



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
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ATLANTA, GEORGIA 30303-8931

October 9, 2007

Tennessee Valley Authority  
ATTN: Mr. William R. Campbell  
Chief Nuclear Officer and  
Senior Vice President  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT - NRC PROBLEM IDENTIFICATION AND  
RESOLUTION INSPECTION REPORT NOS. 05000259/2007008,  
05000260/2007008 AND 05000296/2007008

Dear Mr. Campbell:

On August 24, 2007, the Nuclear Regulatory Commission (NRC) completed an inspection at your Browns Ferry Units 1, 2 and 3 reactor facilities. The enclosed inspection report documents the inspection results, which were discussed on August 24, 2007, with Mr. Gilbert Little and other members of your staff.

The inspection was an examination of activities conducted under your license as they relate to the identification and resolution of problems, compliance with the Commission's rules and regulations, and with the conditions of your operating license. Within these areas, the inspection involved selected examination of procedures and representative records, observations of activities, and interviews with personnel. This inspection was a routine biennial inspection of your Corrective Action Program for Units 1, 2, and 3 in the NRC's Baseline Inspection Program.

On the basis of the sample selected for review, the team concluded that, in general, problems were properly identified, evaluated, and resolved within the corrective action program. However, based on the results of this inspection, the inspectors identified one finding of very low safety significance (Green). The finding was determined to involve violations of NRC requirements. However, because of the very low safety significance and because the problem has been entered into your corrective action program, the NRC is treating the finding as a non-cited violation (NCV), in accordance with Section VI.A.1 of the NRC's Enforcement Policy.

If you contest the NCV in this report, you should provide a response with the basis for your denial, within 30 days of the date of this report, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D. C. 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D. C. 20555-0001; and the NRC Resident Inspector at the Browns Ferry Power Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of 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/**

Stephen C. O'Connor, Acting Chief  
Reactor Projects Branch 6  
Division of Reactor Projects

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

Enclosure: NRC Inspection Report 05000259/2007008, 05000260/2007008,  
05000296/2007008  
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

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

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

Report No: 05000259/2007008, 05000260/2007008 and  
05000296/2007008

Licensee: Tennessee Valley Authority (TVA)

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

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

Dates: August 6-10 and August 20-24, 2007

Inspectors: K. Van Doorn, Senior Reactor Inspector(Team Leader)  
R. Chou, Engineering Inspector  
C. Stancil, Resident Inspector, Browns Ferry  
M. King, Resident Inspector, Harris Plant

Approved by: S. O'Connor, Acting Chief  
Reactor Project Branch 6  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000259/2007-008, 05000260/2007-008, 05000296/2007-008; 08/6-10, 08/20-24/2007; Browns Ferry Nuclear Plant, Units 1, 2 and 3; Biennial baseline inspection of the problem identification and resolution program.

The inspection was conducted by a Senior Reactor Inspector, two Resident Inspectors and an Engineering Inspector. The inspection was a routine Reactor Oversight Process (ROP) biennial baseline inspection of the licensee Corrective Action Program (CAP) for Units 1, 2, and 3. One finding of very low safety significance (Green) was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC)0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### Identification and Resolution of Problems

The licensee was effective in identifying problems at a low threshold and entering them into the CAP. Issues were typically properly characterized and evaluations such as root causes were sufficiently thorough and detailed. Strong management oversight of the CAP was evident. Initial prioritization of issues and corrective actions appeared to be appropriate to risk and program guidance; however, numerous delays in completion of corrective actions had led to increased backlogs in closure of Problem Evaluation Reports (PERs). Recent management attention had resulted in the backlogs beginning to decrease at the time of this inspection. In addition, the inspectors concluded that the licensee had been slow to effect significant improvement in equipment reliability based on the number of equipment problems and timeliness of corrective actions. Also, some repeat problems, such as, adequacy of corrective action implementation were noted; however, these problems were improved from previous inspections.

The licensee was effective in evaluating internal and external industry operating experience items for applicability and taking appropriate action.

Based on review of the licensee's Concerns Resolution Program (CRP), discussions conducted with plant employees from various departments, and review of many PERs, the inspectors did not identify any reluctance to report safety concerns. The inspectors concluded that licensee management routinely emphasized the need for all employees to identify and report problems using the appropriate methods established within the administrative programs.

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

#### Cornerstone: Barrier Integrity

- (Green) A green self-revealing non-cited violation (NCV) of Technical Specification (TS) 3.3.6.1 was identified for failing to recognize an inoperable Reactor Core Isolation Cooling (RCIC) steam flow isolation instrument resulting in exceeding the TS allowed outage time. The licensee entered the deficiency into their CAP for resolution.

This finding is greater than minor because it affected the ability of the licensee to ensure reactor containment isolation following a break in the RCIC turbine steam line and is associated with the Barrier Integrity cornerstone and the respective attribute of configuration control. The finding is of very low safety significance (Green) because it did not represent a degradation of the barrier function of the control room, did not represent an actual open pathway in the physical integrity of the reactor containment, or involve an actual reduction in defense-in-depth for the atmospheric pressure control or hydrogen control functions of the reactor containment. The finding directly involved the cross-cutting area of Human Performance under the correct labeling of components aspect of the Resources component; in that the licensee failed to ensure adequate work instructions and correct labeling were implemented. This directly contributed to the failure of craftsmen and quality control personnel to identify the improperly installed instruments [H.2(c)].

B. Licensee-Identified Findings

None.



## **REPORT DETAILS**

### 4. OTHER ACTIVITIES (OA)

#### 4OA2 Problem Identification and Resolution

##### a.. Assessment of the Corrective Action Program Effectiveness

##### (1) Inspection Scope

The inspectors reviewed licensee Procedure SPP-3.1, Corrective Action Program, Revision 12, which describes the administrative process for the identification and resolution of problems, and its implementation. The inspectors evaluated the implementation of SPP-3.1 on Units 1, 2, and 3.

Procedure SPP-3.1 defines the licensee's classifications of PER significance: "A" level was the most significant, typically safety-related and requiring a formal root cause analysis; "B" level was considered significant, required further evaluation, and may require a formal root cause determination based upon a management decision; "C" level was for routine problems warranting additional corrective evaluation and action; and "D" level was for issues that could be quickly resolved/closed and trended, or routine problems which were adequately addressed by immediate actions or the work control process. The licensee's process also incorporates PERs designated as non-PERs to account for low level items which are, for example, duplicate to other issues identified in the CAP and therefore do not require followup.

The inspectors primarily reviewed PERs that had been initiated by the licensee since December 2005 (the period subsequent to the last NRC baseline problem identification and resolution inspection conducted in November 2005). The reviews mainly focused on issues associated with the following risk significant plant safety systems: Residual Heat Removal Service Water (RHRSW), RCIC, Core Spray Cooling (CSC), and the 250V DC Distribution system. In addition to the system reviews, the inspectors selected a representative number of PERs that were identified and assigned to the major plant departments which included Operations, Maintenance, Engineering, Chemistry, Radiation Protection, and Emergency Preparedness. The inspectors also reviewed a sample of the oldest PERs and oldest Work Orders (WOs) to determine if significant issues were backlogged. The inspectors also reviewed PERs associated with Licensee Event Reports (LERs), NCVs, licensee audits, and licensee self-assessments and reviewed a sample of anonymous PERs.

Reviews were conducted to verify that problems were being properly identified, appropriately characterized, screened for adverse trends, entered into the CAP, and corrective action items were completed as described in the corrective action plan. The inspectors also verified that the licensee adequately determined the cause of the problems and adequately addressed operability, reportability, common cause, generic concerns, and extent of condition. For significant conditions adverse to quality, the review was also to verify that the licensee adequately addressed the root and contributing causes and appropriately identified corrective actions to prevent recurrence.

The inspectors also confirmed the adequacy of a sample of justifications for canceled PERs.

The inspectors reviewed the preventive maintenance (PM) backlog, PMs in the grace period, and deferred PMs. The inspectors also selected a sample of deferred and/or extended PMs to verify that critical components were not adversely affected.

The inspectors also reviewed System Health Reports and the Maintenance Rule (MR) database for the selected systems to verify that equipment deficiencies were being appropriately entered into the Corrective Action and MR programs. The inspectors conducted plant walkdowns of equipment associated with the selected systems to assess the material condition and to look for any deficiencies that had not been appropriately documented.

Documents reviewed to support the inspection are listed in the Attachment.

## (2) Assessment

The inspectors determined that the licensee was effective in identifying problems and entering them into the CAP. PERs normally provided complete and accurate characterization of the subject issues. The threshold for initiating PERs was very low and employees were encouraged by management to initiate PERs. Equipment performance issues, in general, were being identified at an appropriate level and entered into the CAP with some minor exceptions noted. Although several NRC-identified PERs were initiated during the inspection for material condition issues, plant tours confirmed that the licensee threshold for identifying material condition issues was typically low.

Generally, the licensee performed adequate evaluations that were technically accurate and of sufficient depth. Formal root cause and apparent cause evaluations were sufficiently thorough and detailed.

The inspectors determined that, overall, the licensee properly prioritized issues entered into the CAP in accordance with SPP-3.1. However, the inspectors concluded that the licensee had been slow to effect significant improvement in equipment reliability based on the following information:

(a.) The Residual Heat Removal Service Water Heat Exchanger (RHRSW HX) Outlet Valves have had longstanding problems:

- Wiring issues have persisted since 1996. Seven separate instances have been documented, the most recent being July 2007. Problems consisted of broken motor lugs and leads and symptomatic repairs were performed using terminal block Raychem splices.
- Documented mechanical problems included separate issues of valve disc separation, stem shear, cracked stem, and separated handwheel (from 2003 to 2007). Again, symptomatic repairs were performed using valve disc modifications such as orifices and flow skirts.

- Over the course of plant operations, Units 2 and 3 RHRSW HX Outlet Valves routinely experienced loud local flow noise and significant vibrations during throttled Shutdown Cooling operations.
- The licensee did not aggressively pursue the root cause:
  - ▶ To date, comprehensive vibration data on all three unit RHRSW HX Outlet Valves has not been acquired. WO 06-722292-000 was written to acquire vibration data on all three units' outlet valves (twelve in all). Three of four valves on U2 were completed, then the WO was closed. New individual WOs have been written to address vibrations on Units 1 and 3 valves. Unit 3 WOs were written following inspector questioning.
  - ▶ The licensee had not initiated its valve replacement project until the sheared and cracked stem occurrences in 2007.
  - ▶ To date, the valve replacement project has not been properly scoped in that the root cause of high vibrations have not been validated with objective data. Subjective observations (less noise and visual shaking) are being used as project basis. The licensee is proceeding with purchasing and replacement of Unit 2 Walworth and Unit 3 Anchor-Darling valves with presumably vibration-friendly Unit 1 Copes-Vulcan valves. The design will not be complete until approximately February 2008. The first two valves (3A and 3C) are scheduled for replacement following the Unit 3 2008 Spring refueling outage.
- RHRSW HX Outlet Valves were added to MR (a)(1) status on May 31, 2006. Two other RHRSW components, HX floating heads and pump motors, were added in July and October 2005, respectively. RHRSW components make up one third of the MR (a)(1) active list.
- RHRSW/Emergency Equipment Cooling Water (EECW) System Health Report Card Overall Ratings have been RED since the last period in Fiscal Year (FY) 2005, previously turning YELLOW in the second period of FY2005, and turning WHITE in the first period of FY2005. Various system components contributed to the poor system availability and reliability: pump motor failures, piping through-wall leaks, keep-fill check valves, EECW strainers, RHRSW HX outlet valves, and pump performance issues.
- The Plant Health Committee approved the valve replacement project July 18, 2007, and added the RHRSW HX Outlet Valves to the Site Equipment Reliability Top Issues Matrix on August 7, 2007.
- The Change Control Board (site group for project approval and budgeting) approved and budgeted the RHRSW HX Outlet Valve replacement project in its last meeting, July 24, 2007.

(b.) The RHRSW Heat Exchanger Inlet Check Valves are another example of longstanding equipment issues:

- Check valves are sticking full or partially open after flow cessation from RHRSW Pump runs for periodic surveillance and operating instruction chemistry runs. Maintenance history indicates many past occurrences of these sticking check valves.
- In December 2006, maintenance workers identified seven of twelve check valves stuck open while punching scribe marks that would better assist operators in determining valve position (PER 116511). WOs were written to inspect shaft end play and repack with less packing rings to reduce friction. Only Unit 2 valves are complete. Additionally, weighted close-assist lever arms were added to all three unit inlet check valves except two on Unit 3 Loop 1 which are scheduled. The last two surveillances on Unit 1 have been successful.
- During this inspection, NRC inspectors identified five Unit 3 check valves full or partially open (4 full and 1 partially). On two separate occasions, two check valves were found full open. These check valves had neither the lever arms installed in the close-assist position or the packing ring WOs completed. The lever arms appear to be partially successful, although one valve with the close-assist lever arm was found partially open.
- The Functional Evaluation (FE) operability determination for PER 116511 was reviewed by inspectors and found to be weak with regard to the closure function of the RHRSW HX Inlet Check Valves. The original FE basis focused on upstream piping protection and radiological releases. The licensee stated that neither was of primary concern due to not having to credit a second passive mechanical failure (in addition to the fuel boundary), and that the FE would be revised to re-state this basis. The revised FE was reviewed by inspectors and found acceptable.
- The licensee stated that the RHRSW HX Inlet Check Valves were an unnecessary component in the system given the existing pump discharge check valves that perform a duplicate reverse flow function. Additionally, he stated that the HX inlet check valves were installed during initial plant construction for an RHRSW design that was not implemented to make RHRSW system pressure higher than RHR. The licensee indicated that long range plans may completely remove check valve internals, but that achieving full closure following flow cessation is the equipment focus at present. Check valve problem resolution is necessary to allow licensee focus on higher priority equipment problems. The check valves are identified as problem components on the System Health Report Card and Site Equipment Reliability Matrix.

(c.) During the RHRSW system walkdown with the system engineer:

- The inspector identified major corrosion on three RHRSW suction columns in the Intake Pump Station. The corrosion was caused by continued wetting of a section of each suction column from adjacent screen wash pump packing leakage (three separate pumps). There was no means of protecting piping from potential packing leakage and the screen wash drains appeared to be blocked. The licensee initiated PER 128858 and the system engineer stated the intent

was to consider to nondestructive testing and evaluation of the piping. The licensee has a history of service water piping corrosion problems (one of the top plant issues).

- The inspector identified that an auxiliary operator did not understand scribed check valve positions in the field. These were the scribe marks on the check valve spindles to assist operators in position verification. In response, the licensee initiated PER 128867.
- The inspectors identified that other surveillance and operating procedures were not changed to incorporate check valve verifications following flow cessation. In response, the licensee initiated PER 128907.

(d.) The licensee's equipment reliability program is slow in responding to equipment reliability issues. However, the program appears to be a viable process if appropriate management attention and funding are applied:

- Review of O-TI-495, "Browns Ferry Equipment Reliability Program," and discussions with the equipment reliability and projects managers determined that the licensee's equipment reliability program is robust and broad enough to encompass most equipment reliability issues. However, the program will require some finite time to be effective since it is relatively new. The program has established objective criteria for system health reporting and identification of system issues which are then escalated through multiple organizations for concurrence and prioritization. The end result is development of resolution plans which may include project scoping and budgeting depending on complexity and expense.
- The Equipment Reliability Program has been in place for approximately 1 ½ years, but the site has received only a year of benefit due to partial implementation during the Unit 2 refueling outage and Unit 1 restart. In particular, the licensee has disbanded the Plant Health Weekly and T-16 workweek WO review and prioritization meetings which provide feeder information into the program.
- The Site Equipment Reliability Matrix, a consolidation of plant equipment issues from System Health Report Cards, contained 413 risk significant and critical component issues. 12 components had been identified as the "Top Issues," entailing more intense site focus and resources. The licensee stated that there were many items, of the 413 in the matrix, that had not been scoped and prioritized for resolution. This incompleteness of the matrix appeared to exacerbate equipment issue resolutions which could impact plant operation.
- Discussions with Site Projects personnel indicated that the scoping and budgeting of pre-identified equipment issues do not appear to be a problem. The Change Control Board is effective in budgeting and prioritizing scoped projects presented from the Plant Health Committee and works appropriately with other site organizations. Inspectors reviewed BP-315, "BFN Project Approval and Change Control," and determined that the procedure did not reflect

some aspects of the equipment reliability program such as utilization of the Site Equipment Reliability Matrix. BP-315 is being rewritten to better define and incorporate current processes.

(e.) On Units 2 and 3 or common systems, 15 of 133 total systems in the Plant Health Program are currently System Health RED or YELLOW. As expected, there are none on Unit 1 as a result of reconditioning systems for restart. Across all three units, 54 systems are WHITE. Note that the RHRSW/EECW are common systems.

Additional inspector observations are as follows:

(a.) Operations Surveillance Procedures 1-, 2-, 3-SR-3.1.3.3, "Control Rod Exercise for Partially Withdrawn Control Rods," have been performed multiple times with a procedure error in the "Prerequisite" sections. Implementation of the prerequisite would have administratively prevented an operator from performing the surveillance procedure. These monthly surveillance tests have been performed since revisions dated October 24, 2006, for Unit 1 and July 06, 2004, for Units 2 and 3. PER 128453 was initiated by the licensee to document the procedure error. PER 128558 was initiated as a result of the NRC inspector questioning multiple performances of these surveillance tests by operators over such a long period without identifying the error. The inspectors identified cases of several other procedural errors:

- PER 124681 was written in May 2007 for NRC resident inspector identification of a procedure error in the same surveillance procedure that also would not allow performance of the test as written.
- Inadequate procedure reviews performed in addressing PER 124681 missed opportunities to identify an additional procedural error that again prevented performance of the surveillance procedure.
- The procedure for exercising control rods (weekly for full-out and monthly for partials), insertions and withdrawals of one notch provided incorrect direction. Therefore, the operators focused on the correct action per Technical Specifications and not the incorrect written direction. The finding did not result in an unexpected plant transient or equipment damage, and if left uncorrected would not have contributed to either. Eventually, during subsequent test performances, the procedure errors were discovered by other operators and corrected.

(b.) An NRC resident inspector previously identified leaking conduit seals in the Intake Pump Station cable tunnel that were also incorrectly labeled Appendix R seals. The licensee had initiated PER 123957, April 26, 2007. The PER was closed by a WO to resolve the leak without addressing the mislabeling. PER 129153 was initiated to document identification of the labeling issue by the NRC during this inspection. This is a minor finding in that it is only a labeling issue.

(c.) Two corrective actions in PER 119490 were documented as allowing closure to requests for changes. Corrective Action 1 initiated NEDP-3-4," Drawing Category

Change” form. Corrective Action 19 initiated SPP-2.5-3,” Vendor Manual Change” form. However, these corrective actions do not meet procedural requirements in that “action” type corrective action can not be closed by a simple request for change.

(d.) B level PER 85316, “Battery Cell Voltage Low,” resulted in a Corrective Action to Prevent Recurrence (CAPR) to “develop and implement a battery monitoring, testing, spare part, and replacement strategy that reduces the stations vulnerability to degrading battery performance and improves the ability to respond prior to plant operation being adversely impacted.”

The C&D Technologies Vendor Manual storage recommendations for Safety Related Batteries KCR-11 stated:

Charged and wet batteries should be placed in service before the date stamped on the shipping carton when stored at 77°F (25°C). If storage beyond this time is required or temperature is in excess of 77°F (25°C), monitor battery at monthly intervals.

Given the environmental conditions seen by the batteries in storage at Browns Ferry (40 – 104 F) and the current practice of monitoring the battery every 6 months, the vendor recommended maintenance is not being followed. An unknown degraded battery condition could exist with batteries in inventory reducing the available inventory to levels below the limits specified in the CAPR. The licensee initiated PER 129327 to investigate this issue.

These deficiency examples were not considered to represent significant violations of applicable requirements.

### (3) Findings

Introduction: A green self-revealing NCV of Technical Specification (TS) 3.3.6.1 was identified for failing to recognize an inoperable RCIC steam flow isolation instrument resulting in exceeding the TS allowed outage time.

Description: While performing a surveillance procedure for the Unit 1 RCIC system on May 27, 2007, the main control room indication for one of the two RCIC steam flow instruments did not respond as expected and was being driven downscale. The main control room RCIC steam flow indication instrument is not required by TS’s; however, it shares high and low pressure sensing line connections with a TS Instrument, RCIC Steam Line Flow - High, which provides a containment isolation signal to isolate steam flow to the RCIC turbine if a break occurs in the steam line. Only one of the two channels of main control room indication were needed to satisfy the surveillance procedure acceptance criteria, so the procedure was completed successfully. A WO was written to troubleshoot the problem, but a PER was not initiated. On August 7, 2007, while executing the WO to troubleshoot the main control room RCIC steam flow indication, maintenance personnel identified that the low pressure and high pressure sensing lines were reversed affecting both the main control room RCIC steam flow indication and the RCIC high steam flow TS instrument. The licensee evaluated the condition and declared the RCIC high steam flow instrument inoperable. Subsequent

investigation revealed that the high pressure and low pressure sensing line isolation valves were labeled incorrectly during Unit 1 restart activities in June or July of 2006. As a result, the routing of the instrument tubing for the RCIC steam flow instruments was performed based on the incorrectly labeled valves. Therefore, a condition of undetected inoperability existed for a period of time in excess of the allowable limits specified by TS 3.3.6.1, Primary Containment Isolation Instruments, Table 3.3.6.1-1, Item 4a. The investigation also revealed a potential missed opportunity to identify the reversed instrument lines during the execution of a work order to fill and vent the sensing lines. The WO contained comments regarding reversed instrument lines for the A channel of RCIC steam flow, but no record of resolution or extent of condition could be located. The licensee entered this performance deficiency into its CAP for resolution.

Analysis: The inspectors referred to MC 0612 and determined that the finding is greater than minor in that it affected the ability of the licensee to ensure reactor containment isolation following a break in the RCIC turbine steam line. The inspectors determined that the finding is associated with the Barrier Integrity cornerstone and the respective attribute of configuration control. The inspectors evaluated this finding using MC 0609 and determined that it was of very low safety significance (Green) because it did not represent a degradation of the barrier function of the control room, did not represent an actual open pathway in the physical integrity of the reactor containment, or involve an actual reduction in defense-in-depth for the atmospheric pressure control or hydrogen control functions of the reactor containment. The finding directly involved the cross-cutting area of Human Performance under the correct labeling of components aspect of the Resources component; in that the licensee failed to ensure adequate work instructions and correct labeling were implemented. This directly contributed to the failure of craftsmen and quality control personnel to identify the improperly installed instruments [H.2(c)].

Enforcement: TS 3.3.6.1 requires that the RCIC high steam line flow instrument shall remain operable. Contrary to this, the B channel of the Unit 1 RCIC Steam Line Flow - High instrumentation was inoperable since being installed incorrectly. Because this finding is of very low safety significance and because it was entered into the licensee's CAP as PER 128556, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000259/2007008-01, Failure to Recognize an Inoperable RCIC Steam Flow Isolation Instrument.

b. Assessment of the Use of Operating Experience

(1) Inspection Scope

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

Documents reviewed are listed in the Attachment.



(2) Assessment

The licensee was effective in evaluating internal and external industry operating experience items for applicability and entering issues into the CAP. The team found that communication for internal operating experience between other TVA sites was appropriately included and appropriate followup was being performed. The site also contributed to operating experience databases to allow other utilities to benefit from Browns Ferry operating experience.

c. Assessment of the Self-Assessments and Audits

(1) Inspection Scope

The inspectors reviewed licensee audits and self-assessments focused on the CAP process and individual departments to verify that these were performed at appropriate frequencies, assessments were thorough and objective, findings were entered into the CAP, key corrective actions were implemented, and to verify that these findings were consistent with the NRC's assessment of the licensee's CAP.

The team attended the licensee's Management Review Committee (MRC) meetings, an MRC subcommittee meeting, plan of the day meetings, and a Plant Equipment Health meeting to confirm adequate oversight of the CAP and equipment issues including classification and prioritization for PERs, oversight of cause evaluations, and adequacy of PER closures.

The inspectors reviewed Nuclear Safety Review Board (NSRB) meeting minutes for three meetings in 2006 to verify that identified problems and issues were entered into the licensee's CAP and that NSRB management attention items (MAIs) and recommendations (RECs) were being adequately tracked and resolved.

The inspectors also performed a review of recent trend analyses, departmental trends, and CAP performance indicators and trends.

Documents reviewed are listed in the attachment.

(2) Assessment

Audits and self-assessments were effective in identifying issues and entering them into the CAP. These audits and self-assessments appeared to be comprehensive, were self-critical and identified substantive issues, numerous lower level problems, and areas for improvement. However, several of these self-assessments and audits identified repeat issues from previous self-assessments and audits in which prior corrective actions had proven ineffective. Similar issues, although minor, were identified by the inspectors. However, improvement was noted in all areas identified. Overall, the ability to perform self critical CAP assessments and enter identified issues into the CAP, was clearly evident.

The Nuclear Assurance (NA) organization continued to fully meet its biannual functional area audit responsibilities in conformance with the Nuclear Quality Assurance Plan (NQAP).

Site management was purposely active and involved in the CAP and focused appropriate attention on significant plant issues.

During the Unit 1 restart and operation of Units 2 and 3, the NSRB continued to be very proactive in its oversight role. The board appeared to be engaged with the site and was effective in resolving numerous MAIs and RECs associated with nuclear, radiological, and industrial safety. However, the licensee contends that very recent licensee changes in board personnel and philosophy will reflect a more "hands off" approach with plant management. Results of these changes will need to be inspected at a later date.

Reviews of the CAP and other performance indicators such as backlogs indicated that the licensee was actively utilizing this information to highlight where improvement was needed, to enhance the corrective action process, and affect improvement where needed. One action, considered by the inspectors to be an effective initiative, was to implement an MRC subcommittee to provide additional emphasis on general improvement in PER documentation, improvement in cause evaluations, and improvement in PER closures. Improvements were noted in these areas, in part, due to this committee oversight.

The inspectors noted that valuable recommendations sometimes resulted from the various self-assessment processes. However, these were not required to be tracked for closure or disposition in accordance with good industry practice. Subsequent to this observation, the inspectors noted that PER 98713 issued August, 2006, covered the same issue. As of August 24, 2007, the licensee had failed to take corrective action.

d. Assessment of Safety-Conscious Work Environment

(1) Inspection Scope

Through technical discussions with members of the plant staff the inspectors developed a general perspective of the safety-conscious work environment at the site. The discussions also helped the inspectors determine if any conditions existed that would cause employees to be reluctant to raise safety concerns. The inspectors also reviewed the licensee's CRP which provided an alternate method to the CAP for employees to raise concerns and remain anonymous. The inspectors interviewed the CRP Coordinator and reviewed a select number of completed CRP reports to verify that concerns were being properly reviewed and identified deficiencies were being resolved.

(2) Assessment

Based on review of the licensee's CRP, discussions conducted with plant employees from various departments, and review of many PERs, the inspectors did not identify any reluctance to report safety concerns. The inspectors concluded that licensee management routinely emphasized the need for all employees to identify and report

problems using the appropriate methods established within the administrative programs. All of the predominant methods established by the licensee, including the CAP, the WO system, and the CRP were readily accessible to all employees.

4OA6 Management Meetings

The inspectors presented the inspection results to Mr. Gilbert Little and other members of licensee management at the conclusion of the inspection on August 24, 2007. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee personnel**

S. Armstrong, Performance Improvement  
S. Berry, Systems Engineering Manager  
C. Boschetti, Lead Electrical Engineer  
T. Brumfield, Site Nuclear Assurance Manager  
P. Chadwell, Operations Superintendent  
J. Corey, Radiation Protection Manager  
J. Davenport, Licensing  
R. Davenport, Work Control and Planning Manager  
J. DeDimenico, Asst. Nuclear Plant Manager  
R. DeLong, Site Engineering Manager  
A. Elms, Operations Manager  
J. Emens, Licensing Supervisor  
A. Fletcher, Field Maintenance Superintendent  
J. Kennedy, Concerns Resolution Supervisor  
R. Jones, General Manager of Site Operations  
D. Langley, Site Licensing Manager  
G. Little, Asst. Nuclear Plant Manager  
J. Underwood, Acting Chemistry Manager  
J. Woodward, Equipment Reliability Manager

#### **NRC personnel**

T. Liu, Acting Branch Chief, Division of Reactor Projects, RII

### **LIST OF ITEMS OPENED, CLOSED AND DISCUSSED**

#### **Opened and Closed**

05000259/2007008-001	NCV	Failure to Recognize an Inoperable RCIC Steam Flow Isolation Instrument (Section 4OA2.a(3)).
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#### **Discussed**

None.

## LIST OF DOCUMENTS REVIEWED

### **Procedures**

Concerns Resolution Staff Instruction 1, CRS Administration, Rev. 9  
 NEDP-12, System, component and Program Health, Equipment Failure Trending, Rev. 8  
 0-TI-346, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting -  
 10CFR50.65, Rev. 0028  
 SPP-1.6, TVAN Self Assessment Program, Rev. 13  
 SPP-1.7, Excellence In Performance Program, Rev. 4  
 SPP-3.1, Corrective Action Program, Rev. 12  
 TVA-NQA-PLN89A, Nuclear Quality Assurance Plan  
 0-TI-495, Browns Ferry Equipment Reliability Program, Revision 4  
 BP-315, BFN Project Approval and Change Control, Revision 3A  
 2-OI-47, Turbine Generator System  
 1-SR-3.3.6.1.5(4A/A), Core Isolation Cooling Systems RCIC Turbine Steam Line High Flow  
 Instrument Channel A Calibration  
 1-SR-3.5.3.3(COMP), RCIC Comprehensive Pump Test  
 MCI-0-000-BFV001, Generic Maintenance Instructions for Butterfly Valves  
 MCI-1-064-BFV002, Containment Ventilation System Butterfly Valves Disassembly, Inspection,  
 Rework, and Reassembly

### **Problem Evaluation Reports**

#### **RHRSW system PERs**

81236, Unit 2 2A RHRSW HX Leakage  
 87900, RHRSW 2B/2D Piping Pinhole Leaks in Pipe Tunnel  
 88881, EECW Pump D3 Pump Motor Failure Due to Ground Fault  
 90591, RHRSW/EECW Pump Motors Moving into MR (a)(1)  
 90674, RHRSW Pump C1 Rated Flow Failure  
 91267, Unit 2 2A RHRSW HX Outlet Valve Failed to Open Due to STA Switch  
 91780, Unit 3 Reactor Scram resulting from Deficient Switching Order  
 99498, Unit 3 RHRSW HX Outlet Valve Motor Leads Broke  
 104410, RHRSW Pump C1 Impeller Adjustment - Stainless Steel versus Bronze  
 104621, RHRSW HX Outlet Valve Failures Due to Vibration  
 106779, RHRSW Pump Flow Surveillance Failures - 13 in 12 Months  
 106844, RHRSW Pump A2 Lower Motor Bearing High Vibration  
 108801, RHRSW Pump A2 Inadequate Corrective Action for PER 106844  
 109971, RHRSW Pump A2 Exceeded Maintenance Rule Performance Criteria  
 111067, RHRSW A1/A2 Pumps Cross-Tie Valve Hard to Operate  
 112834, RHRSW Pump C2 Motor Cable Damaged During Work  
 114574, RHRSW A1/A2 Pumps Cross-Tie Valve  
 116511, Seven of Twelve RHRSW HX Inlet Check Valves Stuck Open  
 119490, Unit 3 Scram from Demineralizer PLC in Manual  
 119767, RHRSW Pump B1 Cable Termination Damage

119773, RHRSW Pump A2 Underground Cable Failure Due to Water-Treeing  
 119954, Inadequate Sump Pump Design Caused RHRSW Pump A2 Cable to Fail  
 120891, Unit 2 RHRSW HX Outlet Valve Failure to Stroke in Normal Time Band  
 122218, Unit 2 2D RHRSW HX Valve Disk/Stem Separation  
 126762, RHRSW HX Inlet Check Valves Continue to Stick Open - Test Criteria  
 126885, RHRSW HX Inlet Check Valves Stuck Open Following Chemical Addition  
 127137, Unit 3 RHRSW 3A HX Outlet Valve Failed to Close or Open

#### RCIC system PERs

106204, Unidentified EPU Impact on HPCI/RCIC Initiation  
 108947, 360 Degree Linear Indication at Toe of Weld  
 112206, MSPI Baseline Data Errors  
 116947, EQ Issue – Unqualified Contact Blocks Installed on Hand Switch 1-HS-71-17B  
 118029, Add Drain Fittings for RCIC and HPCI Boiler Steam Lines  
 118093, Field Wires Incorrectly Labeled  
 118336, LOOPS 1-L-3-208A and 1-L-3-208C Calibration Values  
 128547, Inoperable RCIC Flow Instrument  
 128556, Unit 1 RCIC Steam Flow Instruments Configuration Discrepancy  
 128848, Compliance Loop 1-F-71-1B Indication Driving Downscale  
 124928, RCIC Steam Flow Indicators in MCR do not Indicate 0 lbm/hr with System in Standby  
 125350, RCIC Servo Removal and Installation

#### CSC system PERs

88274, Senseline Program Self Assessment BFR-REN-05-007 Finding Related to Code List  
 91688, Core Spray Pump 2A Had the Excess Vibration Test Readings  
 93083, Core Spray Sparger 3-PDIS-075-0028 Switch Function was Found outside the Allowable Values  
 95706, M&TE Pressure Gauge E21967 Was Out of Tolerance In the Post Check  
 99373, A Search Unit for Nozzle to Vessel Weld Exams Was Found not Qualified to the EPRI/PDI Procedure PDI-UT-6, Rev. F  
 119221, Unit 2 Tech Spec 3.0.3 Entry During Unit 3 CASA Logic Surveillance Test  
 105189, Non Conservative NPSH Calculation for the Core Spray Pump Flow  
 108425, B3 EECW Pump Breaker Tripped When the 27SCX and 27 SCY Relays Were Manually Operated  
 114422, Relay 0-RLY-211-CASA-1 Failed to Energize  
 95905, Hancock Check Valve Replacement Parts Did Not Meet TVA Spec 9463 and ASME Section XI Requirements  
 68160, RHR Check Valves Keep Fill Failed on LLRT test  
 250V DC system PERs  
 102651, Shutdown Board Battery A Cell 39 Voltage  
 116792, Critical Component Failure PER – Main Bank 1 Battery Charger  
  
 85316, Battery Cell Voltage Low  
 88513, 1 Hour Limit Exceeded After Battery Cell Reading Found Low

88844, Shutdown Board Battery A Cell Parameters Cause Unplanned LCO Entry  
 89260, Shutdown Board Battery A Cell Voltage Low  
 89587, Unplanned LCO SB-A Battery  
 89729, 250 Volt Main Bank  
 89936, Unplanned Entry into LCO  
 91140, Unplanned LCO Entry due to SB-A Inoperability  
 93531, 3-SR-3.8.4.1(DG)  
 95204, Discrepancies for Modifications Resolution  
 95206, Discrepancies for Engineering Resolution  
 96248, Battery Procedure Errors  
 103902, Inadequate Performance of 3-SR-3.8.4.1(DG)  
 107565, SR Enhancement

#### Other PERs

87178, 2C RFP Trip  
 88211, SEN-254 Operating Procedure Review  
 91454, Insufficient Knowledge of BFN VFD's  
 92719 Unit 3 Operators Did Not Refer to ARP for RBM Alarms While Pulling Rods  
 93694, House Keeping Deficiencies  
 94427, TS-71-2P Out of Tech Spec Value  
 94672, PM Deferral for Condensate Storage Tank Inspection  
 101460, PER Extension Process Problem  
 101585, Diesel Generator Water Leak  
 101867, Weaknesses in Management Oversight of CAP  
 111670, Five-Year Self-Assessment Plan not Maintained  
 112893, Apparent Cause Evaluations Need Improvement  
 112894, Root Cause Analysis Need Improvement  
 112895, Improvement Needed in Effectiveness Reviews  
 112896, Ineffective use of Integrated Trend Process  
 113089, System 573 SPOC II SID Coding and Turnover Boundary Issues  
 114972, Upper Tier Requirements Not in Design Process  
 115699, Cable Routing Issue  
 115833, Inadequate Unit 1 RHR Logic Test Instruction  
 115837, Inadequate Unit 1 Test Instruction Causes Unit 2 ECCS Unplanned LCO  
 116361, SER 6-08 Reactor Operation in an Unanalyzed Region  
 117916, U2 Reactor Scram  
 117921, Electrical Cable Separation  
 121393, Radcon Technician Reporting of PCEs  
 121604, Rad Con C-Zones  
 122731, 161 Capacitor Banks  
 122933, Review NRC Information Notice 2007-09: Equipment Operability Under Degraded Voltage  
 123456, Coolant Level  
 123957, Intake Pump Station Cable Tunnel Water Leakage onto B1 Pump Cable  
 124017, PER Coordinator  
 124092, BP-336 Attachment A not Included with 0-SI-65-9-B Data Package

125408, Unit 1 LPRM Gains not Properly Set  
 125410, Continuous use Procedure  
 125738, NA Organization  
 125834, NSRB Oversight  
 126237, Questions Regarding Support of the Audit Program  
 126933, GE Safety Communication 07-08, Inadvertent CRD Rod Withdrawal  
 126875, Late Cause Determination Evaluations

#### PERs Associated with Departments

##### Chemistry Department

94694, Weaknesses in the Data Trend Review Program  
 96373, Chemistry Management Expectations for Conducting Observations not Met  
 100521, Current Lab Resources Impacting the Chemistry Labs Ability to Meet Weekly and Monthly Frequencies  
 101672, Chemistry Potential Increasing Trend in Human Performance Events  
 102133, Potential Discrepancies and/or Enhancements Noted with Sampling Procedures  
 107086, Significant Increase in Quality Deficiency Investigations  
 109419, Potential Human Performance Issue not Addressed  
 114806, Human Performance Event Increase  
 117579, Inadvertent Transfer of 70,000 Gallons of Elevated post-UV Anion Water  
 123101, Corrective Actions did not Appear to Completely Address Stated Actions  
 123102, Corrective Action did not Appear to Address Stated Action  
 122190, Control Bay Chiller Out of Limits for all Parameters

##### Engineering Department

81634, SEN-254 Repeat Recirculation Pump Downshift & Lack of Timely Response  
 83123, Design Basis for RHR HX Leakage  
 Note: Most of the equipment related PERs and some of the miscellaneous PERs were Engineering Department assigned PERs

##### Radiation Protection Department

89455, Procedural Guidance Deficiencies  
 96543, Source Leakage Lead to Unplanned LCO  
 96570, Posting Violation  
 98247, Number of People in Drywell Excessive  
 99898, Potential Trends in Activity Found During Incoming Counts Clothing and Personal Items  
 100375, Potential Trend with Activity on Individuals Checking In  
 102788, Improvement Needed for Focus Areas and Performance Improvement Areas  
 106169, Possible Overweight Lead Blankets  
 106314, Negative Trend in Radiological Work Practices  
 106829, 70 Unexpected Dose Rate Alarms



## Maintenance Department

95869, Review on SQN PER 94144 for a Clearance Requirement  
 06678, Problems on PER Supervisory Review  
 96291, A Diesel Generator Automatically Started  
 96604, Diver Hand Injury During the Performing Maintenance of the Intake Tunnel Drain Valve  
 109448, The 2A CRD Pump Rotating Element Purchased Did Not Meet Design Criteria  
 110479, Loss of Unit 2 & 3 Fire Pump Start  
 122670, Incorrect Material Used on the 2A & 2B Reactor Recirculation Pump  
 116524, Components Failed Due to the Preventive Maintenance Not Implemented Per Schedule  
 101868, The Division Separation Required for Cables and Internal Wiring Associated with DCN 51090 was inadequate  
 110926, A Breach on the Secondary Containment Without Permit  
 103343, Unit 1 LPCI MG Set Tech Spec Submittal TS-427 Was inadequate

## Operations Department

96895, Annunciators Disabled without 50.59 Review  
 97146, Significant Audit Issue  
 83613, Focus Area: Operator Fundamentals  
 101180, Ineffectiveness of Reactivity Management Review Board  
 109118, Group 1 Isolation  
 118024, Oil Sheen in Hot Water Channel  
 119305, Unit 2 Increased Core Flow  
 122211, Difference Between OI Values and Values on Hand Held PC  
 122283, Leak Into Unit 1 Torus  
 125637, Operations Interface with Work Control

## **Industry Operating Experience Reports**

NER No. 05-0659; Review of Crane, Hoisting, Lifting, and Rigging Related Events  
 NER No. 05-1406, IN 2005-19, Effect of Plant Configuration Changes on the Emergency Plan  
 NER No. 05-1410, NRC Information Notice 2005-23: Vibration-Induced Degradation of Butterfly Valves  
 NER No. 05-1424, NSAL-02-14 R2, Steam Line Break During Mode 3 for Westinghouse NSSS Plants  
 NER No. 05-1551, NRC IN 2006-21 OE Regarding Entrainment of Air Into Emergency Core Cooling and Containment Spray System  
 NER No. 06-1590, Degradation of Essential Service Water (ESW) Piping  
 NER No. 07-0871, Intake Structure Blockage Vulnerabilities  
 NER No. 06-1435, Westinghouse TB-06-15, Unqualified Service Level 1 Coatings on Equipment in Containment  
 NER No. 06-0099, IN 2006-01 - Torus Cracking in a BWR Mark I Containment  
 NER No. 07-0863, Flowserve 10 CFR 21 Report Regarding Borg Warner 3" and 4" Swing Check Valves

NER No. 06-0481, IN 2006-09, Performance of NRC-Licensed Individuals While on Duty with Respect to Control Room Attentiveness  
 NER No. 06-1084, IN 2006-14 & Supplement 1, Potential Defective External Lead Wire Connections in Barton Pressure Transmitters  
 NER No. 06-1929, IN 2006-29, Potential Common Cause Failure on MOVs due to Stem Nut Wear  
 NER 07-0244 IN 2007-6 Potential Common Cause Vulnerabilities in Essential Service Water (ESW) Systems  
 NER 06-1590 SER 7-06 Degradation of Essential Service Water Piping  
 NER 06-1819, Reactor Operation in an Unanalyzed Region  
 NER NO: 05-1263, Weaknesses in Operator Fundamentals  
 NER NO: 05-1410, NRC IN 2005-23: Vibration-Induced Degradation of Butterfly Valves  
 NER NO: 06-1512, IN 2006-22: Ultra-Low-Sulfur Diesel Fuel  
 NER NO: 07-0508, NRC IN 2007-09: Equipment Operability Under Degraded Voltage Conditions

### **Other Documents**

MRC Subcommittee guidance and checklist dated 09/20/2006  
 Multiple PM Deferrals curve for May, 2006 to August, 2007  
 Site Equipment Reliability Top 10 Matrix  
 Site Equipment Reliability Top Issues Matrix  
 Anonymous PER list December 16, 2006 to July 2, 2007  
 Non-PER list for December 16, 2006 to July 2, 2007  
 50 Oldest PER list  
 50 Oldest Work Order list  
 Procedure Change Request 05-2931,-2,-4, and -7 for OI-92 and ARP-9-5A  
 Alarm Response Procedures 1-,2-,3-ARP-9-5A, Panel 9-5, 1-XA-55-5A  
 Engineering Design Change 65437 Testing Requirements for RHR Hxs  
 Preventive Maintenance 500163737 Unit 3 RHR HX Leakage Sampling  
 Work Order (WO) 07-712162-000 Unit 3 RHR HX Leakage Sampling  
 WO 04-711093-006, Flush and backfill instrument sensing lines on pnl 25-7A  
 WO 06-719088-040, Install pipe plugs in used port of transmitters 1-PDT-071-0001A and 1-PDT-071-0001B. WO generated due to PER 108449.  
 WO 06-725158-012, perform procedure 1-SR-3.3.6.1.5 (4A/A) per step text of this work order  
 WO 06-725237-003, replace starter that is binding in charger  
 WO 06-726048-000, Facilities to perform June monthly battery check and charge  
 WO 06-726049-000, Facilities to perform July monthly battery check and charge  
 WO 07-710678-000, Residual oil in CT#3 Pump B and has leaked into the hot water channel  
 WO 07-718184-000, RCIC steam flow  
 WO 07-719322-000, Facilities to perform August monthly battery check and charge  
 Justification of Deferral of 91-18 Actions, U3C12 Refueling Outage, March 16,2006  
 Functional Evaluation PER 87900 RHRSW Pipe Degradation on 2B/2D Supply, October 7,2005  
 U0-SYS 023/067 RHRSW/EECW System Health Report Card, FY2007-P1  
 BFN Maintenance Rule (a)(1) SSCs, July 18,2007  
 Cause Determination Evaluation (CDE) 2005-08-10, A and C Room Sump Pump MR Functional Failures

CDE 2005-08-05, 2B/3B RHR Heat Exchangers Removed from Service Due to 2B/2D RHRSW Piping Leaks

Site Equipment Reliability Top Issues Matrix, July 17, 2007

Core Spray System Health Report Cards fro FY2007 - P1, Unit 1

Core Spray System Health Report Cards fro FY2007 - P1, Unit 2

Core Spray System Health Report Cards fro FY2007 - P1, Unit 3

### **Non-Cited Violation Corrective Action Reviews**

NCV 50-260/2006002-02 (PER 85130 & 99193), Failure to Report a Safety System Functional Failure per 10 CFR 50.73

NCV 50-260/2006002-01 (PER 98414), Failure to Perform PSA Risk Evaluation for Multiple Inoperable Components

NCV 50-296/2006003-02 (PER 100822), Maintenance Rule Performance Criteria Exceeded for System 064 Primary Containment

NCV 50-259/2006012-02 (PER 101868 & 102752), Measures were not Adequate to Assure that Cables for 480V MOV Boards 1A and 1B in Panel 1-9-23 Bay 8 were Separated

NCV 50-259/2006007-01 (PER 106420), Failure to Construct Instrument Tubing Sorrotrts in Accordance with Design Drawings

NCV 50-259/2006009-04 (PER 113105), Motor T Drain on 1-MVOP-075-0009 was plugged with Paint

NCV 50-259/2006009-05 (PER 113169), O-Ring for RHR Service Water Component was not Replaced as Required During Performing the Maintenance

NCV 50-259X/2006009-02 (PER 115699), Measures Were Not Adequate to Assure that Cables from Opposite Divisions Were Separated

NCV 50-259/2006009-07 (PER117046), Inadequate Instructions for Maintenance on HCU's

NCV 50-259, 260, 296/2007002-03 (PER 81364), Failure to Properly Prepare a Radioactive Materials Package for Shipment

NCV 50-259/2007009-02 (PER 117921), Criteria Was not Adequately Defined to Ensure Divisional Separation for Cables Were Maintained

NCV 50-259/2007009-01 (PER 117977), Valve 1-SHV-002-0705 for 1B Core Spray Pump was Found in the Closed Position which is normally open valve.

NCV 50-260, 296/2007002-05 (PER 119016), Work Hours for I&C Mechanics Exceeded Overtime Limits Without Prior Authorization

NCV 50-260/2007002-06 (PER 119305), Operation of Unit 2 Outside of the Limits Allowed by Power-Flow Map

NCV 50-259, 260/2007002-02 (PER 119482 & 119829), Two Examples of Failure to Perform Adequate Surveys

NCV 50-259/2007003-03 (PER 125408), Non-Conservative APRM/LPRM Gain Settings Result in Neutron Flux Setpoint in Excess of TS Limit

### **Licensee Event Report Corrective Action Reviews**

LER 50-260/2005-007-00 (PER 87178 & 87198), Reactor Scram due to Low Reactor Water Level Caused by Loss of Feedwater Pumps

LER 50-296/2005-003-00 (PER 91811), Unit 3 Scram from Deficient Switching Order

LER 50-296/2006-002-00 (PER 109107), Unit 3 Scram from Loss of Both Recirculation Pumps  
 LER 50-296/2006-003-00 (PER 109756), Manual Scram in Response to Main Turbine Electro-Hydraulic Control System Fluid Leak  
 LER 50-259/2006-008-01 (PER 110926), Secondary Containment Breach  
 LER 50-260/2007-001-00 (PER 117916), Automatic Turbine Trip & Reactor Scram Due to Equipment Failure During Performance of the Main Generator Rheostat Test  
 LER 50-296/2007-001-00 (PER 119490), Unit 3 Scram from Low Reactor Water Level

### **Documents Associated with Performance Evaluation, Self- Assessments, and Audits**

Audit No. BFA0603 Browns Ferry Nuclear Plant Engineering Functional Area Audit  
 Audit No. BFA 0602, Maintenance Functional Area Audit  
 Audit No. SSA0502, Radiological Protection and Control Audit  
 Audit No. SSA0503, Quality Programs Audit  
 Audit Report BFA0601, Operations Functional Area  
 Self-Assessment (SA) BFN-ENG-05-003, Maintenance Rule Program  
 SA BFN-SIT-06-006, Self Assessment Program  
 SA BFN-TRN-07-003, Maintenance and Technical Training Programs Comprehensive Assessment  
 SA NA-BF-07-003, Quality Assurance Program Effectiveness  
 SA NA-BF-06-029, Root Cause Analysis Quality  
 SA NA-BF-06-011, Corrective Action Program Extension Process  
 SA BFN-M&M-06-003 Appendix F, Maintenance Rework  
 SA BFN-M&M-06-001, Preventive Maintenance Program  
 SA BFN-RP-07-001, As Low As Reasonably Achievable Program  
 SA BFN-TRNOPS-06-SS04, Effectiveness Review of Corrective Actions to Support BFNPER 92461  
 SA BFN-SIT-07-002, Corrective Action Self Assessment  
 SA BFN-SIT-06-008, Corrective Action Program  
 SA BFN-SIT-06-003, Review of Apparent Causes  
 SA BFN-CEM-07-002, Chemistry Training for Performance Improvement  
 SA BFN-CEM-07-SS02, Management of Chemistry Training Processes and Resources  
 SA BFN-SIT-06-007, Effectiveness of Corrective Actions from Previous AFIs  
 SA BFN-NA-07-SS05, Nuclear Assurance Integrated Trend Review for October, 2006 - January, 2007  
 NA-BF-07-002, Nuclear Assurance Oversight Report for October 1, 2006 Through December 31, 2006  
 NA-BF-07-011, Nuclear Assurance Oversight Report for April 1, 2007 Through June 30, 2007  
 NA-BF-07-007, Nuclear Assurance Oversight Report for January 1, 2007 Through March 31, 2007  
 NA-BF-06-029, Nuclear Assurance Assessment of Root Cause Analysis Management Observation Report for 12/15/2005 to 07/09/2007  
 PER Backlog Trend for June 2006 through July 2007  
 MRC Acceptance Rate for June 2006 through July 2007  
 Self-Assessment Schedule for FY07-FY11  
 Site Annual SA Plan/Status for 3<sup>rd</sup> Quarter 2006 through 2<sup>nd</sup> Quarter 2007  
 BFN Chemistry/Environmental Integrated Trend Review for July-September 2006

Corrective Action Program Quality Index through August 17, 2007  
Elective Maintenance Backlog Workoff Curves for 08/02/2007 to 08/31/2007  
Integrated Site Analysis from October to December FY 2006  
Integrated Site Analysis from July to September 2006  
Integrated Trend Review for Third Quarter 2006  
Nuclear Assurance Audit Schedule 2005-2007