UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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July 14, 2009

Mr. Preston D. Swafford
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SUBJECT: BROWNS FERRY NUCLEAR PLANT – NRC FOCUSED FIRE PROTECTION BASELINE INSPECTION REPORT 05000259/2009007, 05000260/2009007, AND 05000296/2009007

Dear Mr. Swafford:

On April 24, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed a focused fire protection baseline inspection at your Browns Ferry Nuclear Plant, Units 1, 2, and 3. The enclosed inspection report documents the inspection results which were discussed, on April 24, 2009, with Mr. J. Randich and other members of your staff. Following completion of additional review in the Region II office, another exit meeting was held by telephone with Mr. R. West and other members of your staff on June 5, 2009, to provide an update on changes to the preliminary inspection findings.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, no findings of significance were identified.

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/
Rebecca L. Nease, Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure: Inspection Report 05000259/2009007, 05000260/2009007 and 05000296/2009007
w/Attachment: Supplemental Information

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Letter to Preston D. Swafford from Rebecca L. Nease dated July 14, 2009.

SUBJECT: BROWNS FERRY NUCLEAR PLANT – NRC FOCUSED FIRE PROTECTION BASELINE INSPECTION REPORT 05000259/2009007, 05000260/2009007, AND 05000296/2009007

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OFFICE	RII:DRS	RII:DRS	RII:DRS	NRR:AFPB	RII:DRP	RII:DRS
SIGNATURE	RA	RA	RA	RA	RA	RA
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DATE	7/10/2009	7/10/2009	7/10/2009	6/30/2009	7/14/2009	7/14/2009
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: S:\DRS\Eng Branch 2\REPORTS\Browns Ferry\Inspection Report\BFN 2009007 Focused FP Baseline Report (Thomas).doc

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-259, 50-260, 50-296
License Nos.:	DPR-33, DPR-52, DPR-68
Report No.:	05000259/2009007, 05000260/2009007 and 05000296/2009007
Licensee:	Tennessee Valley Authority (TVA)
Facility:	Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3
Location:	Athens, Alabama
Dates:	April 20-24, 2009
Inspectors:	C. Kontz, Operations Examiner, Region II (RII) P. Qualls, Fire Protection Engineer, Office of Nuclear Reactor Regulation (NRR)/Fire Protection Branch (AFPB) L. Suggs, Reactor Inspector, RII M. Thomas, Senior Reactor Inspector (Team Lead), RII
Accompanying Personnel:	B. Metzger, Fire Protection Engineer, NRR/AFPB
Approved by:	Rebecca L. Nease, Chief Engineering Branch 2 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000259/2009007, 05000260/2009007 and 05000296/2009007; 04/20 - 24/2009; Browns Ferry Nuclear Plant, Units 1, 2 and 3; Focused Fire Protection Baseline Inspection.

This report covers an announced one-week focused fire protection baseline inspection by a team of three regional inspectors and one NRR fire protection engineer. The team was also accompanied by an additional NRR fire protection engineer who was an observer. No findings of significance were identified. The U.S. Nuclear Regulatory Commission's (NRC's) program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

None

B. Licensee Identified Violations

None

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R05 Fire Protection

Background

During NRC inspections of the BFN Fire Protection Program for Unit 1 recovery in 2006 and 2007, the NRC expressed concerns that the entry conditions for the BFN Appendix R safe shutdown instruction (SSI) 0-SSI-001, "Safe Shutdown Instructions," were too restrictive. In response to the NRC's concerns, the licensee changed the SSI entry conditions as part of the Units 1, 2, and 3 combined 0-SSI-001, Revision (Rev.) 0 in May 2007. Revision 1 to 0-SSI-001, which was issued in August 2008, did not change the SSI entry conditions. However, in December 2008, the licensee issued another revision (i.e., Rev. 2) to the 0-SSI-001 entry conditions in order to establish additional limiting conditions. On January 8, 2009, during a site visit, an NRC representative from NRR identified a concern that the entry conditions of 0-SSI-001, Rev. 2 were too limiting and might preclude the operators from entering the SSIs even during a severe fire event. In a followup inspection of the NRR concern, the resident inspectors identified an unresolved item (URI) 05000259, 260, 296/2009002-01, "Inappropriate Change to SSI Entry Conditions For Appendix R Fire Events." This URI documented the NRC concern that the revised entry conditions of Rev. 2 of 0-SSI-001 could cause operators to enter the SSIs too late to meet critical SSI timelines for operator actions to align reactor core and containment cooling functions which would invalidate critical assumptions (e.g., initial suppression pool temperature) used in the safe shutdown analysis (SSA). On February 9, 2009, in response to the inspectors' URI, the licensee issued Rev. 3 of 0-SSI-001 which changed the entry conditions to include additional provisions for ensuring timely entry into the SSIs that would assure critical SSA assumptions were met to allow decay heat removal and containment cooling functions to be fulfilled in time. The licensee also committed to conduct a comprehensive re-evaluation of the SSI entry conditions to assure they were consistent with all SSA assumptions and SSI timelines for any Appendix R fire event. However, following further dialogue with the NRC staff regarding acceptability of the SSI entry conditions, the licensee subsequently issued Rev. 4 of 0-SSI-001, on February 27, 2009, which changed the entry conditions back to those in Rev. 1. [Note, the entry conditions prescribed by Rev. 1 and 4 of 0-SSI-001 were essentially the same and based only on the magnitude of the fire, and did not include qualifiers related to plant parameters (e.g., reactor water level, suppression pool temperature).]

On January 27, 2009, TVA submitted a request to exempt BFN from the requirements of *Title 10 of the Code of Federal Regulations* (10 CFR), Part 50, Appendix R, Section III.G.2, to allow the use of over 180 operator manual actions (OMAs) in lieu of providing the physical separation described in Section III.G.2. This exemption request was submitted for existing identified noncompliances. Inspection samples of the OMAs did not reveal any significant issues during the 2006 NRC triennial fire protection inspection (Inspection Report (IR) 05000260, 296/2006014) and the 2006/2007 reviews in support of Unit 1 restart (IRs 05000259/2006012, 05000259/2006016, 05000259/2007009)

regarding the feasibility to perform the OMAs. NRC Enforcement Guidance Memorandums (EGMs) 98-002 and 07-004 gave all licensees enforcement discretion until March 6, 2009, with regard to the use of noncompliant OMAs in lieu of providing physical protection in accordance with 10 CFR 50 Appendix R, Section III.G.2.

The NRR staff determined that the information in the exemption request was not sufficient to begin the review in several areas. The application did not provide sufficient information to demonstrate that the special circumstances in 10 CFR 50.12 existed for the exemption request, in that 1) the underlying purpose of the rule to ensure defense in depth for fire areas important to safety was not met, and 2) compliance with the rule did not constitute undue hardship because the rulemaking considered the burden of compliance when it was backfit upon the pre-1979 plants. The staff discussed the results of its acceptance review in a phone call with TVA management on February 26, 2009, with followup calls on February 27, and March 3, 2009. On March 4, 2009, TVA withdrew the exemption request and submitted a letter of intent to transition to the National Fire Protection Association (NFPA) 805 in accordance with 10 CFR 50.48(c).

During NRR's acceptance review for this exemption request, it was noted that for several fire areas, there appeared to be a large number of noncompliant OMAs that were required to be completed within 20 minutes or less. The feasibility of and reliability for the licensee to complete this large number of OMAs in 20 minutes or less was questioned by an NRR staff reviewer. In response to the expiration of enforcement discretion and the withdrawal of their exemption request, the licensee re-reviewed the OMAs with short time requirements (20 minutes or less). The licensee also identified the noncompliant OMAs in the corrective action program (CAP) as a nonconforming condition in accordance with the guidance in NRC Regulatory Issue Summary (RIS) 2005-20, Rev.1 (formerly Generic Letter 91-18). The licensee posted hourly roving fire watches (which were in addition to the OMAs being credited as compensatory measures) to address the existing noncompliances. Additionally, the licensee was developing a plan to reduce time critical OMAs (60 minutes or less).

Given the large number of OMAs with short time completion requirements, coupled with the fact that the licensee revised the SSI entry conditions since the last fire protection inspection, the NRC concluded that a sample of the more risk significant OMAs be reviewed in a near term inspection to verify that there was no immediate safety concern. A focused fire protection baseline inspection was performed at BFN, as documented in this inspection report (IR), to assess the impact of the revised Appendix R SSI entry conditions on the licensee's ability to perform certain OMAs, such that the SSA assumptions were met. In addition, this team inspection sampled the more risk significant compensatory measures put in place to address the existing noncompliances with Section III.G.2.

.01 Post-Fire Safe Shutdown From Main Control Room

a. Inspection Scope

The team reviewed the BFN Fire Protection Report (FPR), which contained the fire protection plan, fire hazards analysis (FHA), SSA, and the Appendix R Safe Shutdown Program. The team also reviewed operating instructions and other supporting documents for postulated fires in fire zone (FZ) 1-3 and FZ 3-3. The team observed simulator exercises for postulated fires in Fire Area (FA) 9. These reviews were

performed to evaluate consistency with the assumptions in the SSA and BFN licensing basis.

The team reviewed the adequacy of procedures utilized for post-fire safe shutdown (SSD) from the main control room (MCR) and performed an independent walk-through of procedure steps to ensure the implementation and human factors adequacy of the procedures. Additionally, the team examined OMAs to ensure that they had been properly reviewed and approved by NRC, as applicable, and that the actions could be implemented in accordance with plant procedures in the time necessary to support the SSD method for each FA. The OMAs were reviewed to verify that those actions were consistent with the criteria in NRC Inspection Procedure 71111.05T. Specific actions verified included electrical distribution system alignment. Communications and emergency lighting necessary to support performance of the OMAs were reviewed. The team reviewed the licensee's walkdown validations for FZ 1-3 and FZ 3-3. The team reviewed training for the non-licensed assistant unit operators (AUOs) to verify that the training reinforced the shutdown methodology in the SSA and the SSIs for the selected FZs.

Specific procedures and documents reviewed are listed in the Attachment to this IR.

b. Findings

(1) Introduction: The team identified a URI involving a postulated fire scenario in which the initial suppression pool temperature assumed in the licensee's Appendix R thermo-hydraulic analysis may not be the most limiting value for a postulated fire in certain FAs.

Description: The licensee's Appendix R thermo-hydraulic analysis was based on specific initial plant conditions at the time of entry into the SSIs. During review, the team noted that a fire induced single spurious equipment operation could result in plant parameters being outside the initial conditions assumed in the thermo-hydraulic analysis and SSA prior to entry into the SSIs. This was corroborated by a simulator exercise for a postulated fire in FA 9, which demonstrated the effect on suppression pool temperature of a single main steam safety relief valve (MSRV) spuriously opening at the onset of a fire. During the simulator exercise, suppression pool temperature quickly rose above the 95 degrees Fahrenheit (º F) value assumed in the thermo-hydraulic analysis. Suppression pool temperature above the analyzed value could impact the net positive suction head (NPSH) required for the low pressure coolant injection (LPCI) pumps, which were credited for providing core cooling (if high pressure systems were not available) and suppression pool cooling. This issue was discussed with licensee personnel who initiated problem evaluation report (PER) 169488 to assess the basis for the suppression pool temperature assumed in the Appendix R analysis. The licensee had hourly roving fire watches in place (which were implemented as additional compensatory measures to address the existing noncompliant OMAs) while this issue was being evaluated. This issue is unresolved pending the NRC's review of the licensee's assessment of the suppression pool temperature basis during the fall 2009 triennial fire protection inspection (TFPI). This issue is identified as URI 05000259, 260, 296/2009007-01, "Suppression Pool Initial Temperature Assumed in the Appendix R Thermo-Hydraulic Analysis May not be the Most Limiting Value."

(2) Introduction: The team reviewed the impact of the changes to the SSI entry conditions which is the subject of existing URI 05000259, 260, 296/2009002-01.

Description: The team reviewed revisions to 0-SSI-001 to assess the impact of the changes to the entry conditions on performance of the OMAs. The changes made to the SSI entry condition in Rev. 2 (i.e., reactor water level cannot be restored and maintained above +2 inches narrow range with operation of available equipment) were considered nonconservative and could possibly delay or prevent implementation of the OMAs. The team observed two simulator exercises where different revisions of the SSI entry conditions were used. The two simulator exercises were based on postulated fires in FA 9 which caused spurious opening of an MSRV. In the first exercise, only plant equipment credited during a fire in FA 9 was assumed to remain operable, and the SSI entry conditions for Rev. 4 of 0-SSI-001 (revision of record at the time of the inspection) were used to direct entry and use of the SSIs to respond to the fire event. Revision 4 of 0-SSI-001 changed the entry conditions back to what they were in Rev. 1. A second simulator exercise was run using Rev. 2 of the SSI which assumed high pressure coolant injection (HPCI) remained operable. The entry conditions for Rev. 2 of 0-SSI-001 would have allowed the response to the fire to be directed by plant emergency operating instructions (EOI) in lieu of the SSIs under certain plant conditions (e.g., if operators were able to maintain reactor water level above +2 inches). The team noted that delaying or not performing the SSI actions similar to scenario 2 could present challenges for maintaining SSD and long term decay heat removal capabilities. For example, during conditions where containment overpressure (COP) was required to ensure adequate NPSH for the LPCI pumps, the EOI actions attempted to reduce containment pressure, whereas, the SSIs directed actions to maintain COP to support NPSH requirements. Thus, the EOI actions were contrary to the SSI actions and the EOI may not accomplish or could delay, essential actions directed by the SSIs. Based on the simulator exercises observed, the team's assessment of the impact of the SSI entry condition changes in Rev. 2 on SSD was consistent with URI 05000259, 260, and 296/2009002-01. This URI remains open pending further review by the NRC during the fall 2009 TFPI in conjunction with review of the existing URI related to the inappropriate change to the SSI entry conditions for Appendix R fire events.

(3) Introduction: The team identified a concern where licensee procedure 0-SSI-001 may not implement the design basis described in the SSA regarding fire induced spurious actuation of components. In addition, the team also found that the SSA was not consistent with the licensing basis requirements described in the NRC Safety Evaluation Report (SER) for BFN Units 1, 2, and 3, dated April 25, 2007. These issues are considered to be additional examples of an existing URI related to the SSI entry conditions (URI 05000259, 260, 296/2009002-01).

Description: Regarding procedure 0-SSI-001 not implementing the SSA design basis, the team noted that the entry conditions were based on multiple spurious actuations. The entry conditions specified that the SSIs were to be entered if the magnitude of the fire had the potential to affect SSD capability, as indicated by 1) multiple failures/spurious actuations of systems/components; 2) erratic or questionable indications on numerous MCR instruments; or 3) multiple trains/channels of safety related equipment threatened by the fire. However, the SSA design basis requirement assumed only a single spurious actuation, with the single worst case spurious actuation being a fire induced spurious opening of an MSRV. Given the difference between the SSI entry conditions and the SSA design basis requirements, the SSIs may not implement the SSA design basis (i.e., the SSIs may not be entered for the design basis single spurious actuation).

Regarding the SSA not meeting the licensing basis requirements, the team noted that the SSA design basis requirement regarding fire induced spurious actuations was not consistent with the NRC SER issued for BFN Units 1, 2, and 3 dated April 25, 2007. The SER stated (with reference to RIS 2005-30) that to meet the requirements of Appendix R, Section III.G, a licensee must consider the effects of multiple concurrent spurious actuations. The SER further stated that the BFN FPR did not consider concurrent multiple spurious actuations, and there were no exemptions approved for Unit 1 to allow not analyzing for multiple concurrent spurious actuations. The team discussed this issue with licensee personnel who initiated PER 169197 to review the inconsistency between the BFN FPR and the NRC SER.

The team considered these issues to be examples of an existing URI related to SSI entry conditions (URI 05000259, 260, 296/2009002-01). These issues will be reviewed further by the NRC during the fall 2009 TFPI in conjunction with review of this existing URI related to the SSI entry conditions for Appendix R fire events.

(4) Introduction: The team identified a URI concerning whether the containment isolation valves (CIVs) were included and properly analyzed for availability in the Appendix R separation analysis to ensure closure to support COP and NPSH requirements for postulated fires in certain FAs.

Description: TVA submitted a letter to the NRC dated November 15, 2007, "Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - Technical Specifications (TS) Changes TS-431 and TS-418 - Extended Power Uprate (EPU) - Response to Round 13 Request for Additional Information (RAI) - Containment Overpressure APLA-35/37." In that letter, TVA indicated that the analysis for Appendix R showed that credit for COP was needed during certain fire scenarios to ensure adequate NPSH for the residual heat removal (RHR) pump operating in the alternate shutdown cooling mode for a postulated worst case fire event. However, fire damage to circuits of CIVs could cause failure to close or spurious opening of the CIVs which could result in the depressurization of the primary containment. The TVA letter further stated that the FAs in which COP would be needed were reviewed and TVA concluded from the review that none of the CIV cables that could cause spurious opening (downstream of the MCR hand switches) were located in the FAs of concern. However, during this inspection, TVA personnel informed the team that the CIVs were not included in the Appendix R separation analysis and may not have been analyzed for fire induced spurious actuations in the FAs of concern where COP was needed to ensure adequate NPSH. The information discussed with the team during this inspection regarding the CIVs did not appear to be consistent with the information provided in the licensee's November 15, 2007, letter to the NRC. The team questioned the adequacy of the SSA (i.e., were the CIV cables sufficiently analyzed for spurious actuation in the FAs where COP was needed) in that the CIVs were not included as minimum SSD system equipment necessary for COP for the alternate shutdown cooling mode. The licensee initiated PER 169484 to review the Appendix R separation analysis to determine if the CIVs needed to be included in the analysis. The team noted that the licensee's EPU license amendment request submittals were being reviewed by NRR and questions had been raised regarding the COP needed to ensure adequate NPSH requirements for the available RHR pump. The team discussed the CIV issue with the NRR licensing project manager for BFN to ensure NRR awareness and consideration of the issue during review of the licensee's EPU license amendment request. This issue is unresolved pending further NRR review of the licensee's analysis of the CIV cables for

potential impact on the COP and NPSH concerns associated with the EPU. This CIV issue is identified as URI 05000259, 260, 296/2009007-02, "Containment Isolation Valves not Included in the Appendix R Separation Analysis."

(5) Introduction: The team identified a URI related to the concern that the Unit 2 SSIs were different from the Units 1 and 3 SSIs, in that the Unit 2 SSIs did not include OMAs to address closure of an MSRV if the valve were to spuriously open due to a postulated fire.

Description: During review/walkdown of selected SSIs, the team noted that the Unit 1 and Unit 3 SSIs included OMAs to direct closure of a spuriously opened MSRV, but the Unit 2 SSIs did not have similar OMAs. The team discussed this inconsistency with licensee personnel who stated that the analyses were different because the vendor who performed the Unit 2 SSA was different from the vendor who performed the SSA for Units 1 and 3. The licensee initiated PER 169487 to evaluate the need for OMAs to isolate an MSRV during a Unit 2 Appendix R fire event. The licensee had hourly roving fire watches in place (which were implemented as additional compensatory measures to address the existing noncompliant OMAs) while this issue was being evaluated. This issue is identified as URI 05000259, 260, 296/2009007-03, "Operator Manual Actions to Isolate Main Steam Safety Relief Valves for a Unit 2 Appendix R Fire Event," and is unresolved pending further NRC review of the licensee's evaluation during the fall 2009 BFN TFPI.

(6) Introduction: The team identified a URI concerning the licensee's categorization of OMAs as required for Appendix R Section III.G.1 versus III.G.2.

Description: The licensee's SSA identified a number of FAs as meeting the separation criteria of Appendix R Section III.G.1. The team questioned the basis for categorizing the OMAs as required for Appendix R Section III.G.1 versus III.G.2 for certain FAs in that the FAs had numerous OMAs that appeared to be required to ensure SSD (e.g., FA 9). Appendix R Section III.G.1 specifies that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage. OMAs at the specified emergency control stations for III.G.1 compliance are allowed. Prior NRC approval is required to credit OMAs in lieu of spatial separation for III.G.2 compliance. During review of the Appendix R submittals prior to the BFN Unit 2 and Unit 3 restarts, the NRC staff accepted OMAs for certain FAs based on the SSA statements that the FAs met Appendix R Section III.G.1 separation criteria. The licensee's January 27, 2009, exemption request included OMAs for III.G.2 FAs only because the OMAs for the III.G.1 FAs were considered to have been previously accepted by the NRC. Consequently, numerous OMAs may not have been included in the exemption request and may not be identified in the licensee's corrective action program (CAP) if the OMAs were improperly categorized as being required for Appendix R Section III.G.1 versus III.G.2. The team discussed this with licensee personnel who initiated PER 169491 to address this issue. This issue is identified as URI 05000259, 260, 296/2009007-04, "Categorization of Operator Manual Actions as Meeting Appendix R Section III.G.1 versus III.G.2," and is unresolved pending further licensee review of the SSA to determine if OMAs were properly categorized.

(7) Introduction: The team identified a concern regarding the assumption in the SSA involving where the AUOs would be located when the SSIs were entered, potentially affecting their ability to perform OMAs within analyzed time limits. This issue is similar to

an existing URI related to OMA feasibility (URI 05000259/2006012-01), and therefore, is considered to be a part of this URI.

Description: The team performed walk downs of the OMAs in attachments to procedures 0-SSI-1-3, Rev. 3 and 0-SSI-3-3, Rev. 4, with members of the licensee's operations staff. The completion times of the simulated actions were compared to times in Attachment 2 of calculation ND-Q0999-2008-007, Rev. 1. The time comparisons indicated that the actions were feasible within the times listed, under ideal conditions. The team noted that the completion times for the OMAs were based on the AUOs starting from the MCR when the reactor was tripped and the SSIs were entered (time T=0). The start location was based on the assumption that the AUOs would have time to be recalled to the MCR and briefed prior to SSI entry. However, a faster developing fire may result in the AUOs not having arrived in the MCR when SSI entry is required. This had the potential to impact the analysis and SSD may not be accomplished within the time assumed.

Additionally, the team noted that individual SSI attachments contained multiple OMAs in various plant locations. Many of the time-critical OMAs were not routine operations performed by the AUOs. During this inspection, licensee personnel indicated that training was not being provided (e.g., job performance measures) to ensure the AUOs demonstrated proficiency in performing the OMAs within the required times.

The team noted that this issue was similar to one identified by the NRC as URI 05000259/2006012. Therefore, this issue will be reviewed further by NRC during the fall 2009 TFPI in conjunction with review of existing URI 05000259/2006012-01.

4OA6 Meetings, Including Exit

On April 24, 2009, the lead inspector presented the inspection results to Mr. J. Randich, General Manager of Site Operations, and other members of the licensee's staff. The licensee acknowledged the findings. Proprietary information is not included in this report. Following completion of additional reviews in the Region II office, another exit meeting was held by telephone with Mr. R. West, Site Vice President, and other members of his staff on June 5, 2009, to provide an update on changes to the preliminary inspection findings. The licensee acknowledged the findings.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

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R. Knight, Operations Training
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J. McCrary, Operations Support
J. Randich, General Manager of Site Operations
B. Simril, TVA Corporate Fire Protection Program Manager
T. Stafford, BFN Appendix R/Fire Protection Engineer
R. West, Site Vice President
J. Wolcott, EPU Project Manager

NRC Personnel
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K. Korth, Resident Inspector
R. Nease, Chief, Engineering Branch 2, Division of Reactor Safety, Region II
T. Ross, Senior Resident Inspector
C. Stancil, Resident Inspector

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000259, 260, 296/2009007-01	URI	Suppression Pool Initial Temperature Assumed in the Appendix R Thermo-Hydraulic Analysis May not be the Most Limiting Value [Section 1R05.01.b.(1)]
05000259, 260, 296/2009007-02	URI	Containment Isolation Valves not Included in the Appendix R Separation Analysis [Section 1R05.01.b.(4)]
05000259, 260, 296/2009007-03	URI	Operator Manual Actions to Isolate Main Steam Safety Relief Valves for a Unit 2 Appendix R Fire Event [Section 1R05.01.b.(5)]
05000259, 260, 296/2009007-04	URI	Categorization of Operator Manual Actions as Meeting Appendix R Section III.G.1 versus III.G.2 [Section 1R05.01.b.(6)]

Closed

None

Discussed

05000259/2006012-01	URI	Feasibility and Reliability of Local Manual Operator Actions to Achieve Safe Shutdown [Section 1R05.01.b.(7)]
05000259, 260, 296/2009002-01	URI	Inappropriate Change to SSI Entry Conditions For Appendix R Fire Events [Sections 1R05.01.b.(2) and b.(3)]

LIST OF DOCUMENTS REVIEWED

Procedures

0-AOI-26-1, Abnormal Operating Instruction, Fire Response, Rev. 11
0-SSI-001, Safe Shutdown Instructions, Rev. 2, Rev. 3, Rev. 4
0-SSI-1-3, Unit 1, Reactor Building Fire EL 593 North of Column Line R, Rev. 3
0-SSI-3-3, Unit 3 Reactor Building Fire EL 593 and RHR Heat Exchanger Rooms, Rev. 4
0-SSI-9, Unit 2 Reactor Building Fire 4KV Electrical Board Room 2A, Rev. 5

Calculations / Engineering Analyses

ED-Q0999-2003-0048, Unit 1, 2, and 3 Appendix R Manual Action Requirements, Rev. 7
ND-Q0999-2008-0007, Appendix R III.G.2 Manual Action Feasibility Evaluation, Rev. 1

Licensing Basis Documents

NRC Letter dated April 25, 2007, Browns Ferry Nuclear Plant, Units 1, 2, and 3 - Issuance of Amendments Regarding Revision to Appendix R License Conditions to Reflect Three-Unit Operation (TAC Nos. MD3596, MD3597, and MD3598) (TS-4590)
Browns Ferry Fire Protection Report, Rev. 4

Other Documents

EGM-98-002, Disposition of Violations of Appendix R, Sections III.G and III.L Regarding Circuit Failures
EGM-07-004, Enforcement Discretion for Post-Fire Manual Actions Used as Compensatory Measures for Fire Induced Circuit Failures
GE-NE-0000-0021-1614, Task Report T0611, Appendix R Fire Protection, Rev. 0
TVA Letter dated November 15, 2007, Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - Technical Specifications (TS) Changes TS-431 and TS-418 - Extended Power Uprate (EPU)
- Response Round 13 Request for Additional Information (RAI) - Containment Overpressure APLA-35/37

TVA Letter dated January 27, 2009, Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - Proposed Request for Exemption from 10 CFR 50, Appendix R, Paragraph III.G.2, Fire Protection of Safe Shutdown Capacity
TVA Letter dated March 4, 2009, Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - Letter of Intent to Adopt National Fire Protection Association (NFPA) 805, Performance-Based Standard for Fire Protection for Light Water reactor Generating Plants, 2001 Edition
NRC Regulatory Issue Summary (RIS) 2005-07, Compensatory Measures to Satisfy the Fire Program Requirements
RIS 2005-20, Rev. 1, Revision to NRC Inspection Manual Part 9900 Technical Guidance, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety"
RIS 2005-30, Clarification of Post-Fire Safe Shutdown Circuit Regulatory Requirements
RIS 2006-10, Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions

Problem Evaluation Reports (PER) Reviewed

PER 162431, NRC concern about Appendix R entry conditions

PER 162779, SSI entry conditions - containment cooling
PER 164685, NRC safety concern regarding implementation of the SSIs
PER 165288, Exemption request to address NRC RIS 2006-10

Problem Evaluation Reports Initiated During This Inspection

PER 169197, Fire Protection Report Inconsistent with the April 25, 2007 NRC SER
PER 169406, Drawing discrepancy depicting location of Panel 1-LPNL-925-658
PER 169484, Containment isolation valves not in Appendix R separation analysis
PER 169487, No OMAs to isolate MSRVs for Appendix R event
PER 169488, Appendix R analysis suppression pool temperature basis
PER 169491, OMAs categorization as Appendix R III.G.1 versus III.G.2

LIST OF ACRONYMS

ADAMS	Agencywide Document Access and Management System
AFPB	NRR Fire Protection Branch
AUO	assistant unit operator
BFN	Browns Ferry Nuclear Plant
CAP	corrective action program
CFR	*Code of Federal Regulations*
CIV	containment isolation valve(s)
COP	containment overpressure
EGM	Enforcement Guidance Memorandum(s)
EOI	emergency operating instruction(s)
EPU	extended power uprate
ºF	degrees Fahrenheit
FA	fire area
FHA	fire hazards analysis
FPP	fire protection program
FPR	fire protection report
FZ	fire zone
HPCI	high pressure coolant injection
IMC	Inspection Manual Chapter
IP	NRC Inspection Procedure
IR	NRC Inspection Report
JPM	job performance measure
LPCI	low pressure coolant injection
MCR	main control room
MSRV	main steam safety relief valve
NFPA	National Fire Protection Association
NPSH	net positive suction head
NRC	U.S. Nuclear Regulatory Commission
NRR	NRC Office of Nuclear Reactor Regulation
OMA	operator manual action(s)
PARS	Publicly Available Records
PER	problem evaluation report
RAI	request for additional information
Rev	Revision
RHR	residual heat removal
SER	NRC Safety Evaluation Report
SSA	safe shutdown analysis
SSD	safe shutdown
SSI	safe shutdown instruction(s)
TFPI	triennial fire protection inspection
TS	Technical Specification(s)
TVA	Tennessee Valley Authority
UFSAR	Updated Final Safety Analysis Report
URI	unresolved item