussed on February 25, 2016, with Mr. Steven Bono and other members of your staff.

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 of very low safety significance (Green) identified during this inspection. This finding was determined to involve a violation of NRC requirements. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violation or the significance of this NCV, 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,

**/RA/**

Anthony D. Masters, 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 05000259/2016007, 05000260/2016007 and 05000296/2016007  
w/Attachment: Supplemental Information

cc: Distribution via ListServ

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 ADAMS:  Yes      ACCESSION NUMBER: ML16085A180       SUNSI REVIEW COMPLETE       FORM 665 ATTACHED

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SIGNATURE	AMR4 via email	DLR2 via email	JXR1 via email	RCT1	ADM2		
NAME	A. Ruh	D. Retterer	J. Rivera	R. Taylor	A. Masters		
DATE	3/24/2016	3/15/2016	3/15/2016	3/24/2016	3/25/2016		
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J. Shea

3

Letter to J. Shea from Anthony D. Masters dated March 25, 2016

SUBJECT: BROWNS FERRY NUCLEAR PLANT - NRC PROBLEM IDENTIFICATION AND  
RESOLUTION INSPECTION REPORT 05000259/2016007, 05000260/2016007  
AND 05000296/2016007

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**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.: 05000259/2016007, 05000260/2016007, 05000296/2016007

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 8 – 11, 2016  
February 22 – 25, 2016

Inspectors: R. Taylor, Senior Project Inspector, Team Leader  
D. Retterer, Resident Inspector Hatch  
J. Rivera, Health Physics Inspector  
A. Ruh, Resident Inspector Browns Ferry

Approved by: Anthony D. Masters, Branch Chief,  
Reactor Projects Branch 7  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000259/2016007, 05000260/2016007, 05000296/2016007; February 8 – 25, 2016; 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, two resident inspectors, and a health physics 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 April 29, 2015. The Cross-cutting aspect is determined using IMC 0310, "Components Within the Cross Cutting Areas," dated December 4, 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 50, Appendix B, Criterion XVI, Corrective Action, was identified for the licensee's failure to promptly identify conditions adverse to quality associated with deficient flood barrier penetrations in the 'B' Residual Heat Removal Service Water (RHRSW) compartment. As an immediate corrective action, the licensee evaluated the deficiencies and determined that the equipment in the room would remain operable during a design basis flood. The violation was entered into the licensee's corrective action program as CR 1119892.

The performance deficiency was more-than-minor because it was associated with the protection against external factors attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the capability of the flood protection function of the 'B' RHRSW compartment was adversely affected due to the presence of degraded penetrations. The finding was screened using IMC 0609 Appendix A, Exhibit 4, "External Events Screening Questions," dated June 19, 2012. The finding screened as very low safety significance (Green) because the finding would not cause a plant trip, initiating event, degrade two or more trains of a multi-train system or function, and it would not degrade one or more trains of a system that supports a risk significant system or function. Additionally, the finding did not involve the total loss of any safety function. The inspectors determined that the finding had a cross-cutting aspect in the Human Performance area of Conservative Bias (H.14) because personnel characterized the potential deficiencies as "not unacceptable" rather than establishing that final acceptability was still in question which required timely resolution. (Section 4OA2)

## 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 condition reports (CRs) and service requests (SRs). To verify that problems were being properly identified, appropriately characterized, and entered into the CAP, the inspectors reviewed CRs that had been issued between March 2014 and January 2016, including a detailed review of selected CRs 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 CRs that were identified and assigned to the major plant departments, including emergency preparedness, health physics, chemistry, and security. These CRs 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 CRs, verified corrective actions were implemented, and attended meetings where CRs 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 CRs, 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 CRs 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 CRs and the guidance in licensee procedure NPG-SPP-22.306, "Level 1 Evaluation," and NPG-SPP-22.305, "Level 2 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 CRs as described in licensee procedures NPG-SPP-0300, "Corrective Action Program," management's expectation that employees were encouraged to initiate CRs 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.

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

- Inspectors identified that Control Bay Habitability Zone (CBHZ) Penetration Breach Analysis procedure 0-TI-272 stated that the maximum allowable breach size is 197.97 square inches. The step references calculation MDQ003020040025. The current revision (revision 2) of the calculation; however, concluded that the breach area must be maintained less than 77.628 square inches in order to maintain the Control Room Emergency Ventilation System (CREVS) operable. Based on this discrepancy between the current calculation and the breach procedure, a breach could theoretically be authorized which would cause CREVS to be inoperable. This error existed because the breach procedure had not been updated to match revision 1 of the calculation in May 19, 2011 and again for revision 2 in April 10, 2015. The failure to ensure 0-TI-272 was maintained appropriate to the circumstances was a performance deficiency contrary to 10 CFR 50, Appendix B, Criterion V. The performance deficiency was minor because, despite the error in the text of the procedure, engineers were actively controlling breaches to less than 68.506 square inches, which precluded the possibility of making CREVS unknowingly inoperable. Engineers were controlling breaches to this lower level because they made an entry in their breach status log at the time of revision 1 of the calculation to reduce the allowed breach from 197.97 square inches down to 68.506 square inches. Engineers did not make the same correction for revision 2 of the calculation (77.628 square inches allowed); however, the error resulted in a conservative control over breaches. This failure to comply with 10 CFR 50, Appendix B, Criterion V constitutes a minor violation that is not subject to enforcement action in accordance with the NRC's Enforcement Policy.

Additionally, inspectors followed-up on a previously documented unresolved item: 05000259/260/296/2015-004-03, Corrective Actions For 2012 Flooding Walkdowns, documented in NRC report number 05000296/2015004. The issue was associated with several potentially deficient flood barrier penetrations in the 'B' Residual Heat Removal Service Water (RHRSW) compartment that had not been fully evaluated by the licensee. Inspectors reviewed leak rate testing documentation and interviewed personnel about the penetrations, testing and corrective actions. After these reviews, the inspectors concluded a more-than-minor performance deficiency existed (discussed in 4OA2.1.c).

### Problem Prioritization and Evaluation

Based on the review of CRs 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 CR severity level determination guidance in NPG-SPP-0300, "Corrective Action Program." Each PER was assigned a severity level by the CR 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 CRs depending on the type and complexity of the issue consistent with procedures NPG-SPP-22.306, "Level 1 Evaluation," and NPG-SPP-22.305, "Level 2 Evaluation."

### 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, CRs, 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

##### 1. (Closed) Unresolved Item (URI) 05000259/260/296/2015004-03 Corrective Actions For 2012 Flooding Walkdowns

Introduction: An NRC identified Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the licensee's failure to promptly identify conditions adverse to quality associated with deficient flood barrier penetrations in the 'B' RHRSW compartment.

Description: Inspectors identified a severely corroded 2" diameter abandoned pipe penetrating the floor of the 'B' RHRSW compartment. The pipe had rusted through and caused the inspectors to question whether the open pipe created a pathway that would allow potential flood waters outside the compartment to flow into the compartment and flood the room. The licensee's evaluation discovered that the condition was previously identified in July 2012 during the licensee's flooding walkdowns required by the NRC order implementing Near-Term Task Force Recommendation 2.3 related to the Fukushima Dai-ichi nuclear power plant accident. Inspectors reviewed the licensee's

flooding walkdown report and performed additional inspections of the licensee-identified deficiencies and the status of their corrective actions. In total, the inspectors found that the following four conditions had not been corrected in the 'B' RHRSW room: 1) The 'B' emergency equipment cooling water (EECW) strainer backwash valve conduit was severed where it penetrated the floor of the room, 2) There was an unsealed gap between a conduit sleeve and the enclosed conduit for powering the B1 RHRSW pump, 3) There was a 1/4 inch by 3/8 inch hole in a rubber boot at the 'B' EECW discharge pipe floor penetration and 4) There was a severely corroded 2" diameter abandoned pipe penetrating the floor. After performing drawing reviews and local leak rate testing of the abandoned pipe, the licensee determined that the first and fourth condition did not bypass the flood barriers and that the other two would potentially introduce flood water into the compartment at rate of 35 gallons per minute. This amount of in-leakage was within the available pumping capacity of a single compartment sump pump and was not an immediate operability concern.

The licensee initially reported these conditions to the NRC on November 27, 2012 as potential deficiencies awaiting further inspection and possible repair; however, the work order to complete these actions was not accomplished until some of the items were re-identified and questioned by the inspectors in 2015. TVA Procedure CTP-FWD-100, "Flood Protection Walkdowns NEI 12-07," Section 5.0, "Acceptance Criteria," required that observations which cannot be immediately judged as acceptable be entered into the Corrective Action Program (CAP) where an evaluation of the observations can be made. The licensee entered the potential deficiencies into the CAP; however, the program did not result in evaluations which judged whether the observations identified in SR#633945 were acceptable. Once evaluated, several of the original observations were determined to be acceptable; however, some of the observations could not be determined to be acceptable and were therefore, conditions adverse to quality.

Analysis: The inspectors determined that the failure to evaluate the observations made of the 'B' RHRSW room flood barriers as described in CTP-FWD-100, "Flood Protection Walkdowns NEI 12-17," was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external factors attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the capability of the flood protection function of the 'B' RHRSW compartment was adversely affected due to the presence of degraded penetrations. The finding was screened using IMC 0609 Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," dated June 19, 2012. Because the finding involved the degradation of a function specifically designed to mitigate a flood (e.g. flood barriers), the finding was further screened using Exhibit 4, "External Events Screening Questions." The finding screened as very low safety significance (Green) because when the two degraded penetrations are assumed to be completely failed, the resulting in-leakage into the room would not cause a plant trip, initiating event, degraded two or more trains of a multi-train system or function, and it would not degrade one or more trains of a system that supports a risk significant system or function. Additionally, the finding did not involve the total loss of any safety function. The inspectors determined that the finding had a cross-cutting aspect in the Human

Performance area of Conservative Bias (H.14) because personnel characterized the potential deficiencies as “not unacceptable” rather than establishing that final acceptability was still in question which required timely resolution.

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 deficiencies, are promptly identified. Contrary to the above, from November 27, 2012 to January 14, 2016, the licensee failed to maintain measures to promptly identify deficient flood barriers in the ‘B’ RHRSW Pump Room. The licensee took immediate corrective actions to evaluate the deficiencies and determined that the equipment in the room would remain operable during a design basis flood. The licensee entered the violation into the licensee's corrective action program as CR 1119892. This violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. (NCV 05000259/260/296/2016007-01, Failure to Promptly Identify Conditions Adverse to Quality Associated with RHRSW Room Flood Barriers).

.2 Use of Operating Experience

a. Inspection Scope

The inspectors examined licensee programs for reviewing industry operating experience, reviewed licensee procedure NPG SPP-22.500, “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-22.102, "NPG Self-Assessment Program and Benchmarking Programs."

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 CRs 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 CRs 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 CRs 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.

#### b. Assessment

Based on the interviews conducted and the CRs 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 25, 2016, the inspectors presented the inspection results to Mr. Steve Bono and other members of the site staff. The inspectors confirmed that all proprietary information examined during the inspection had been returned to the licensee.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## KEY POINTS OF CONTACT

### Licensee personnel:

T. Anderson, Performance Improvement Manager  
S. Bono, Site VP  
K. Bronson, Sr Site VP  
E. Bares, Licensing  
J. Castro, Program Manager, Corporate Licensing  
G. Doyle, Director, EPU/PUP  
J. Garner, Licensing  
K. Harvey, Balance of Plant Supervisor  
S. Hunnewell, Engineering Director  
D. Jackson, Systems Engineer  
J. Kent, Director Site Support  
M. Lawson, Radiation Protection Manager  
J. Morris, CAP Manager, Performance Improvement  
M. McAndrew, Director Operations  
J. Paul, Site Licensing Manager  
T. Scott, QA Manager  
P. Summers, Director Plant Support  
B. Tidwell, Site VP Assistant  
Ashley White, Performance Improvement  
J. Wynn, Chemistry Manager

### NRC personnel:

D. Dumbacher, Senior Resident Inspector  
A. Masters, Chief, Branch 7, Division of Reactor Projects  
T. Stephens, Resident Inspector

## LIST OF REPORT ITEMS

### Opened and Closed

05000259/260/296/2016007-01	NCV	Failure to Promptly Identify Conditions Adverse to Quality Associated with RHRSW Room Flood Barriers (Section 40A2)
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### Closed

05000259/260/296/2015004-03	URI	Corrective Actions for 2012 Flooding Walkdowns (Section 40A2)
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### Discussed

None

## LIST OF DOCUMENTS REVIEWED

### Procedures:

0-GOI-200-1, Freeze Protection Inspection, Rev. 81  
0-GOI-300-1, Operator Round Logs, Rev. 208  
1, 2, 3-OI-94, Traversing Incore Probe System, Rev. 19, 37, and 24 respectively  
1-SI-4.4.A.1, Standby Liquid Control Functional Test, Rev. 23  
1, 2, 3-OI-99, Reactor Protection System, Rev. 47, 83, and 55 respectively  
1-SR-3.1.7.1, Conditional for Standby Liquid Control (SLC) Solution Level Check, Rev. 12  
3-SI-3.2.4 (SDBR), EECW Check Valve Test on SDBR Chillers, Rev. 12  
3-SI-3.2.4 (RHR I), EECW Check Valve Test on Residual Heat Removal System Division I,  
Rev. 08  
1, 2, 3-SR-3.5.1.1 (HPCI), Maintenance of Filled HPCI Discharge Piping, Rev. 9  
CL-13.1 - Chemistry Program, Rev. 48  
EPIP-12, Emergency Equipment and Supplies, Rev. 17  
EPIP-15, Emergency Exposure, Rev. 12  
FPDP-4, Fire Emergency Response, Rev. 06  
RCI-17, Control of High Radiation Areas and Very High Radiation Areas, Rev. 84  
RCI-41, Radiation Protection's Periodic Routines, Rev. 33  
NPG-SPP-01.1, Administration of Standard Programs & Processes (SPPs); Standard  
Department Procedures (SDPs); and Business Practices (BPs), Rev. 05  
NPG-SPP-03.3, NRC Commitment Management, Rev. 06  
NPG-SPP-05.2.1, Operational ALARA Planning and Controls, Rev. 04  
NPG-SPP-05.18, Rev. 01  
NPG-SPP-06.8, Leak Reduction Program, Rev. 1  
OPDP-1, Conduct of Operations, Rev. 37  
0-OI-67, Emergency Equipment Cooling Water System, Rev. 112  
MCI-0-000-PCK001, Generic Instructions for Valve Packing, Revs. 30, 31, 32, 33, 34  
0-TI-272, Control Bay Habitability Zone Penetration Breach Analysis, Rev. 8, 10, 12  
NPG-SPP-09.26.20, Valve Stem Packing Enhancement Program, Rev. 0  
MME025.003, Valve Packing Lesson Plan  
NPG-SPP-03.4, Maintenance Rule Performance Indicator Monitoring, Trending and Reporting –  
10CFR50.65, Rev. 3  
0-TI-346, Maintenance Rule Performance Indicator Monitoring, Trending and Reporting –  
10CFR50.65, Rev. 47  
CTP-FWD-100, Flood Protection Walkdowns NEI 12-07, Rev. 2

### Condition Reports (CR):

243128, 721569, 790092, 790109, 800190, 801057, 852574, 854205, 855181, 856561, 859093,  
860152, 865757, 874355, 876512, 878702, 879809, 880785, 881714, 882293, 884204, 888630,  
890649, 892009, 900641, 903080, 909287, 910804, 911184, 920418, 922055, 926383, 929876,  
934576, 941766, 946851, 949167, 949751, 952065, 957156, 957974, 958012, 958835, 964577,  
966328, 989728, 991980, 994103, 995392, 995993, 996771, 999357, 962223, 968531,  
1001683, 1009084, 1017294, 1017856, 1018297, 1027267, 1027287, 1093981, 1118405,  
1101545, 1102787, 1102772, 1085977, 1094953, 1081812, 1079624, 1067210, 1035028,  
1040823, 1043488, 989728, 991980, 9974738, 952082, 995993, 962223, 109654, 1079624,

1067210, 1035028, 997473, 1031635, 871919, 1000662, 1000663, 1000664, 1000665, 1008300, 1012980, 1016551, 1092520, 562303, 1078087, 1025066, 1065182, 1135384, 212791, 473637, 852579, 867001, 873895, 876012, 880863, 906452, 908203, 913911, 914024, 917359, 926429, 934434, 938283, 940852, 941033, 944785, 970737, 973627, 975524, 990793, 1003397, 1007206, 1007211, 1007217, 1009621, 1009623, 1019164, 1019695, 1022022, 1022025, 1022026, 1025473, 1025685, 1029869, 1031779, 1032642, 1039710, 1039836, 1059347, 1059355, 1064118, 1064993, 1068198, 1068719, 1068999, 1069121, 1069400, 1070658, 1071234, 1071352, 1075911, 1079928, 1081396, 1086878, 1087349, 1089477, 1089857, 1093416, 1094520, 1094763, 1103056, 1103510, 1103611, 1108172, 1109226, 1114188, 1119892, 1136822

Work Orders (WO):

114674833, 115187517, 114582869, 115892268, 116046353, 116403748, 116797395, 114639261, 115847009, 116215219, 116216981, 116717636, 116753131, 116866651, 116872123, 116872126, 117005100, 117158412, 117165436, 117348290, 117463376, 117464053

Audits and Self-Assessments:

BFN-ENG-F-14-002, Control Room Envelope (CRE) Habitability Program Assessment, dated November 13, 2014, Rev. 1  
 BFN-MNT-FSA-15-001, AOV and MOV Program, dated October 9, 2015  
 BFN-MNT-SSA-15-003, Leak Reduction Program, dated March 4, 2015  
 BFN-ENG-S-14-024, Valve Packing Self-Assessment, dated October 24, 2014  
 CRP-ENG-F-10-009, Air Operated Valve Fleet Focused Self-Assessment, conducted May 3 through 20, 2010

Miscellaneous Documents:

0-TI-577, Inservice Testing of Pressure Relief Devices, Rev. 5  
 1-47E854-1, SLC Flow Diagram, Rev. 14  
 ALARA Post-Job Review, 14-0081, 1/28/15  
 ALARA Work-in-Progress Review, 14-0081, 10/24/14  
 BFN-VTD-G250-0020, SLC Accumulator Maintenance Manual  
 SLC System Health Report  
 MDQ0063900083, SLC NPSH Calculation  
 NEDP-5 DD Review, Design Calculation Review  
 BFN-50-7063, SLC Design Basis Document  
 Effectiveness Review, CR Number: 1017856  
 Emergent Dose Control and Authorization (form)  
 FY16 SAC (Station ALARA Committee) Action Items (spreadsheet)  
 Pre-Job Briefing for the 11/4/15 Graded Exercise, Rev. 0  
 Station ALARA Committee Review Package, 10/21/15  
 System Health Report, RHR Service Water / EECW, 6/1/15 – 9/30/15  
 System Health Report, RHR Service Water / EECW, 10/1/15 - 1/31/16  
 U2R18 PCE Intervention Plan, March 2015  
 U3R16 PCED Reduction Plan, February 2014  
 VSIDS Standard Map Survey Report, Survey # M-20160120-8, 1/20/16  
 VSIDS Standard Map Survey Report, Survey # M-20151224-2, 12/23/15  
 0-47E851-4 Flow Diagram Drainage, Rev 17

3-47W587-1 Mechanical Drains & Embedded Piping, Rev. 4  
3-47W587-2 Mechanical Drains & Embedded Piping, Rev. 2  
MDQ003020040025, Control Bay Habitability Zone Seismic Class II Boundaries and Max Allowable Breach Analysis, Revs. 0, 1 and 2  
PM 73342  
Raw Water Inspection Report 116511187 of 3C Diesel Generator Heat Exchanger, dated November 9, 2015  
Raw Water Inspection Report 116993775 of C Diesel Generator Heat Exchanger, dated January 11, 2016  
Eddy Current Inspection Report 116511187 of 3C Diesel Generator Heat Exchanger, dated November 10, 2015  
NRC Letter titled "Station Blackout – Browns Ferry Units 1, 2, and 3 (MPA-A022) (TAC NOS. M68517, M68518, AND M68519), dated September 16, 1992  
Eddy Current Inspection Report 116993775 of C Diesel Generator Heat Exchanger, dated January 11, 2016  
AP Services Valve Packing Guide, Rev. 3  
Weir Valve Technical Bulletin #11.1  
Procedure Change Request 14001591  
BFN-50-7082, General Design Criteria Document: Standby Diesel Generator, Rev. 24  
Memorandum MEB830509013, "Diesel Engine Jacket Water Cooler – Design Pressure and Thermal Performance, dated May 6, 1983  
MK/PSD Report No. 6981-8A, Establish the Rating of the Emergency Diesel Generator and Provide Deration Curves for Elevated Ambient Combustion Air Temperatures," dated December 21, 1988  
Aging Management Program Notebook: Diesel Starting Air Program, Rev. 0  
Maintenance Rule (a)(1) evaluation for CR 105 contactor failures  
Maintenance Rule (a)(1) plan for Air Conditioning System 031, Rev. 5  
Control Bay Habitability Zone Breach Permits / Available Margin Logs between March 5, 2011 and February 18, 2016  
Q3-2015, Emergency Diesel Generator System Health Report  
Browns Ferry Nuclear Plant Flooding Walkdown Report by WoorleyParsons, dated April 10, 2014, Rev. 3  
Walkdown Record Forms per CTP-FWD-100 Flood Protection Walkdowns NEI 12-07  
TVA Letter, Fleet Response to NRC Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding the Flooding Walkdown Results of Recommendation 2.3 of the Near-Term Task Force Review of Insights from the Fukushima di-ichi Accident, dated November 27, 2012