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

December 3, 2010

Mr. Rod Krich
Vice President, Nuclear Licensing
Tennessee Valley Authority
3R Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT – NRC INSPECTION PROCEDURE 95002 SUPPLEMENTAL INSPECTION REPORT 05000259/2010008, 05000260/2010008, AND 05000296/2010008 AND ASSESSMENT FOLLOW-UP

Dear Mr. Krich:

On October 22, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed a supplemental inspection pursuant to Inspection Procedure 95002, "Inspection for One Degraded Cornerstone or Any Three White Inputs In a Strategic Performance Area," at your Browns Ferry Nuclear Plant, Units 1, 2 and 3. The enclosed inspection report documents the inspection results, which were discussed at the preliminary exit meeting on October 22, 2010, with Mr. Don Jernigan, Keith Polson and other members of your staff. A final exit was completed on December 2nd with Keith Polson and other members of your staff.

As required by the NRC Oversight Process Action Matrix, this supplemental inspection was performed because two findings, one of Yellow safety significance and one of White safety significance were identified which placed Browns Ferry Units 1, 2 and 3 in the Degraded Cornerstone Column in the fourth quarter of 2009. The issues, which degraded the Mitigating Systems Cornerstone, were a Yellow finding for failure to meet the regulatory requirements of 10 CFR 50, Appendix R, Section III.G and a White finding for failure to comply with Technical Specification 5.4 Procedures, specifically 5.4.1.a, which requires that applicable procedures be established, implemented, and maintained as recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. These violations were documented in NRC Inspection Report 05000259/2010007, 05000260/2010007, and 05000296/2010007, dated April 19, 2010 (ML101090503). The NRC discussed your readiness for this inspection with your staff. It was agreed that BFN would be ready by the end of the 3rd calendar quarter and the inspection would be conducted in the 4th calendar quarter 2010.

The objectives for this inspection were to provide assurance that: (1) the root causes and the contributing causes for the risk-significant issues were understood; (2) the extent of condition and extent of cause of the issues were identified and (3) corrective actions were or will be sufficient to address and preclude repetition of the root and contributing causes. This inspection included an independent NRC review of the extent-of-condition and extent-of-cause for these issues and an assessment of whether any safety culture component caused or significantly contributed to the issues. The inspection consisted of examination of activities conducted under

your license as they related to safety, compliance with the Commission's rules and regulations, and the conditions of your operating license. The inspection team determined that your staff performed a comprehensive evaluation of the subject findings. Your staff's evaluation of the Yellow finding associated with failure to comply with Appendix R, Section III.G identified the direct causes to be (1) Inadequate management and oversight of the Browns Ferry Appendix R program which resulted in non-compliance with NRC requirements, and (2) Ineffective use of the Corrective Actions Program to identify, evaluate, and correct Fire Protection/Appendix R compliance issues. Your staff also identified a contributing cause which resulted in the Yellow finding to be a lack of effective turnover from Browns Ferry Unit 1 Restart Team to the Browns Ferry Nuclear Plant. Your staff's evaluation of the White finding associated with failure to comply with Technical Specification 5.4.1.a identified the direct cause to be inadequate preparation and review of a procedure revision which resulted in a non-conservative change to the Safe Shutdown Instruction entry conditions. No contributing causes for the White finding were identified by your staff.

The inspection team determined that your corrective actions, as itemized in the root cause evaluation, are appropriate to resolve the deficiencies related to the Degraded Mitigating Systems Cornerstone. The inspection team also concluded that your root cause, extent of condition, and extent of cause evaluations appropriately considered the safety culture components as described in Inspection Manual Chapter 0305, Operating Reactor Assessment Program.

Based on the results of this inspection, no findings were identified. As such, the inspection objectives of Inspection Procedure 95002 were satisfied. Therefore, both the Yellow finding associated with Appendix R, Section III.G and the White finding associated with Technical Specification 5.4.1.a are closed. As a result, the NRC determined the performance at Browns Ferry Nuclear Plant to be in the Licensee Response Column of the Reactor Oversight Program Action Matrix, as of December 4th, 2010.

In accordance with 10 CFR 2.390 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 Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document 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/

Eugene F. Guthrie
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: Inspection Report 05000259/2010008, 05000260, and 05000296
w/Attachment: Supplemental Information

cc w/encl.: (See page 3)

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Eugene F. Guthrie
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ADAMS: ☐ Yes ACCESSION NUMBER:_____ ☐ SUNSI REVIEW COMPLETE

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SIGNATURE	KFO /RA/	Via email	Via email	KFO /RA for/	Via email	Via email	
NAME	KO'Donohue	JHanna	MKeefe	SLingam	RMonk	RRodriguez	
DATE	12/03/2010	12/03/2010	12/03/2010	12/03/2010	12/03/2010	12/03/2010	
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Letter to R. M. Krich from Eugene F. Guthrie dated December 3, 2010

SUBJECT: BROWNS FERRY NUCLEAR PLANT – NRC INSPECTION PROCEDURE 95002 SUPPLEMENTAL INSPECTION REPORT 05000259/2010008, 05000260/2010008, AND 05000296/2010008 AND ASSESSMENT FOLLOW-UP

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U.S. Nuclear Regulatory Commission

Region II

Docket Nos.:	50-259, 50-260, and 50-296
License Nos.:	DPR-33, DPR-52, DPR-68
Report Nos.:	05000259/2010008, 05000260/2010008, and 05000296/2010008
Licensee:	Tennessee Valley Authority
Facility:	Browns Ferry Nuclear Plant Units 1, 2, and 3
Location:	Corner of Shaw and Nuclear Plant Roads Athens, AL 35611
Dates:	October 12, 2010, through October 22, 2010
Inspectors:	Kathleen O'Donohue, Branch Chief, Team Leader John Hanna, Sr. Reactor Analyst Molly Keefe, Human Factors Specialist Siva Lingam, Project Manager, Sequoyah Robert Monk, Sr. Resident Inspector, Watts Bar Reinaldo Rodriguez, Sr. Reactor Inspector
Approved By:	Eugene Guthrie Reactor Project Branch 6 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000259/2010008, 05000260/2010008, and 05000296/2010008 10/12/2010- 10/22/2010; Browns Ferry Nuclear Plant Units 1, 2, and 3; Supplemental Inspection – Inspection Procedure (IP) 95002

This supplemental inspection (IP 95002) was conducted by a branch chief, a senior reactor analyst, a senior resident inspector, a senior reactor inspector, a human factors specialist, and a project manager. No findings were identified. The NRC's program for overseeing the safe operations of commercial nuclear reactor power reactors is described in the NUREG-1649, "Reactor Oversight Process."

Cornerstone: Mitigating Systems

The inspection team performed this supplemental inspection in accordance with IP 95002, "Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," to assess the licensee's evaluations associated with the failure to comply with 10 CFR 50 Appendix R, Section III.G and their failure to comply with the Technical Specification requirements 5.4, procedures, specifically 5.4.1.a, which requires that applicable procedures be established, implemented, and maintained as recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978; The NRC previously characterized the 10 CFR 50, Appendix R, Section III.G finding as having moderate to high safety significance (Yellow) and the Technical Specification finding as having low to moderate safety significance (White) in NRC Inspection Report, No. 05000259/2010007, 05000260/2010007 and 05000296/2010007.

During this supplemental inspection, the inspection team determined that the licensee performed a comprehensive evaluation of the issues. The Yellow finding of failure to meet the regulatory requirements of 10 CFR 50, Appendix R, Section III.G and the White finding for failure to comply with Technical Specification 5.4.1.a were identified by the NRC during a triennial fire protection inspection. The licensee identified the primary root causes for the Yellow Finding to be (1) Inadequate management and corporate oversight of the Browns Ferry Nuclear plant's (BFN) Appendix R program resulting in non-compliance with NRC requirements and (2) Ineffective use of the Corrective Action Program to identify, evaluate and correct Fire Protection/Appendix R compliance issues. The contributing cause for the Yellow finding was identified by the licensee as lack of effective turnover from BFN Unit 1 Restart Team to the BFN plant. These two primary root causes, along with a contributing cause led the licensee to fail to recognize the full extent of their noncompliance with the Appendix R requirements. The licensee identified the primary root cause for the White Finding to be inadequate preparation and review of a procedure revision which resulted in a non-conservative change in the entry conditions that led to a failure to comply with Technical Specification 5.4.1.a.

The current supplemental inspection was also performed to assess the licensee's evaluation associated with the failure to meet the regulatory requirements of 10 CFR 50, Appendix R, Section III.G and for failure to comply with Technical Specification 5.4.1.a. During this supplemental inspection, the inspection team determined that the licensee performed a comprehensive evaluation of the NRC identified inspection findings. The inspection team determined that the root cause evaluations for these technical issues thorough, and the

evaluation appropriately evaluated the root and contributing causes, adequately addressed the extent of condition and cause, assessed safety culture, and established corrective actions for risk significant performance issues that were sufficient to address the causes and prevent recurrence for both issues.

In addition to assessing the licensee's evaluations, the inspection team performed an independent extent-of-condition and extent-of-cause review and a focused inspection of the site safety culture as it related to the root cause evaluations. The team concluded that the licensee's root cause evaluations and corrective actions, both completed and planned, were sufficient. Additionally, the results of the inspection team's independent extent of condition were determined to be adequate for the BFN licensee. The inspection team also determined based on independent inspection, that the licensee's assessment of the BFN safety culture was accurate and reflected the conditions at the site.

Given the licensee's acceptable performance in addressing the above issues, the Yellow and White findings associated with these issues will not be considered in plant performance assessment following the end of the current assessment period. This is in accordance with the guidance in IMC 0305, Operating Reactor Assessment Program.

A. NRC-Identified & Self-Revealing Findings

None

B. Licensee-Identified Violations

None

REPORT DETAILS

4. OTHER ACTIVITIES

4OA4 Supplemental Inspection (95002)

.01 Inspection Scope

The inspection team performed this supplemental inspection in accordance with Inspection Procedure (IP) 95002, "Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," to assess the licensee's evaluations associated with the failure to comply with 10 CFR 50 Appendix R, Section III.G and their failure to comply with the Technical Specification requirements of 5.4.1.a. The NRC characterized the Appendix R, Section III.G finding as having moderate to high safety significance (Yellow) and the Technical Specification finding as having low to moderate safety significance (White) based on the results of significance determination process (SDP) Phase 3 risk analyses performed by region-based senior reactor analysts (SRAs), as discussed in NRC Inspection Report, No. 05000259/2010007, 05000260/2010007 and 05000296/2010007. The inspection objectives were to:

- provide assurance that the root and contributing causes of risk-significant issues were understood;

- provide assurance that the extent of condition and extent of cause of risk-significant issues were identified and to independently assess the extent of condition and extent of cause of individual and collective risk-significant issues;

- independently determine if safety culture components caused or significantly contributed to the risk significant issues; and

- provide assurance that the licensee's corrective actions for risk-significant issues were or will be sufficient to address the root and contributing causes and to preclude repetition.

The licensee staff informed the NRC staff that Browns Ferry would be prepared for the inspection by the end of the 3rd calendar quarter, 2010. In preparation for the inspection, the licensee performed a root cause evaluation (RCE), to identify weaknesses that existed in various organizations, which allowed for a degraded Reactor Oversight Process (ROP) cornerstone, and to determine the organizational attributes that resulted in the Yellow and White findings. The licensee also compiled a safety culture self-assessment report as part of the RCE. The inspection team reviewed the licensee's RCE in addition to other evaluations conducted in support and as a result of the RCE. The inspection team reviewed corrective actions that were taken or planned to address the identified causes. The inspection team also held discussions with licensee personnel to ensure that the root and contributing causes and the contribution of safety culture components were understood and corrective actions taken or planned were appropriate to address the causes and preclude repetition. The inspection team

independently assessed the extent of condition and extent of cause of the identified issues. In addition, the inspection team performed an assessment of whether any safety culture components caused or significantly contributed to the issues.

.02 Evaluation of the Inspection Requirements

02.01 Problem Identification

a. Determine that the licensee's evaluation of the issue documents who identified the issue (i.e., licensee-identified, self-revealing, or NRC-identified) and the conditions under which the issue was identified.

.1 Failure to comply with Appendix R, Section III.G:

The inspection team verified the licensee's RCE documented the issue as NRC-identified along with multiple instances when the licensee had an opportunity to identify it including;

- NRC Inspection Report 2009007, Focused Baseline Inspection Report, URI 05000259, 260, 296/2009007-04, Categorization of Operator Manual Actions as Meeting Appendix R Section III.G.1 versus III.G.2

- NRC Inspection Report 2006012, Unit 1 Recovery, URI 05000259/2006012- 001, Feasibility and Reliability of Local Manual Operator Actions to Achieve Safe Shutdown

- NRC Inspection Report 2006014, Triennial Fire Protection Inspection Report, URI 05000260, 296/2006014-03, Unapproved Local Manual Operator Actions in Lieu of Cable Protection for a FA Subject to the Requirements of Appendix R Section III.G.2.

The inspection team verified the licensee's RCE documented the issue as NRC-identified and that the issue was first identified NRC Inspection report 5000259/2009009, 05000260/2009009, and 05000296/2009009.

.2 Failure to comply with Technical Specification 5.4.1.a:

On December 23, 2008, Browns Ferry changed the Safe Shutdown Instructions (SSI) Entry Conditions to add a condition related to +2 inches reactor vessel water (narrow range) level condition. On January 30, 2009, Browns Ferry discussed the SSI Entry Condition changes with the NRC senior resident inspector. The inspector questioned the impact on operator action timeliness and the potential affect on mitigating spurious actuations. Browns Ferry initiated PER 162431 and started a timeline analysis.

The inspection team verified the licensee's RCE documented the issue as NRC-identified and that the issue was first identified during an NRC review of Revision 0002 to procedure 0-SSI-001. This was followed up by documentation in Inspection Report 05000259/2009002, 05000260/2009002, and 05000296/2009002 with URI 05000259,

260, 296/2009002-01, Inappropriate Change to SSI Entry Conditions For Appendix R Fire Events.

b. Determine that the licensee's evaluation of the issue documents how long the issue existed and prior opportunities for identification.

.1 Failure to comply with Appendix R, Section III.G:

The licensee's RCE described, in detail, the history of progression of the issue beginning with Unit 1 initial licensing (1973) and including the events, milestones, and effects of the licensee's actions up-to the start date of the start of the RCE (2010). The RCE also identified numerous prior opportunities for identification of the issue including some of the more notable ones listed below:

- The NRC issued Unit 1 Safety Evaluation Report (SER) on April 25, 2007, which BFN failed to formally review, or to document the commitments in the CAP. In this SER, the NRC clearly warned BFN of NRC positions regarding paragraphs III.G.1 and III.G.2,
    - Compensatory measures (increased BFN operations staffing) were primarily required to address identified deficiencies with Safe Shutdown (SSD) methodologies, and the BFN methodologies required the use of significant numbers of operator manual actions (OMAs);
    - III.G.1 protection for redundant SSD systems may not be claimed for redundant systems in a III.G.2 area by crediting OMAs at an emergency control station;
    - Use of OMAs in lieu of compliance with III.G.2 were not allowed without an NRC exemption;
    - BFN had requested no exemptions;
- On June 30, 2007, the NRC issued EGM-07-004 (Enforcement Guidance Memorandum), which performed the following:
    - Emphasized September 6, 2007, as the end date for licenses to initiate corrective actions and to implement compensatory measures for non-compliances related to post-fire OMAs, except for those OMAs that are relied upon as the mitigating mechanism for fire induced multiple-spurious actuations; and,
    - Emphasized that March 6, 2009, was the date for the completion of corrective actions associated with non-compliances involving OMAs.
- The NRC published draft rulemaking in 2005 to define requirements for using OMAs to comply with requirements of Appendix R, paragraph III.G.2. In the same year, the NRC issued RIS 2005-30, "Clarification of Post-Fire Safe-Shutdown Circuit Regulatory Requirements." This RIS clarified:
    - Requirements to analyze post-fire spurious actuations that could impact safe shutdown;
    - Use of operator manual actions with respect to protection of associated circuits;

- Use of emergency control stations in accordance with Appendix R, Section III.G.1.a.

- There was no evidence that BFN formally reviewed this RIS, evaluated the RIS for potential impact to the BFN Appendix R program, or identified actions necessary to bring the site Appendix R program into compliance. This issue ultimately led to BFN's misclassification of III.G.1 areas that were the subject of Violation 1.

The inspection team concluded that the licensee accurately characterized how long the issue existed and the prior opportunities for identification.

.2 Failure to comply with Technical Specification 5.4.1.a:

The inspection team verified the licensee's RCE documented the origin of the issue and prior opportunities for identification, including a detailed timeline of events associated with the issue. Additionally, the RCE documents, in detail, the history of the root cause (lack of technical basis for SSI entry conditions) indicating the prior opportunities for its identification.

The inspection team concluded that the licensee accurately characterized how long the issue existed and the prior opportunities for identification.

c. Determine that the licensee's evaluation documents the plant specific risk consequences, as applicable, and compliance concerns associated with the issues both individually and collectively.

The inspection team determined there were no collective compliance concerns because both violations reflected different aspects of the same condition (i.e., failure to mitigate a severe damaging fire ultimately resulting in a significantly increased risk of core damage). The inspection team reviewed the licensee's evaluation to ensure it documented the plant specific risk consequences associated with the risk of a severe damaging fire and the inability to successfully combat the casualty that could result in core damage.

.1 Failure to comply with Appendix R, Section III.G:

Compliance associated with this issue will not be restored until a new licensing basis is established via implementation of the National Fire Protection Association standard 805 (NFPA-805) program. The licensee currently meets NRC Commission policy for transition to NFPA-805.

During the final risk significance determination, the NRC determined the risk associated with the Yellow violation to be approximately 2E-5 core damage frequency (CDF) depending on the Unit. During the transition to NFPA-805, the licensee initiated several corrective actions to reduce the plant risk resulting from the high number of OMAs. BFN established an effort the called "pull forward", to promptly make changes to the plant (e.g., operating procedures, design changes, etc.) that reduce the risk significance of

continuing to rely on OMAs in place of Appendix R compliance. The inspection team verified that these actions are consistent with the NRC Commission policy for transition to the NFPA-805 program.

The team inspected samples of other efforts BFN plans for continued risk reductions from a severe damaging fire. Those efforts include:

- The “pull forward effort”;
- Installation of incipient fire detection in Shutdown Boards, to be completed in the first quarter of 2011;
- Providing divisional tray protection, to be completed in the first quarter of 2011;
- Installation of protective fusing on the Shutdown Boards, to be completed between 2011 and 2015;
- Major revisions to the SSIs, date to be determined pending completion of the BFN fire probabilistic risk analysis (PRA);
- Transition the site to NFPA-805, risk informed fire protection, to be completed in 2014.

The inspection team concluded that the licensee appropriately documented the risk consequences and compliance concerns associated with the issue.

.2 Failure to comply with Technical Specification 5.4.1.a:

The NRC estimated the risk of the inadequate SSI entry criteria to be White using guidance and qualitative techniques contained in inspection manual chapter (IMC) 0609, Appendix M “Significance Determination Process Using Qualitative Criteria." The licensee introduced this plant risk on December 23, 2008 when the SSI entry criteria were modified. Compliance was restored when the licensee revised the SSI to correct the entry conditions on February 27, 2009.

The inspection team concluded that the licensee appropriately documented the risk consequences and compliance concerns associated with the issue.

d. Findings

No findings were identified.

02.02 Root Cause, Extent of Condition, and Extent of Cause Evaluation

a. Determine that the licensee evaluated the issue using a systematic methodology to identify the root and contributing causes.

The licensee used the following systematic methods to complete Root Cause Evaluation Report “Violation of Appendix R Regulations,” Revisions 0, 1, and 2, which addressed the issues associated with both violations:

- data gathering through interviews and document review
- comparative timeline, going back to the 1970's and identifying specific barriers and missed opportunities to identify problems
- events and causal factor charting
- programmatic and organizational weakness chart
- safety culture analysis; and
- barrier analysis

The licensee used the comparative timeline, the events and causal factors approach, and the safety culture analysis to evaluate human performance issues. The inspection team determined that the licensee evaluated the issue using a systematic methodology to identify root and contributing causes.

b. Determine that the licensee's RCE was conducted to a level of detail commensurate with the significance of the issue.

The inspection team reviewed the root causes and contributing causes described below in order to verify that they were sufficiently comprehensive and addressed the identified root causes of the issues:

.1 Failure to comply with Appendix R, Section III.G:

The inspection team determined that the licensee identified 2 root causes and one contributing cause associated with this issue.

Root Cause #1: Inadequate management and oversight of the Browns Ferry Fire Protection program resulted in non-compliance with NRC requirements, specifically:

- BFN/TVA failed to critically review the overall 10 CFR 50 Appendix R compliance strategy in light of the Appendix R generic communications and enforcement guidance. TVA Management maintained an entrenched position and failed to recognize that BFN's compliance methodology put them out of alignment with the direction taken by the NRC. This failure resulted in unacceptable regulatory risk by continuing to use outdated strategies.
- Inadequate corporate governance and oversight by the Licensing and Engineering organizations with regard to compliance with Fire Protection regulations. Corporate governance and oversight failed to recognize the need to effect changes to mitigate problems with the strategy to address Fire Protection/Appendix R issues and the implementation of that strategy.

Root Cause #2: Ineffective Use of the Corrective Action Program to identify, evaluate and correct Fire Protection/Appendix R compliance issues - BFN failed to adequately review and analyze NRC regulatory documents (e.g., SERs), correspondence, and generic communications (e.g., RIS) related to Fire Protection/Appendix R, to assess the adequacy of the existing compliance strategy in light of regulatory expectations. BFN and TVA senior management failed to monitor progress towards achieving compliance with 10 CFR 50 Appendix R requirements or to intervene when the plan did not meet milestones, specifically:

- Identification – The licensee failed to systematically review and analyze NRC regulatory documents and correspondence related to Appendix R to identify issues requiring corrective actions. Additionally, Some Fire Protection/Appendix R related issues identified during external and internal assessments were not entered into the corrective action program.

- Evaluation - Review and evaluation of issues did not always identify the significance of the issue. For example, non-conformance with NRC regulations identified in 2006 was not screened as a non-conforming condition.

- Untimely Resolution - In April 2006, the NRC notified BFN that non-risk-significant OMAs would be given enforcement discretion for three years starting March 6, 2006. This issue was entered into the corrective action program, however, the licensee failed to implement any actions to correct the deficiencies within three years.

Contributing Cause: lack of effective turnover from Browns Ferry Unit 1 Re-start Team to the BFN plant. The Browns Ferry personnel that had an understanding of the Fire Protection OMAs issue left the plant or were reassigned to other TVA units. No formal mechanisms were in place to ensure that open issues from Unit 1 restart were turned over to BFN Licensing and subsequently tracked to completion.

The inspection team concluded that the licensee's root cause analysis included an extensive timeline of events and an event and causal factor tree as discussed in the previous section. The inspection team reviewed the conclusions in the root cause analysis by inspecting a sample of the underlying facts and assumptions. Based on the breadth and depth of this evaluation, and the independent review of the licensee's assertions, the inspection team concluded that the root cause analysis was conducted to a level of detail commensurate with the significance of the issue.

Based on the extensive work performed for this evaluation, and the independent validation of the licensee's assertions, the inspection team concluded that the root cause analysis was conducted to a level of detail commensurate with the significance of the problem.

.2 Failure to comply with Technical Specification 5.4.1.a:

The inspection team determined that the licensee identified 1 root cause associated with this issue.

Root Cause #1: Inadequate preparation and review of a procedure revision resulted in non-conservative changes in the SSI entry conditions. Underlying the inadequate procedure revision were two factors:

- The preparer and reviewers of the Entry Condition change had inadequate technical knowledge of the basis for the SSI entry conditions and the impact of SSI Entry Condition changes on the Appendix R Program, and did not understand the limits of their technical knowledge.

- The original Safe Shutdown Analysis report does not provided a clearly documented technical basis for the SSI entry conditions.

The inspection team determined that the licensee's root cause analysis included an extensive timeline of events and an event and causal factor tree as discussed in the previous section. The inspection team reviewed the conclusions in the root cause analysis and verified a sample of the underlying facts and assumptions. During this inspection, the inspection team determined that the root cause evaluation did not identify one potential contributing cause. Although the licensee diagnosed the root cause as an inadequate preparation and review of a procedure revision, the licensee did not identify, as a contributing cause, that the License Condition Impact Evaluation (LCIE) process potentially lacked sufficient detail given the task complexity.

In 2008, Standard Department Procedure FPDP-3, "Management of the Fire Protection Report," established the process by which changes to the Fire Protection Report were made. Section 3.3 provided the LCIE process for evaluating fire protection changes against the license condition. The inspection team determined that the lack of guidance detail in the LCIE process contributed to the inadequate reviews of the responsible engineers. The LCIE process contained no criteria to be used for guidance. As a result the process relied heavily on individual engineer's knowledge. The inspection team noted that although the licensee did not identify the lack of guidance in the LCIE process as a contributing cause, they did recognize the procedural weakness within the LCIE process and initiated corrective actions to strengthen the process. These corrective actions included procedural process improvements, and additional reviews. The LCIE portion of FPDP-3 was replaced with an enhanced process called the Fire Protection Program Change Regulatory Review (FPPCRR). The revised process included more specific criteria to be answered, enabling a more thorough preparation and review by the engineers. In addition, a Fire Protection Review Board was added to ensure completion of a thorough independent review which would appropriately challenge the change and bases for the change prior to revising the Fire Protection Program. This enhanced process aligned the FPDP-3 more closely to the more thorough change processes in place at Browns Ferry such as the Design Change Process.

Based on the breadth and depth of the licensee's evaluation, the inspection team concluded that the root cause analysis was conducted to a level of detail commensurate with the significance of the problem.

c. Determine that the licensee's RCE included a consideration of prior occurrences of the issue and knowledge of OE.

.1 Failure to comply with Appendix R, Section III.G:

The inspection team found that the licensee's RCE did not identify any OE that addressed a similar issue with excessive crediting of OMAs in lieu of III.G compliance. The inspection team reviewed a sample of the 300 operating experience items related to fire protection and OMAs identified by the licensee and did not discover any evidence to the contrary. However, the licensee identified 11 corrective action documents (PERs) between 2006 and 2009 and 4 Corporate Nuclear Assurance Assessment Reports relevant to this issue.

Based on the licensee's detailed evaluation and conclusions, the inspection team determined that the licensee's root cause analysis included an appropriate consideration of prior occurrences of the issue and knowledge of prior OE.

.2 Failure to comply with Technical Specification 5.4.1.a:

The inspection team found that the licensee's RCE did not identify any OE that addressed similar Safe Shutdown Entry Criteria issues. The inspection team reviewed a selected sample of the 300 operating experience items related to fire protection and OMAs identified by the licensee and did not discover any evidence to the contrary. However, the licensee identified 2 corrective action documents (PERs) in 2009 and 4 Corporate Nuclear Assurance Assessment Reports relevant to this issue.

Based on the licensee's detailed evaluation and conclusions, the inspection team determined that the licensee's root cause analysis included an appropriate consideration of prior occurrences of the issues and knowledge of prior OE.

d. Determine that the licensee's RCE addresses the extent of condition and extent of cause of the issues.

The inspection team found that the licensee's evaluation of extent of cause/extent of condition was generally very thorough, particularly in regard to regulatory-related programs. The thoroughness of the RCE was especially important due to the broad nature of Root Cause #1, which was defined as lack of management oversight.

.1 Failure to comply with Appendix R, Section III.G:

The licensee evaluated the extent of condition for the failure to comply with 10 CFR 50 Appendix R, Section III.G by first compiling a list of regulatory programs and then screening them for applicability. The programs were screened to identify additional examples where Browns Ferry Nuclear or Nuclear Power Group's (i.e., TVA corporate for all nuclear plants in the fleet) implementation of regulatory programs deviated from regulatory requirements without required approval. The licensee evaluated the following programs for applicability:

- Augmented Quality Program
- In-service Inspection Program
- Radiological Emergency Response Plan
- Breaker Testing and Maintenance Program
- In-service Testing Program
- Radiological Protection and Control Program
- Buried Piping Program
- Instrument Setpoint Program
- Reactor Coolant System Water Chemistry Program
- Buried Cabling Program
- Maintenance Rule Program
- Safety Function Determination Program
- Commercial Grade Dedication Program
- Meteorological Measurement Program
- Seismic Monitoring Instrumentation Program
- Equipment Qualification Program
- Motor Operated Valve/Air Operated Valve Program
- Seismic Qualification Program
- Fire Protection Program
- Offsite Dose Calculation Manual
- Snubber Program
- Fitness for Duty Program
- Physical Security Plan, Safeguards Contingency Plan, and Guardforce Training and Qualification Plan
- Technical Specifications Bases Control Program
- Flow Accelerated Corrosion Program
- Primary Containment Leakage Rate Testing Program
- Training Program
- Groundwater Protection Program
- Quality Assurance Program
- Quality Control Program

The licensee examined the identified programs for examples of non-compliance with regulatory requirements. This was done using 5 inputs or criteria, specifically:

1 NRC Identified Problem Areas - reviews of violations from NRC inspection reports

2 Corrective Action Program - PERs with “regulatory requirements” in the problem description

3 Self-Assessment Review - review of any self assessments conducted on the listed programs

4 Quality Assurance Audit Review - review of QA Audits conducted for these programs

5 Program Owner - An additional review by the Corporate Functional Area Manager (CFAM) or program owner was also conducted.

As a result of this review, the licensee identified several programs that potentially had similar problems to that experienced in the fire protection program. For the areas identified below, the licensee conducted additional evaluation regarding the extent of this condition. Areas with potential examples of this condition included:

- Fire Protection Program
- In-service Testing Program
- Instrument Setpoint Program
- B.5.b Implementation
- Maintenance Rule Program

The licensee identified problems in the Inservice Testing Program, specifically procedure revisions and program changes were pursued as part of their respective corrective action plans. However, the licensee determined that resolution was not timely. From the RCE, "The untimely resolution of Inservice Testing Program issues is similar to the untimely resolution of Appendix R Issues and will be included in the extent of cause discussion." The inspection team identified to the licensee that the 5 criteria listed above would adequately identify issues that are already known and understood, but not necessarily latent errors that are unknown.

The inspection team noted that none of the other programs were "scoped" for extent of cause applicability. For example, with regard to the maintenance rule program, the licensee stated: "A self assessment (BFN-ENG-F-10-003) was conducted to determine the current state of BFN compliance with respect to Maintenance Rule requirements (10CFR50.65). The review concluded that BFN is in compliance; however several Areas for Improvement (AFI) were identified. The report is draft and was expected to be completed by 10/17/2010. Their review concluded that BFN is in compliance with Maintenance Rule requirements (10CFR50.65) and that this is not similar to the Appendix R condition and therefore is not part of the Extent of Condition for this RCE."

The inspection team questioned whether the maintenance rule program had similarities to the fire protection program issues. For example, the team noted an increased number of systems in the 10 CFR 50.65 a(1) monitoring category (approximately two-fold increase in 3 years) indicating possible ineffectiveness in the program to monitor and improve equipment performance. The inspection team also noted that there was an unusually high number of Problem Evaluation Reports written on the maintenance rule program (e.g., 130 corrective action documents written in 3 years on PRA Assessments indicating problems with the conduct of 10 CFR 50.65 a(4) reviews). The inspection

team noted that NRC inspectors historically voiced concerns about the health of the maintenance rule program based on interviews with Resident Inspectors, much in the same way that Fire Protection Program concerns had been raised previously.

However, the inspection team determined that the corrective actions for Root Cause #1 and #2 were very comprehensive and concerns over specific regulatory programs were being addressed by the corrective actions listed. For example, the licensee created a "Road to Green" improvement plan for the maintenance rule program though it was not scoped or credited under Extent of Condition. The licensee created and initiated this program prior to the inspection team expressing their concerns. Further, the inspection team determined that a portion of the observed negative trend experienced in the Maintenance Rule program could have resulted from positive corrective efforts that the licensee implemented, including:

- Re-baselining the System Health tracking system, which may have caused an increase in the number of documented negative observations.
- Changing (and more challenging) expectations for the reporting of Maintenance Rule failure data.
- Improved governance and oversight which resulted in more appropriate categorization of equipment issues.

The licensee reviewed the Extent of Cause for Root Causes #1 and 2. The inspection team determined that the extent was limited to regulatory documents received since early 2005 when the licensing organization stopped formally reviewing and tracking resolution of regulatory issues and potential commitments. (Please refer to section 4OA4.02.01.b) The licensee conducted a sample review of records from 2008 and 2009 and did not identify any significant issues. However, due to one issue identified during this cause investigation involving a missed commitment for Operations staffing in the 2007 SER issued to support Unit 1 restart, the licensee generated an action to review all BFN SERs and other 'significant' regulatory correspondence issued since 2005 for implementation inaccuracies and to ensure that BFN actions/ commitments reflected in the SERs and regulatory correspondence are adequately captured in BFN implementing documents.

The licensee also issued a Nuclear Operating Experience Report (NOER) as required by the administrative procedure SPP 3.9, Rev 3, Operating Experience Program, Section 3.5, Internal Nuclear Operating Experience Reports. The inspection team noted that the NOER was issued at the time of the initial root cause evaluation. The root cause was significantly revised twice after this; however, the NOER was not re-issued to reflect the final root cause evaluation. Further, the NOER was issued with a "green" designation which did not require a response from the other sites. In that the details of Root Cause #1 referenced lack of corporate oversight, the inspection team was concerned that the NOER was not sufficiently robust to ensure extent of condition at sites under the same corporate oversight was adequately considered. Discussions with the licensee revealed that although the NOER was released according to the procedure revision in place at the time, the procedure was in the process of being revised, and the review level thresholds were being redefined to ensure appropriate timeliness and depth of future reviews. For

additional information in regard to the extent of condition of corporate oversight, please refer to section 40A4.02.04 of this report.

With regard to Extent of Cause for Root Cause #3, the licensee found some specific examples of untimely resolution of problems. The initial review of open PERs for extent of cause was limited to open A and B level PERs, however, the open PERs related to the Inservice Testing Program were C level PERs. In order to fully identify other areas where untimely resolution of identified problems could lead to regulatory issues, the licensee created an action to review all open C level PERs related to regulatory programs or regulatory requirements. This action was in progress at the time of the inspection.

Despite some initial concerns, the inspection team concluded that the licensee's root cause analysis adequately addressed the extent of condition and the extent of cause of the issue.

.2 Failure to comply with Technical Specification 5.4.1.a:

The licensee concluded that the potential Extent of Condition applicability only extended to Emergency Operating Instructions, Annunciator Response Procedures, and Abnormal Operating Instructions. Further, the licensee did not identify any problems in these procedures once the review was performed. The inspection team questioned whether the extent of condition review was too narrowly focused because inadequately performed procedure changes may not have been limited to operating instructions. Given that the root cause of the second violation was 1) lack of technical understanding of a procedure change by reviewers/preparers, combined with 2) an inadequately documented design basis, the inspection team questioned whether the postulated causes might affect other types of procedure changes.

The inspection team reviewed multiple, potentially risk-significant changes made on procedures within the past 3 years for technical adequacy. The inspection team did not identify any similar problems. The inspection team also reviewed a sample of the Problem Evaluation Reports with "procedure" in the title that were written in the past 3 years in order to identify other examples and determine if there was an adverse trend in procedure quality. The inspection team verified no issues were found in this area.

With regard to Extent of Cause, the inspection team found that the licensee's RCE team reviewed other License Conditions requiring descriptive entry conditions to identify areas where the documented technical basis was either lacking or inadequate. The licensee identified one potential weakness, specifically dealing with Large Fire/Mass Casualty Event. The licensee found that changes to the Browns Ferry Operations Extreme Damage Mitigation Guidelines were made using an established flow path, which did not include guidance to ensure that the license condition was being maintained while making changes to the implementing procedures. Browns Ferry initiated a corrective action document (PER 220850) to investigate the issue and propose corrective actions as necessary.

Based on the review sample, the inspection team concluded that the licensee's root cause analysis adequately addressed the extent of condition and the extent of cause of the issue.

e. Review the licensee's root cause, extent of condition, and extent of cause evaluations in order to verify that the licensee appropriately considered the safety culture components as described in IMC 0305.

The inspection team reviewed problem evaluation reports, corrective action procedures and the root cause analysis for the two violations to determine if the licensee properly considered whether any safety culture component caused or contributed to the issue. In addition, the inspection team conducted individual and group interviews with 43 licensee staff and supervisors/managers to determine if the safety culture components identified in the RCE are still present at the site today.

As part of the root cause evaluation, the licensee reviewed the identified root and contributing causes against the safety culture components that could have contributed to the issues. The licensee's root cause evaluation included a discussion of the 13 safety culture components described in Regulatory Issue Summary 2006-013, "Information on the Changes Made to the Reactor Oversight Process to More Fully Address Safety Culture," (ADAMS Accession No. ML061880341) as they applied to the violations and findings. The licensee determined that weaknesses in decision making, resources, work practices, and the corrective action process were the most prevalent safety culture attributes. The licensee also included the results of a 2010 safety culture self-assessment and site "pulsing" surveys, as well as the results of a vendor safety culture survey conducted in 2009, in consideration of the safety culture components.

The inspection team independently confirmed a sample of other safety culture components which contributed to the issue(s) were also identified in the root cause analysis. These additional safety culture components included weaknesses in the corrective action program and resources. For each of the identified prevalent and contributing safety culture components, the inspection team confirmed that the licensee established appropriate corrective actions to address the issues. During the course of interviews with licensee personnel, the inspection team asked interviewees questions related to Safety Culture Work Environment (SCWE) to determine if the licensee's staff were reluctant to raise safety concerns or if retaliation existed for raising safety concerns. The inspection team did not identify concerns related to SCWE.

The inspection team identified some continued weaknesses in the area of resources. The licensee team indicated that many departments are not currently fully staffed and this causes a backlog of work, making it difficult to deal with emergent site issues. Even though this is seen as an area of weakness to the line organization, most are aware that positions were posted and management is actively seeking new employees to fill the vacancies. Some of the departments had more access to benchmarking and advanced training opportunities than others, apparently partially due to staffing constraints. Most of the staff interviewed were interested in benchmarking opportunities and saw the value of learning about day to day operation at another utility.

The inspection team confirmed that the licensee's root cause, extent of condition, and extent of cause evaluations appropriately considered the safety culture components as described in IMC 0305, Operating Reactor Assessment Program.

f. Findings

No findings were identified.

02.03 Corrective Actions

a. Determine that (1) the licensee specified appropriate corrective actions for each root and/or contributing cause, or (2) an evaluation that states no actions are necessary is adequate.

The team found that the RCE corrective actions were overall appropriate for each root and contributing cause identified.

.1 Failure to comply with Appendix R, Section III.G:

The inspection team determined that all root and contributing causes listed in the RCE were linked to an appropriate corrective action. Additionally, the licensee established corporate governance and oversight of BFN licensing activities, and re-establish formal review of incoming regulatory correspondence. Improvements to the Corrective Action Program were already in place to address the recently NRC identified substantive crosscutting theme in the area of Problem Identification and Resolution (IR 05000259, 260, 296/2010006).

The licensee re-categorized all of their OMAs to be compensatory measures, as documented in PERs 101631 and 169491, versus continuing to treat the OMAs as an integral and approved element of the Fire Protection program, as well as establishing fire watches in all three units until permanent actions are in place. Consistent with current NRC Commission policy, full compliance for this violation will be achieved upon completing the implementation of the transition to NFPA-805. In the interim, BFN plans to initiate fire protection improvements, as plant conditions allow for the physical changes, under the transition requirements with the focus on risk reduction and elimination of OMAs. BFN plans to prioritize these improvements based on those with greater impact on overall fire risk reduction.

The inspection team reviewed the licensee's plans to make the Turbine Buildings of all 3 Units compliant with 10 CFR 50 Appendix R, Section III.G, thus removing the need to implement the challenging strategy of Self Induced Station Blackout (SISBO) for severe damaging fires in those areas. In the interim, TVA established fire watches in all 3 Units to mitigate the fire hazard.

The inspection team reviewed the licensee's SSI strategy of having a second Auxiliary Operator verify all previously performed actions following a severe damaging fire. This approach reduced the risk by minimizing the likelihood that an incorrectly performed action such as the opening of an electrical breaker in order to isolate a bus, would go

undetected during the fire and threaten safe shutdown of the unit. The inspection team verified, through Control Room walkdowns, that an additional Auxiliary Operator was on shift and available in support of this strategy.

The inspection team also reviewed corrective actions associated with Root Cause # 1 of their RCE, inadequate corporate governance and oversight by the Licensing and Engineering organizations with regard to compliance with Fire Protection regulations. Actions that were in process included realigning and expanding corporate managerial positions, creating new corporate positions such as the corporate functional area manager (CFAM), to better enable more detailed intimate knowledge of the assigned areas of responsibility. As part of the reorganization, staffing allowance at BFN was also expanded leading to additional staff positions in critical areas such as system engineering and operations. Publications were provided to support a consistent implementation of the revised and clarified senior management expectations. The communications between site staff and corporate staff is a particular area of managerial improvement with increased expectations. Through interviews with both corporate and site managers, the inspection team determined that the new and revised expectations are consistently understood and are generally being applied as described.

The inspection team noted that the position of CFAM was especially important in the effort to improve managerial oversight. The improved communications protocol between site and corporate resulted in a program that provided second and third “checks” on the performance of most site programs. Other improvements that added depth to management oversight were: 1) an increased number of self-assessments, 2) re-base-lined system and program health reports and 3) the re-prioritization of the Quality Assurance division. However, the inspection team identified that the licensing program and the employee concerns program were not receiving external review. The inspection team was informed by the licensee that they had misunderstood the scope of quality assurance assessments and that there was a misunderstanding that the Licensing program was included in the QA assessment scoping. As a result, the licensee revised their corporate and site oversight plan to ensure the licensing program and employee concern program would be independently reviewed as intended by the licensee’s new corporate oversight approach.

The inspection team determined that the proposed corrective actions are appropriate and addressed each root and contributing cause.

.2 Failure to comply with Technical Specification 5.4.1.a:

Upon identification of the issue, the licensee took immediate corrective actions to restore the entry conditions to those previously in place prior to the change. All root and contributing causes in the RCE were linked to an appropriate corrective action. Additionally, there were corrective actions in place that addressed the inspector identified contributing cause of inadequate procedural guidance.

The inspection team determined the proposed and implemented corrective actions are appropriate and addressed each root and contributing cause.

b. Determine that the licensee prioritized corrective actions with consideration of risk significance and regulatory compliance.

The inspection team determined that the RCE corrective actions for the violations were appropriately prioritized based on risk significance and regulatory compliance. The inspection team found that the licensee developed a comprehensive plan to prioritize specific corrective actions that will address risk reduction during the transition to a new fire protection licensing basis under the NFPA-805 program.

.1 Failure to comply with Appendix R, Section III.G:

Commensurate with the risk significance of the issue, the licensee evaluated the most critical OMAs and revised selected SSIs to include steps for independent confirmation of OMAs in order to improve the likelihood of success of these steps. Additionally, the licensee revised calculation NDQ0-999-2008-0001, which determined the transient temperature response of the U1, U2, and U3 Electric Board Rooms and Control Bay spaces upon loss of HVAC concurrent with an Appendix R event. Based on this revision, the licensee was able to show that for the applicable rooms, the temperatures remained well within the design temperatures up to 4 hours into the event. This allowed BFN to revise the SSIs and move the HVAC time critical manual actions completion times from 60 or 120 minutes to 240 minutes. This revision provided the operators additional time to complete the actions, effectively improving the design margin. The licensee also issued Design Change Notice (DCN) 69786, which in part, modified the High Pressure Cooling Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) normal configuration to include suction from the Condensate Storage Tank. This modification permitted BFN to eliminate OMAs for fires in Fire Areas 8, 16, and 25, in order to establish alignment of HPCI and RCIC to the Suppression Pool. DCN 69786 also removed the OMA to trip Breaker 710 on Battery Board 3 that supplied power to DPO Engineering Shop because this shop no longer exists. This modification removed an OMA that was required for almost all of the SSIs. In light of these changes, the licensee re-structured several attachments within the SSIs such that additional time margin was gained.

Based upon these corrective actions, as well as the other corrective actions identified in the RCE, the inspection team determined that the licensee prioritized corrective actions with consideration of risk significance and regulatory compliance.

.2 Failure to comply with Technical Specification 5.4.1.a:

Compliance to the technical specification requirements was restored when the licensee promptly revised the SSI to correct the entry conditions on February 27, 2009. The inspection team reviewed the training provided to the operators as part of this change and noted that only a required reading assignment was sent to each Licensed Operator as part of their next scheduled training cycle. The inspection team was concerned with this approach because the next training cycle could have been months after the SSIs were revised. After further review of the SSIs' procedure revision details, it became clear that only the conjunctive AND conditions were deleted, effectively returning the SSIs to the previous entry conditions. Because all of the Licensed Operators were

trained using the previous SSI revision, it was expected that there was no new information to learn. The inspection team agreed with this approach.

Based upon these corrective actions, as well as the other corrective actions identified in the RCE, the inspection team determined that the licensee prioritized corrective actions with consideration of risk significance and regulatory compliance.

c. Determine that the licensee established a schedule for implementing and completing the corrective actions.

The inspection team found that the licensee's RCE generally established a schedule for corrective action completion. The Inspection team noted that the licensee anticipates that additional corrective actions will be identified during the transition to NFPA-805. Any newly identified corrective actions will need to be incorporated into the closure schedule as appropriate.

.1 Failure to comply with Appendix R, Section III.G:

The licensee developed an interim timeline for all corrective actions associated with the RCE up to and including the transition to NFPA-805. The inspection team was informed that BFN expects to submit their License Amendment Request in the first quarter of 2012. Upon successful approval by the NRC of that submittal BFN will be in full compliance with fire protection requirements. The inspection team determined that a schedule was established for implementing and completing the corrective actions. The licensee developed a plan, which incorporated risk considerations, for the modifications currently identified. These modifications will be installed in the near future to bring the turbine building fire area into compliance and to improve the defense in depth in other fire areas. DCN 69957 was issued to install a 3-hour rated fire barrier on the turbine building side of the safety related cable routed through the connecting cable tunnel to the intake pumping house. Currently, the intake pumping station is considered a part of the turbine building fire area 25. By installing this fire barrier, fire area 25 can be separated into two different fire areas. Once this barrier is installed, the necessary analysis done and the SSIs revised, both the turbine building fire area 25 and the newly separated intake pumping station fire area will be in full compliance with Appendix R. Additionally, several DCNs contained in corrective actions 26 through 31 of PER 214592 will be issued to install incipient detection in selected fire areas throughout the plant to improve the defense-in-depth in these areas. Because these DCNs require the equipment to be removed from service to allow installation of the incipient detection, the DCNs will be implemented when plant conditions allow for the equipment isolations.

.2 Failure to comply with Technical Specification 5.4.1.a:

The licensee promptly restored the entry conditions to those previously in place prior to the change. The licensee also initiated a corrective action to analyze the Safe Shutdown Analysis and establish the basis for the current SSI entry conditions. An Engineering Bulletin was produced. The inspection team questioned the adequacy of this primarily for two reasons: (1) rather than establishing the basis, the resulting Engineering Bulletin was more of a historical summary of the status quo and (2) the Engineering bulletin was

not part of a technical basis. When the inspection team questioned the adequacy of this corrective action, the licensee referenced a parallel effort taking place that also identified the same concerns. The licensee's review resulted in a corrective action document (PER 265257) which was written to address the inadequate closure of this corrective action. Prior to the inspection team leaving the site, this PER revised the Engineering Bulletin to reference the appropriate Appendix R calculations establishing the SSI entry conditions basis. The licensee also revised appropriate procedures to require fire protection program changes to go through additional challenge boards prior to approval. Additionally, changes to SSI entry conditions are now required to be analyzed against the established basis for the current SSI entry conditions

One of the corrective actions identified by the licensee's RCE was to implement training on procedure SPP-3.10.3, "Human Performance Tools," for BFN. Specifically, this training was tailored to emphasize the consistent use of same conservative decision making tool for all managers and supervisors. This was captured in corrective action number 50 of PER 214592. However, the inspection team found that this action took credit for activities being performed as part of PER 208926 and was only meant to track completion of the training. The inspection team independently reviewed PER 208926 and questioned its adequacy to meet the intent of corrective action number 50. The licensee stated that at the time the RCE was being prepared, the actions in PER 208926 were not yet taken but the RCE team believed those actions would have resulted in training that would meet the need. However, after further review, the licensee concluded that actions taken by PER 208926 were insufficient to meet the intended training for action number 50 of PER 214592. Consequently, the licensee revised corrective action number 50 to stop taking credit for activities under PER 208926 and added specific actions to meet the training needs identified by the RCE team. Subsequently, the inspection team reviewed the revised corrective actions and found them adequate.

d. Determine that the licensee developed quantitative and/or qualitative measures of success for determining the effectiveness of the corrective actions to preclude repetition.

.1. Failure to comply with Appendix R, Section III.G:

The licensee maintains a report to monitor the progress of completion for all corrective actions itemized in the RCE. This report is being provided to the NRC as status information to the BFN Sr. Resident Inspector. The report tracks the number of corrective actions completed, the calculated risk for the current plant condition, completion of "pull forward" efforts associated with the transition to the NFPA-805 such as field activities that address Fire Protection System impairments, System Health to Green effort, and Root Cause Action completion. In addition to the progress documented in that report, the BFN system and program health reports will indicate continued implementation of the improvements and corrective actions by inference. PER 214592 also includes the performance of annual self-assessments to monitor and evaluate the effectiveness of the corrective actions.

The inspection team determined that the licensee's senior management team committed to perform semi-annual effectiveness review boards in order to drive issues to conclusion. Attendance to the board meetings will include the Executive Sponsor of the

issue, Vice President of Licensing, Site Vice President, the 95002 Project Manager, Quality Assurance Department representatives, and others as needed. Further, the inspection team noted that the Browns Ferry 95002 Task Force would remain active following completion of the on-site inspection. Specifically the task force would be regularly tracking completion of the following items:

- Fire protection Limiting Conditions for Operations
- Backlog of fire protection work items
- Closure Review Board status

Based on the information discussed above, the inspection team determined that quantitative and qualitative measures of success were developed for determining the effectiveness of the corrective actions to preclude repetition.

.2 Failure to comply with Technical Specification 5.4.1.a:

The licensee completed the majority of corrective actions as identified in their RCE. Corrective Action # 50, which requires the development and completion of training, is scheduled to be completed June 6, 2011. The licensee restored compliance with Technical Specification 5.4.1.a for the inadequate SSIs through issuance of a procedure change on February 27, 2009, in order to remove entry conditions related to water level. The licensee committed to proceduralized requirements to prohibit any further changes to the SSI procedures' entry conditions until transition to NFPA-805. The inspection team determined that this short-term corrective action was adequate to prevent recurrence until the Fire PRA was completed and the fire mitigation strategy would significantly change. The inspection team reviewed the quantitative/qualitative measures for the longer-term corrective actions. The inspection team verified, based on timelines and graphs of extrapolated SDP risk for various risk reduction measures, that completion of SSI revisions was targeted for 2014. The inspection team noted that these metrics/goals were necessarily broad because the Fire PRA, as it is completed, will inform the licensee's actions as they gain insights about plant response to a postulated fire.

Based on the information discussed above, inspection team determined that quantitative and qualitative measures of success were developed for determining the effectiveness of the corrective actions to preclude repetition.

e. Determine that the licensee's planned or taken corrective actions adequately address a Notice of Violation (NOV) that was the basis for the supplemental inspection, if applicable.

The inspection team found that generally the licensee's RCE corrective actions were adequate for addressing the NOVs with minor exceptions noted below.

.1 Failure to comply with Appendix R, Section III.G:

The NRC issued an NOV to the licensee on April 19, 2010 (IR 05000259, 260, 296/2010007). The licensee provided the NRC a written response to the NOV on May

18, 2010, and updated their response on a follow-up letter on October 7, 2010. The licensee's response described: (1) corrective steps which were taken and the results achieved; (2) corrective steps which will be taken; (3) the date when full compliance will be achieved; and (4) the reasons for the violation. During this inspection, the inspection team confirmed that the licensee's RCE planned corrective actions, as detailed in PER 214592, did address the NOV. The inspection team noted that some of the corrective actions were in process and a few were already completed.

.2 Failure to comply with Technical Specification 5.4.1.a:

The NRC issued an NOV to the licensee on April 19, 2010. The licensee provided the NRC a written response to the NOV on May 18, 2010, and updated their response on a follow-up letter on October 7, 2010. The licensee's response described: (1) corrective steps which have been taken and the results achieved; (2) corrective steps which will be taken; (3) the date when full compliance will be achieved; and (4) the reasons for the violation.

The inspection team determined that the licensee's RCE planned corrective actions, as documented in PER 214592, did address the NOV. The licensee took prompt corrective actions to restore the entry conditions to those previously in place prior to the change. The inspection team did not identify any significant concerns with the licensee's planned and completed corrective actions.

However, as discussed in previous sections, the inspection team independently identified several corrective actions for both violations that were closed incorrectly. The inspection team noted, as previously discussed, that for the most part, the licensee also identified the majority of the issues during the performance of their review effort, which was being conducted in parallel with the inspection team's efforts during this inspection.

The inspection team concluded that overall, the licensee's plan and methodology for verifying appropriate closure of the corrective actions was adequate. This was based on:

- Although there were several questions raised, parallel to the inspection team's query, the licensee also identified most of the same issues and were taking appropriate action to realign the closures to ensure appropriate corrective action completion

- The licensee submitted a supplemental response to NOV # EA-09-307, dated October 29th, 2010 (ML1030701330) which commits to maintaining a corrective action closure review board. This review board will be populated by staff members from the original root cause review team that are intimately familiar with the intent of the RCE corrective actions.

- Additional corrective actions were in place to improve the overall performance of the licensees CAP (refer to IR 050005000259/260/296/2010006 for additional details) to ensure continued improvement of the CAP.

f. Determine that the interim compensatory actions adequately address the risk associated with the issues during the implementation of the long term corrective actions.

The inspection team determined that most corrective actions identified in the RCE were essentially interim corrective actions because restoration of full compliance will occur upon full completion of the transition to NFPA-805 which will establish a new licensing basis with appropriate plant modifications.

.1 Failure to comply with Appendix R, Section III.G:

As interim compensatory measures, the licensee will continue implementation of OMAs to mitigate the effects of fire damage to safe shutdown equipment and cables. BFN posted additional compensatory measures in the form of fire watches, and was revising the SSIs to include steps to independently verify critical actions were completed. Additionally, BFN plans to initiate fire protection improvements, where allowed, under the transition requirements with the focus on risk reduction and elimination of OMAs.

The inspection team determined the proposed and implemented interim compensatory actions adequately address the risk associated with the issues during the implementation of the long term corrective actions.

.2 Failure to comply with Technical Specification 5.4.1.a:

As an interim compensatory measure, the licensee issued a memo to require all Fire Protection Program changes to go through additional challenge from different committees. This interim compensatory measure later became permanent when Standard Department Procedure FPDP-3 was revised.

The inspection team determined the implemented interim compensatory actions adequately addressed the risk associated with the issue until the completion of the corrective actions identified in the RCE and full transition to NFPA-805.

g. Findings

No findings were identified.

02.04 Independent Assessment of Extent of Condition and Extent of Cause

a. Inspection Scope

IP 95002 requires that the inspection team perform a focused inspection to independently assess the validity of the licensee's conclusions regarding the extent of condition and extent of cause of the issues. The objective of this requirement is to independently sample performance, as necessary, within the key attributes of the cornerstone that are related to the subject issues to ensure that the licensee's evaluation regarding the extent of condition and extent of cause is sufficiently comprehensive.

The inspection team conducted independent extent of condition and extent of cause reviews for the issues associated with the White and Yellow findings. The Yellow finding revealed significant and broad organizational issues associated with the site and corporate management and performance monitoring of the engineering and licensing organizations. The White finding revealed a more focused weakness related to procedure bases. The inspection team's independent review focused on the primary root causes associated with the Yellow and White findings in addition to the licensee's identified causes.

In conducting this independent review, the inspection team interviewed site management and staff, reviewed program and process documentation, and reviewed existing site program monitoring and improvement efforts, including review of corrective action documents. Based on the root and contributing causes identified by BFN, the inspection team focused the review on the following attributes of the programs and processes:

- Program and process expectations that clearly delineated site management and staff roles and responsibilities;

- Program and process performance monitoring efforts that included performance gap analyses;

- Program and process improvement efforts that included effective use of the Operating Experience (OE) and existing station improvement plans, and;

- Change management implementation for past programs and processes, including organizational and staffing restructuring completed at the site and corporate level.

b. Assessment

The inspection team determined that BFN conducted a comprehensive extent of condition and extent of cause review that sufficiently identified most relevant areas.

One relevant area that was not fully explored by the licensee, beyond BFN, was one of the root causes of the Yellow finding. The licensee determined one of the root causes to be inadequate corporate governance and oversight by the Licensing and Engineering organizations with regard to compliance with Fire Protection regulations. Cooperate oversight and governance extends beyond BFN, possibly affecting the other licensees under the TVA corporate purview. There were no statements in the licensee's extent of cause or condition that indicated the Appendix R programs of other licensees under the same corporate governance and oversight were reviewed. The inspection team requested further information related to the reason the corporate staff was confident that similar conditions didn't exist for these other TVA sites. The licensee responded that a review, though not specified in the root cause report, was done per SPP 3.9, Rev 3, Operating Experience Program, Section 3.5, Internal Nuclear Operating Experience Reports. The inspection team reviewed the specific NOER for the Yellow violation. The licensee categorized the NOER as a level green, "not significant", which did not require responses from other licensees in the corporate fleet. The timing of processing these

green NOERs could take up to 30 days for the Operating Experience coordinator to be notified by the Problem Event Report Screening Committee (PSC) of an issue. Additionally, the procedure's goal was to create and disseminate the NOER to the other fleet licensees within 15 days of the event occurrence. Therefore, an NOER may not be received until 45 days after the issue is identified. The inspection team determined that the use of the NOER process was inadequate to accomplish the licensee's intended communication goal to other TVA sites. After discussions with the inspection team, the licensee revised the corporate procedure to ensure regulatory issues are addressed in a more thorough and timely manner as well as ensuring more appropriate significance designations for the regulatory issues being addressed.

The inspection team concluded that the requirements were met for BFN extent of condition and extent of cause reviews. The NRC ROP baseline inspection program has scheduled inspections that will programmatically review and inspect other licensed TVA facilities and determine whether or not programmatic issues exist at the other stations. Inspection results for future inspections may be reviewed via documented inspection reports under the following report numbers; Sequoyah Nuclear Plant: 05000327&328/2011002, 003, 004, 005, 006; and for Watts Bar Nuclear Plant: 05000390/2010007; 05000390/2011002, 003, 004, 005.

c. Findings

No findings were identified.

02.05 Safety Culture Consideration

a. Inspection Scope

IP 95002 requires that the inspection team perform a focused inspection to independently determine that the licensee's RCE appropriately considered whether any safety culture component caused or significantly contributed to any risk significant issue.

The inspection team reviewed problem evaluation reports and procedures to determine if the licensee properly considered whether any safety culture component caused or contributed to the issue. In addition, the inspection team conducted individual and group interviews with 43 staff and supervisors/managers to determine if the safety culture components identified in the RCE are still valid issues at the site today.

b. Assessment

As part of the root cause evaluation for the issue, the licensee evaluated the identified root and contributing causes against the safety culture components that could have contributed to the issues. The licensee's root cause evaluation included a discussion of the 13 safety culture components described in Regulatory Issue Summary 2006-013, "Information on the Changes Made to the Reactor Oversight Process to More Fully Address Safety Culture," (ADAMS Accession No. ML061880341) as they applied to the violations and findings. In addition, the licensee determined that weaknesses in decision making, resources, work practices, and the corrective action process were the most

prevalent safety culture attributes. The licensee also included the results of a 2010 safety culture self-assessment and site "pulsing" surveys, as well as the results of a vendor safety culture survey which was conducted in 2009, in consideration of the safety culture components.

The inspection team independently confirmed that a number of other safety culture components which contributed to the issue(s) were also identified in the RCE. These additional safety culture components included weaknesses in the corrective action program and resources. For each of the identified prevalent and contributing safety culture components, the inspection team confirmed that the licensee established corrective actions to address the issues. During the course of interviews with licensee personnel, the inspection team asked interviewees questions related to Safety Culture Work Environment (SCWE) to determine if the licensee's staff were reluctant to raise safety concerns or if retaliation existed for raising safety concerns. The inspection team did not identify concerns related to SCWE.

The inspection team independently determined that recent site senior leadership changes improved the staffs' willingness to trust the upper management team. The inspection team heard during almost all of the interviews that BFN staff believes the site is moving in the right direction. All individuals interviewed stated that they were willing to raise nuclear safety concerns without fear. Based on the licensee staff interviews, it appears that The Concerns Resolution Program (CRP) (Employees' Concern Program) is viewed as an effective alternative for raising concerns; however, it is not usually needed because issues are generally resolved satisfactorily at the first line supervisor level.

The inspection team inquired about the employees' ability to use and how frequently they use the corrective action program. The licensee staff indicated that the new software changes last year made entering issues and developing PERs easier. Most of those interviewed felt that the PERs are prioritized in an effective manner, and that management's response and disposition of the issue is appropriate and timely. However, the inspection team did hear some concerns with the frequency with which the licensee closes PERs to work orders. The concern is that the work orders are not always prioritized in the same manner as the PERs.

The inspection team identified some continued weaknesses in the area of resources. The licensee staff indicated that many departments are not currently fully staffed and this causes a backlog of work, making it difficult to deal with emergent site issues. Even though this is seen as an area of weakness to the line organization, most are aware that positions were posted and management is actively seeking new employees to fill the vacancies. Some of the departments had more access to benchmarking and advanced training opportunities than others, mostly due to staffing constraints. Most of those interviewed were interested in benchmarking opportunities and saw the value-added of learning about day to day operation at another utility.

c. Findings

No findings were identified.

02.06 Evaluation of IMC 0305 Criteria for Treatment of Old Design Issues

The licensee did not request credit for self-identification of an old design issue; therefore, the risk-significant issue was not evaluated against the IMC 0305 criteria for treatment of an old design issue.

4OA6 Meetings, Including Exit

October 22, 2010, inspection team presented the inspection results to Mr. Don Jernigan, Keith Polson and other members of your staff. On December 2, 2010 the inspection conducted a final exit with Keith Polson. The inspection team confirmed with the licensee that no proprietary information was reviewed by the inspection team during this inspection period and no proprietary information was therefore retained by the inspection team or documented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

J. Brown, Corporate Engineering
J. Davenport, BFN Licensing Engineer
P. Donahue, BFN Engineering
S. Douglas, General Manager of Nuclear Quality Assurance
J. Emens, BFN Site Licensing Manager
D. Green, Corporate Licensing
C. Guey, Corporate Probabilistic Risk Assessment
K. Jones, Corporate Engineering
J. Kennedy, Corporate Safety Culture
J. Kirsch, BFN Fire Protection System Engineer
R. Krich, Vice President of Nuclear Licensing
D. Matherly, BFN Fire Protection Task Force/Lead
B. Pierce, BFN Performance Improvement
K. Polson, BFN Site Vice President
M. Scaggs, Executive Sponsor for Material Condition Improvement
B. Simril, Manager of TVA Fire Protection
H. Smith, BFN Fire Operations
T. Stafford, BFN Fire Protection Engineer
R. Whalen, Vice President of Nuclear Engineering

LIST OF ITEMS OPENED AND CLOSED

Opened:

None

Closed:

05000259, 260, 296/2009009-03,	VIO	"Failure to Ensure One Train of Cables of Systems Necessary to Achieve and/or Maintain Post-Fire Safe Shutdown is Free of Fire Damage in Accordance With 10 CFR Part 50, Appendix R, Section III.G."
05000259, 260, 296/2009009-05,	VIO	"Inadequate Safe Shutdown Instruction Entry Conditions for Appendix R Fire Events."

Attachment

LIST OF DOCUMENTS REVIEWED:

Problem Evaluation Reports Reviewed (PER)
101631, 146452, 162799, 164685, 169491, 208926, 214592, 226197, 223536, 229148, 263581 230291, 236172, 238026, 238449, 240789, 241885, 247817, 248907, 252299, 254000, 265335, 265247, 265257, 265337, 265340, 265343, 265345, 265354, 265351, 265359, 265364, 265369, 265372, 265257, 268640, 268642, 269969, 270196, 270197, 270201, 270233, 270278, 270332, 270378

Drawings:
0-45E830-30, Pump House Tunnel Fire Barrier Plan, Sections and Details, Rev.1
DWG 45A897-1, Manual Actions Required for FSSD Following a Fire (SQN)

Design Changes:
EDC 69701, Eliminate or Revise Several Time Critical Operator Manual Actions for Appendix R Safe Shutdown as Appropriate, Rev. A
DCN 69786, Appendix R Improvements, Rev. A
DCN 69957, Appendix R Pump House Tunnel Fire Barrier, Rev. A

Calculations:
B14-100617111, Units 1, 2, and 3 Appendix R Manual Action Requirements, Rev. 9

Procedures:
0-AOI-26-1, Fire Response, Rev. 11
1-AOI-100-1, “Reactor Scram,” Revision 7
1-AOI-100-1, “Reactor Scram,” Revision 8
AOI-30.2 C.28, “Fire Safe Shutdown Room 757-A17 or 757-A24,” Rev 2 (WB)
AOI-30.2 C.37, “Fire Safe Shutdown Room 737-A1B,” Rev. 0 (WB)
AOI-30.2 C.37, “Fire Safe Shutdown Room 737-A1B,”Rev. 2 (WB)
AOI-30.2 C.46, “Fire Safe Shutdown Room 713-A1A,” Rev. 0 (WB)
AOP-N.08, “Appendix R Fire Safe Shutdown,” Rev 4 (SQN)
AOP-N.08, “Appendix R Fire Safe Shutdown,” Rev 5 (SQN)
AOP-N.08, “Appendix R Fire Safe Shutdown,” Rev 9 (SQN)
AOP-N.01, “Plant Fires,” Rev 9 (SQN)
AOP-N.01, “Plant Fires,” Rev 10 (SQN)
AOP-N.01, “Plant Fires,” Rev 12 (SQN)
AOP-N.01, “Plant Fires,” Rev 13 (SQN)
0-GOI-100-1A, “Unit Startup,” Revision 22
0-GOI-100-1A, “Unit Startup,” Revision 23
1-GOI-100-12, “Power Maneuvering,” Revision 9
1-GOI-100-12, “Power Maneuvering,” Revision 8
0-OI-57B, “480V/240V AC Electrical System,” Revision 188
0-OI-57B, “480V/240V AC Electrical System,” Revision 187
0-OI-57A, “480V/240V AC Electrical System,” Revision 139
0-OI-57A, “480V/240V AC Electrical System,” Revision 140
0-OI-82, “Standby Diesel Generator System,” Revision 110
0-OI-82, “Standby Diesel Generator System,” Revision 111
OSG4-165, “Manual Actions Required for Safe Shutdown-10CFR50 Appendix R,” Rev 5 (WB)
0-SI-3.1.4, “ECCW Pump Performance,” Revision 49

0-SI-3.1.4, “ECCW Pump Performance,” Revision 48
1-SR-3.3.1.1.10(3B), “Reactor Protection System High Reactor Pressure Channel B1 Calibration,” Revision 5
1-SR-3.3.1.1.10(3B), “Reactor Protection System High Reactor Pressure Channel B1 Calibration,” Revision 6
2-SI-3.2.10.B, “Verification of Remote Position Indicators for Residual Heat Removal Service Water System Valves,” Revision 12
2-SI-3.2.10.B, “Verification of Remote Position Indicators for Residual Heat Removal Service Water System Valves,” Revision 13
0-SSI-001, Safe Shutdown Instructions, Rev. 3
0-SSI-001, Safe Shutdown Instructions, Rev. 4
0-SSI-001, Safe Shutdown Instructions, Rev. 7
0-SSI-005, Unit 1 4kV Electric Board Room 1A, Rev. 8
0-SSI-007, Unit 1 480V Shutdown Board 1 B Room, Rev. 4
0-SSI-009, Unit 2 Reactor Building Fire 4kV Electric Board Room 2A, Rev. 10
0-SSI-17, Unit 1 Battery and Battery Board Room, Rev. 5
OPDP-1, Conduct of Operations, Rev. 18
ECI-0-000-MOV001, “Maintenance for Limitorque Motor Operated Valves,” Revision 42
EPI-0-000-MOV001, “Electrical Preventative Maintenance for Limitorque Motor Operated Valves,” Revision 52
FPDP-3, Management of the Fire Protection Report, Rev. 6
NPG-SPP-01.2, Administration of Site Technical Procedures, Rev. 0
NPG-SPP-02.3, “Operating Experience Program,” Revision 0
NPG-SPP-03.1.7, “PER Actions,” Revision 1
NPG-SPP-03.2, Nuclear Safety Oversight, Rev 0000
NPG-SPP-06.6, “Maintenance Rule Performance Indicator Monitoring, Trending and Reporting - 10 CFR 50.65,” Revision 9
NPG-SPP-09.13, Fire Protection Program Change Regulatory Reviews, Rev. 2
NPG-SPP-09.3, Plant Modifications and Engineering Change Control, Rev. 1
NPG-SPP-11.10, “Adverse Employment Action,” Rev. 0000,
NPG-SPP-11.10, “Adverse Employment Action,” Rev. 0000,
BP-120, “Retaining Critical Knowledge,” Rev.0002,
BP-122, “Governance, Oversight, Execution and Support Program,” Revision 8
BP-127, “Peer Teams,” Rev. 0005
BP-130, “Organization and Staffing Management,” Rev 0000
BP-132, “Work Environment Oversight Group,” Rev. 000
BP-213, “Managing TVA’s Interface with NRC,” Revision 31
BFN-ODM-4.15, “Operations Performance Management: Attachment A- Department and Crew Human Performance Clock Reset Criteria,” Rev. 006.
TVA-NQA-PLN89-A, “Nuclear Quality Assurance Plan,” Rev. 0024A1
NEDP-22, “Functional Evaluations,” Revision 9

Miscellaneous Documents:

BFN 2010 Training schedules: Maintenance Training, Initial license training, licensed operator re-qualification training.
BFN Corrective Action Review Board (CARB) packet, Wednesday, October 13, 2010
“Violation of Appendix R Regulations Root Cause Report,” Revision 001, 002

NLOR Cycle 1-4 training schedules revision 3
"Safety Culture Improvement Plan Actions," October 13, 2010.
BFN-PI-F-10-001 Focused Self Assessment Report, "Safety Culture; SYNERGY Survey Follow-up Assessment" June 14-25, 2010.
2009 SYNERGY Safety Culture Survey Areas for Improvement, June 15, 2010.
FY11 PR&D Goals for BFN Department Managers and Above
Safety/HU/Strong Nuclear Safety Culture Topic Rotation schedule for October 2010
CRS-1, "Appendix C SCWE Pulsing Guidance" Revision 10
2010 Concerns Resolution Program/Employee Concerns Program Issue files.
BFN-PI-F-10-002 Focused Self Assessment Report, "2010 Browns Ferry Mock 95002 Inspection," June 14-25, 2010.
Slide presentation: "Mock NRC 95002 Inspection"
Slide presentation: "Engineering Sustainability"
B45-101008-001, BFN SSI Entry Condition Basis Evaluation
OPL173S149, BFN Operator Training – Requalification – Fire in the Unit Reactor Building – SSI-9, Rev. 3
OPL171.031, BFN Licensed Operator Training – Safe Shutdown Instructions, Rev. 13
NEDP-7, Job Performance Requirement Guide Performing Electrical Appendix R/Fire Protection Circuit Analysis, Rev. 19
NEDP-7, Job Performance Requirement Qualification Guide Performing Mechanical/Programmatic Appendix R/Fire Protection Reviews, Rev. 19
IP 95002 Mock inspection table: "Browns Ferry- Violation of Appendix R Regulations," March 17, 2010, Revision 11 draft C
SYNERGY presentation slides: "2009 Nuclear Safety Culture Assessment," July 7, 2009.
SYNERGY Survey report: "2009 Nuclear Safety Culture Assessment," March 2009.
SYNERGY Survey report: "2006 Nuclear Safety Culture Assessment," October 2006, Rev. 1.
TVA Handbook: "One Team, One Fleet, One TVA!" Spring 2010
TVA: "Browns Ferry Fire Protection 95002 Inspection Communications Plan," July 02, 2010.
Slide presentation and talking notes: "NRC 95002 Inspection," June 29, 2010
Newsletter: "Keeping Current," June 30, 2010 and September 27, 2010.
Newsletter: "NPG News Browns Ferry," July 9, July 13, July 16, July 26, August 11, August 23, September 9, and September 13, 2010.
Newsletter: "NPG News, Fleet," June 28, July 12, August 16, September 27, October 12, 2010.
Slide Presentation: "Project Update: BFN Fire Protection"
Work Environment Oversight Group Report: August-September 2010, and June-July, 2010.
Corrective Action Audit number SSA0903 and Self-Assessment and Benchmarking Assessment No. CRP-PA-I-09-006, "Browns Ferry, Sequoyah, and Watts Bar Nuclear Plants and Corporate Office" May 13, 2009
Site "pulsing" surveys from January 2009-September 2010
CRP-QA-F-10-001, "Quality Assurance Self Assessment," February 2010.
"Tennessee Valley Authority Nuclear Power Group Operating Model" Program Document, Rev 1
TVA Staffing Charts, 2007, 2008, 2009, 2010
"CNO Strategy" Report, Rev 2, October 09, 2009
"Strategic Council" Report, September 24, 2010
"Nuclear Operations Support Management Review Meeting" Report, August 3, 2010
Self Assessment Report BFN-ENG-06-012, "Triennial Fire Protection Inspection Readiness"
Self Assessment Report BFN-PI-F-10-002, "2010 Browns Ferry Mock 95002 Inspection"
Self Assessment Report CRP-NS-06-001, "Corporate Governance and Oversight"

Root Cause Evaluation Report, “Violation of Appendix R Regulations,” Revisions 0, 1 and 2
Position Description for Manager, Nuclear Site Licensing dated September 27, 2010
Power Point Presentation Slides “TVA Nuclear Power Group Probabilistic Risk Assessment” by Ching Guey October 20, 2010
Program Health Report for Maintenance Rule Program, dated 1st & 2nd quarters 2010
Resumes for the following TVA managers: James Emens, Thomas Matthews, and Rod Krich
Interview Notes from Site Licensing Manager (active from June 2005 thru June 2007)
Interview Notes from Acting Licensing Manager (active from October 2008 thru December 2008)
Interview Notes from current Licensing Manager (conducted on February 1, 2010)
Nuclear Engineering Bulletin, “BFN SSI Entry Condition Basis Evaluation,” October 18, 2010
Nuclear Safety Review Board Reports for the dates of October 18, 2009, February 16, 2010, July 15, 2010, and October 15, 2010
Assessment Evaluation Report, “Evaluation of Browns Ferry IST Program Assessments,” September 20, 2010
Browns Ferry response to the following Generic Communications: Information Notice 01-012, Information Notice 99-005, Information Notice 92-028, Information Notice 83-069, Information Notice 80-011
Browns Ferry Maintenance Rule (a)(1) SSC Lists from 2008 through 2010
Control Room Manning chart (dayshift) October 19, 2010
WBN-OPS-F-10-003, Watts Bar Nuclear Fire Operations Focused Self Assessment
TVA Sequoyah and Watts Bar Nuclear Power Plants Fire Protection Issue Resolution Options, Rev 0
TVA Nuclear Assurance-Nuclear Power Group (NPG) Wide-Radiological Emergency Preparedness Program Audit Report SSA0804