



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

March 18, 2013

10 CFR 2.201

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Browns Ferry Nuclear Plant, Unit 1
Facility Operating License No. DPR-33
NRC Docket No. 50-259

Subject: Revised Reply to a Notice of Violation; EA-11-018

- References:
1. Letter from NRC to TVA, "Final Significance Determination of a Red Finding, Notice of Violation, and Assessment Follow-Up Letter (NRC Inspection Report No. 05000259/2011008) Browns Ferry Nuclear Plant," dated May 9, 2011
 2. Letter from TVA to NRC, "Appeal of Final Significance Determination of a Red Finding and Reply to a Notice of Violation; EA-11-018," dated June 8, 2011
 3. Letter from NRC to TVA, "Response to Appeal of Final Significance Determination of a Red Finding and Reply to Notice of Violation" dated June 22, 2011.

In a letter dated May 9, 2011 (Reference 1), the Nuclear Regulatory Commission (NRC) provided Tennessee Valley Authority (TVA) with the final significance determination for a Red finding and an associated Notice of Violation, EA-11-018. In response, TVA provided the reply to Notice of Violation EA-11-018 on June 8, 2011 (Reference 2), in accordance with 10 CFR 2.201, "Notice of Violation." The NRC provided the response to the TVA appeal of the Notice of Violation EA-11-018, on June 22, 2011. (Reference 3)

The purpose of this letter is to provide a revised reply to Notice of Violation EA-11-018 that includes additional causal information and corrective actions resulting from a revision to the associated root cause analysis. Due to the extensive nature of the additional corrective actions, TVA has determined that a revision to the June 8, 2011 reply to the Notice of Violation is warranted. The enclosure to this letter provides TVA's revised reply to Notice of Violation EA-11-018. This revised reply supersedes our previous reply to the Notice of Violation provided in Reference 2.

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Notice of Violation EA-11-018. This revised reply supersedes our previous reply to the Notice of Violation provided in Reference 2.

There are no new regulatory commitments contained in this letter. Should you have any questions concerning this submittal, please contact J. E. Emens, Jr., BFN Site Licensing Manager, at (256) 729-2636.

Respectfully,



J. W. Shea
Vice President, Nuclear Licensing

Enclosure:

Revised Reply to Notice of Violation; EA-11-018

cc (Enclosure):

NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Browns Ferry Nuclear Plant

ENCLOSURE

**Browns Ferry Nuclear Plant, Unit 1
Docket No. 50-259**

Revised Reply to Notice of Violation; EA-11-018

ENCLOSURE

Browns Ferry Nuclear Plant, Unit 1 Docket No. 50-259

Revised Reply to a Notice of Violation, EA-11-018

Restatement of Violation

During an NRC inspection completed on December 31, 2010, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Browns Ferry Nuclear Plant Unit 1 Technical Specification (TS) LCO 3.5.1, Emergency Core Cooling System (ECCS) — Operating, requires, in part, that each ECCS injection/spray subsystem shall be operable in Modes 1, 2, and 3. Action statement Condition A states that with one low pressure ECCS injection/spray subsystem inoperable restore the low pressure ECCS injection/spray subsystem to operable status within seven days. Action statement Condition B states that with the required action and associated completion time of Condition A not met, be in Mode 3 within 12 hours and in Mode 4 within 36 hours.

Contrary to the above, from March 13, 2009 to October 23, 2010, a Unit 1 low pressure ECCS injection/spray subsystem was inoperable while in Modes 1, 2, and 3, and the licensee failed to restore the subsystem to operable status within seven days, or complete Action statement Condition A and B within the required time. Specifically, the Unit 1 Residual Heat Removal Loop II subsystem was inoperable, because the licensee failed to maintain the Unit outboard Low Pressure Coolant Injection (LPCI) valve 1-FCV-74-66 in an operable condition, which rendered a low pressure ECCS injection/spray subsystem (the RHR loop II subsystem) inoperable while Unit 1 was operating in Mode 1.

This violation is associated with a Red significance determination process finding for Unit 1 in the Mitigating Systems cornerstone.

Admission or Denial

Tennessee Valley Authority (TVA) admits the Technical Specification operability violation.

Reasons for the Violation

In the course of its evaluation, TVA has identified three root causes for this violation; one root cause for the valve failure and two root causes associated with the failure to detect the valve failure in a timely manner. Eight contributing causes, related to the failure to detect the valve failure, were also identified for this violation.

The root causes (RCs) for this violation are as follows.

RC 1. Valve Failure - An undersized thread barrel (manufacturing defect), when subject to system differential pressure greater than the capacity of the reduced thread engagement, caused skirt/disc separation in valve 1-Flow Control Valve (FCV)-74-66.

Discussion:

On October 23, 2010, when placing the Unit 1 Residual Heat Removal (RHR) System Loop II into Shutdown Cooling, no system flow was able to be established to the reactor. Subsequent disassembly and inspection of the RHR Loop II Outboard Injection Valve, 1-FCV-74-66, revealed that the valve had experienced a disc skirt to valve disc separation and the valve disc was stuck in the seat, thus blocking flow.

Investigation into the failure identified that the skirt thread barrel was undersized, resulting in inadequate thread connection between the disc skirt and the valve disc. When subjected to system differential pressure above the structural capacity of the reduced thread engagement, the disc skirt pulled out from the valve disc. The undersized thread barrel was the result of a manufacturing defect with the original valve installation.

Because of the valve design (flow lifts the disc off the seat), the failure was not immediately apparent. Valve surveillance testing after return to power with the disc skirt/disc separated caused the valve stem to drive the disc into the valve seat. This became a self revealing event when there was an attempt to place RHR shutdown cooling in service. Analysis indicates the disc skirt/disc separation likely occurred on or before August 9, 2008, and that there were missed opportunities to detect the separation.

In summary, the disc skirt/disc separation was the result of the following.

- A manufacturing defect in which the thread barrel of the disc skirt was undersized
- Disc to disc skirt separation due to opening thrust exceeding the capacity of the threaded connection between the disc skirt and disc when subjected to system differential pressure

As part of the root cause evaluation, a substantial safety hazard evaluation per the Code of Federal Regulations, 10 CFR Part 21 was conducted and was included in Revision 1 to Licensee Event Report (LER) 50-259/2010-003, Failure of a Low Pressure Coolant Injection Flow Control Valve, dated April 1, 2011. General Electric (GE) provided the FCV-74-66 valve in 1969 (Refer to GE Spec. No. 21A1047AS, Part No.4, RIMS No. B22881202602). The GE specified condition was that the valve shall be capable of being opened within 24 seconds against a differential pressure of 350 psi. The TVA calculation previously discussed gives assurance that the valve is capable of opening against 1030 pounds per square inch (psi)/999 psi differential (psid). This was confirmed by additional analysis included in which full thread engagement at the disc to disc skirt connection was sufficient for the opening thrust with a differential pressure greater than 350 psi. Thus, operating with a differential pressure greater than 350 psi was not considered causal.

- RC 2. Failure to Detect Valve Failure - Lack of requirement for verification of thread dimensions during reassembly of valve 1-FCV-74-66 using a new disc with the old disc-skirt in 1983 resulted in failure to identify and correct the undersized thread barrel leading to the valve failure.

Discussion:

In 1983, a design change was implemented to address flow induced vibration problems on the RHR outboard injection valve 1-FCV-74-66. The design replaced the existing valve disc with a new V-notch disc with linear flow characteristics. The existing disc skirt was not replaced. Given that the design replaced only the valve disc with a new part, it would have been reasonable to measure the skirt threads to ensure the new disc threads were an appropriate match to the existing disc skirt. This was a missed opportunity to have detected the undersized thread barrel.

Review of the current procedure governing assembly of 1-FCV-74-66 (procedure MCI-0-74-VLV008, Maintenance of Residual Heat Removal Motor Operated Valves FCV-74-52 and FCV-74-66), identified that there are no procedural requirements to verify thread dimensions when reassembling the valve with new piece parts.

- RC 3. Failure to Detect Valve Failure - Misapplication of the criteria for determination of active/passive function of valve 1-FCV-74-66 resulted in inappropriate classification and removal from the Generic Letter (GL) 89-10 program. This contributed to the untimely identification of the valve failure.

Discussion:

In 1997, in accordance with Supplement 1 to GL 89-10, globe valves FCV-74-52 and FCV-74-66 were inappropriately determined to be "passive" based on operating in their safety position during normal alignment and were removed from the program. A review of the 1994 TVA GL 89-10 submittal identified several requirements that would have required the LPCI Outboard Injection Valves to be included in the GL 89-10 scope. Criteria for classification as passive were misapplied by both contract and TVA personnel.

The following contributing causes (CCs) have been identified for this violation.

- CC 1. The failure of the troubleshooting process to require additional troubleshooting in accordance with procedure MMDP-3, "Guidelines for Planning and Execution of Troubleshooting Activities," when the minor maintenance troubleshooting work order did not resolve the inability to vent valve 1-FCV-74-66 in November 2008, resulted in a missed opportunity to identify valve disc/stem separation.

Discussion:

In November 2008, troubleshooting using a minor maintenance work order was initiated for the inability to vent 1-FCV-74-66 through the normal vent path through the bonnet vents. When the troubleshooting was unable to establish a vent path, it was assumed

that the vent line was plugged similar to a previous problem seen on 1-FCV-74-52 and a corrective maintenance work order was initiated to repair the line. No additional troubleshooting was performed to attempt to rule out any other possible causes. Investigation has determined that the 1-FCV-74-66 disc separation likely occurred prior to November 2008. Normally, venting the full open valve bonnet would result in flow due to keep-fill flow through clearances in the valve and any back leakage through the downstream check valve and inboard isolation valve. With the valve disc stuck in the seat enough to prevent keep-fill pressure from lifting the disc off the seat, and lack of back leakage through the downstream path, there would be no flow through the vent path. Thus, a disc separation with the disc stuck in the seat was a plausible cause for the inability to vent. The troubleshooting did not consider or test for this cause.

Underlying the less than adequate troubleshooting were the following:

- Procedural guidance is not in place to establish drivers to continue following troubleshooting methods and establishing more formal troubleshooting plans once troubleshooting using minor maintenance work orders is unsuccessful in identifying the problem.
- The process does not force cognitive thinking for development of all possible causes to be supported or refuted with conclusive determinations with the results of the troubleshooting when troubleshooting using minor maintenance work orders.

The failure of the troubleshooting process to require additional troubleshooting in accordance with procedure MMDP-3, "Guidelines for Planning and Execution of Troubleshooting Activities," when the minor maintenance troubleshooting work order did not resolve the inability to vent 1-FCV-74-66 in November 2008, resulted in a missed opportunity to identify valve disc/stem separation. This was considered a significant contributor to the untimely discovery of degraded conditions with 1-FCV-74-66.

CC 2. The Plant Operations Review Committee (PORC) and senior management made a non-conservative decision to start up with an open degraded/nonconforming condition (DNC) for the inability to vent valve 1-FCV-74-66 in November 2008.

Discussion:

In November 2008 troubleshooting using a minor maintenance work order was initiated for the inability to vent 1-FCV-74-66 through the normal vent path through the bonnet vents.

Because the DNC on 1-FCV-74-66 (and 1-FCV-74-52) was not resolved, the PORC was required to review and approve both the functional evaluation and starting up from the outage with an existing DNC. The PORC review was performed and PORC approved the startup without correcting the identified DNC.

The decision to start up with an open degraded/nonconforming condition was non-conservative because the condition could have been resolved prior to startup (parts were available) with only a short schedule impact. Further challenge of the troubleshooting activities to support or refute the causes and recommendations from PORC to repair the 1-FCV-74-66 bonnet valves would have conclusively supported

whether the inability to vent was actually a blocked vent line. Attributed to the non-conservative decision making was the following:

- Parts were available to correct the condition and the repair activities would have been short in duration;
- The resolution of the condition focused on meeting TS requirements and not addressing the degraded/nonconforming condition; and
- No specific training is provided to PORC members for degraded/non-conforming conditions.

This was considered a significant contributor in that PORC provides a process barrier which failed because of non-conservative decision making.

- CC 3. The combination of inadequate program knowledge, lack of a detailed technical basis document for the inservice testing (IST) program, and weak oversight by corporate and site management resulted in failure to fully implement the IST program in accordance with American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) requirements. This resulted in failure to meet the requirements of 10 CFR 50.55a and contributed to the untimely identification of valve 1-FCV-74-66 failure.

Discussion:

In 2002, a ten year interval update of the IST program incorporated the OM Code 1995 Edition and 1996 Addenda, as documented in the TVA Browns Ferry Nuclear Plant (BFN) Technical Instruction, 0-TI-362, Inservice Testing of Pumps and Valves, Revision 10, effective date September 25, 2002. At that time, 10 CFR 50.55a(b)(ii) became applicable to the BFN IST Program. During the 2002 program update, the review of affected components missed the fact that valves classified as "active" in the IST stroke timing test program were not being tested in the motor operated valve (MOV) program as would be necessary in order to meet the requirements of the regulation.

Inadequate program knowledge, lack of a detailed technical basis document for the IST program, and weak oversight were identified as the attributed factors that resulted in failure to fully implement the IST program in accordance with OM Code requirements. This resulted in failure to meet the requirements of 10 CFR 50.55a and contributed to the untimely identification of 1-FCV-74-66 failure. This is considered a significant contributor.

- CC 4. Unclear guidance in writer's guide (WG) WG-1.3-005, "Miscellaneous Content and Format Guidelines," resulted in inadequate application of acceptance criteria in procedure ECI-0-000-MOV009, "Testing of Motor Operated Valves Using MOVATS Universal Diagnostic System (UDS) and Viper 20." The writer's guide states to provide acceptance criteria "when required" rather than ensuring acceptance criteria are always provided.

Discussion:

Biennial MOV testing (MOVATS) specified in the equipment qualification (EQ) Data Package for Limatorque SMB5T motor operators was performed on 1-FCV-74-066 by EQ required Preventative Maintenance (PM) (WO 08-714852-000) in October 2008. This testing is limited to operational verification of the motor operator spring pack in lieu of grease inspection.

Criterion V of 10 CFR 50, Appendix B, specifically requires acceptance criteria be included in quality-related procedures of quantitative or qualitative measure sufficient for determining that the activities have been satisfactorily accomplished. When preparing to perform the work, the Component Engineer provided the data collection requirements in procedure ECI-0-000-MOV009, Attachment 7, Section 1, "Testing of Motor Operated Valves Using MOVATS Universal Diagnostic System (UDS) and Viper 20." Data gathering was limited to areas concerning verification that the motor operator spring pack was responding as expected; i.e., free to operate and not hydraulically bound with grease. Acceptance criteria steps in Attachment 7 were marked "Not Applicable" based on the testing being performed. Because the acceptance criteria steps had been marked "Not Applicable," the requirements of 10 CFR 50, Appendix B, Criterion V were not met. Additionally, Acceptance Criteria were not required by the procedure for partial MOVATS testing (procedure ECI-0-000-MOV009, Attachment 5). This represents another failure to comply with 10 CFR 50, Appendix B, Criterion V.

The procedural inadequacies were the result of inadequate barriers in the writer's guide addressing acceptance criteria. The procedures addressing acceptance criteria were not clear when compared to requirements identified in the TVA QA manual, which establishes TVA Policy. Although it is recognized that the test being performed would not have satisfied the requirements of 10CFR50.55a, had acceptance criteria been provided, the procedure would have enhanced the barriers by providing quantitative criteria so as to evaluate anomalies, which could have provided an opportunity to detect the disc separation. Thus, this was considered a missed opportunity.

- CC 5 Inadequate use of the corrective action program due to narrowly focused extent of condition, inadequate consideration of Operating Experience (OE), and untimely corrective actions contributed to untimely identification and correction of the 1-FCV-74-66 failure.

Discussion:

The RCA team identified multiple aspects related to the BFN Corrective Action Program (CAP) that were determined to be less than adequate. These were primarily related to the causal analysis performed for the Residual Heat Removal Service Water (RHRSW) valve failure in March 2008 and the untimely resolution of discrepancies between the IST and MOV programs identified in June 2008. The significant factors associated with the ineffective and untimely resolution of conditions adverse to quality were identified to be:

- Narrowly focused extent of condition (EOC);
- Inadequate consideration of OE); and
- Untimely corrective actions.
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- CC 6. Inadequate assessments of engineering programs resulted in failure to identify noncompliance with 10 CFR 50.55a for an extended period.

Discussion:

Assessments of the IST and MOV programs by the site, corporate, and Quality Assurance (QA) organizations were inadequate. Assessments were few in number and those performed did not evaluate compliance with regulations.

- CC 7. Inadequate Corporate Governance and Oversight for IST and MOV Programs contributed to ineffective identification of program non-compliance and untimely corrective action once issues were identified.

Discussion:

Corporate Governance and Oversight Support Programs (GOSP) for IST and MOV Programs were ineffective in identifying program non-compliance and driving timely corrective action once issues were identified. This was attributed to a lack of structure in GOSP during the initial recognition of the issues associated with 10 CFR 50.55a and specifically, inconsistencies between IST and MOV Programs. Corrective actions initiated by Corporate were slow to resolve issues and assessments did not thoroughly identify and resolve the issues. The resolution of Corrective Action Program (CAP) documents failed to conclude that the FCV-74-66 and FCV-74-52 were required to be in the GL 89-10 Program as "Active" Valves. No causal analysis was performed of these issues until the valve failed October 23, 2010.

- CC 8. Inadequate emphasis on the importance of regulatory compliance has contributed to a culture which lacks urgency in the identification and timely resolution of issues associated with non-compliant and potentially non-conforming conditions.

Discussion:

Multiple examples support that there was a lack of urgency in the identification and timely resolution of non-compliant conditions and potentially nonconforming conditions. Evidence points to an inadequate emphasis on the importance of regulatory compliance. Significant examples include:

- Misapplication of criteria for determination of active/passive function of 1-FCV-74-66 resulted in inappropriate classification and removal from the GL 89-10 program - challenges by Quality Assurance in 1995, which could have led to the correct scoping decision, were not considered valid;
- TVA failed to comply with a January 1997 commitment to declare RHR inoperable when FCV-74-52 or 66 are out of their normal open position when in Shutdown Cooling in Mode 3;
- Inadequate troubleshooting of inability to vent 1-FCV-74-66 was based on an unverified assumption that the issue was a plugged vent line similar to a previous problem with 1-FCV-74-52; all possible causes were not considered, leading to the acceptance of a degraded/nonconforming condition;

- PORC and Senior Management non-conservative decision to startup with degraded/nonconforming conditions on 1-FCV-74-52 and 1-FCV-74-66;
- IST Program deficiencies; 13 PERs had been initiated for program deficiencies;
- Acceptance criteria marked "N/A" for MOVATS testing; lack of acceptance criteria as required by 10 CFR 50 Appendix B Criterion V;
- Untimely Corrective Actions; PER 147628, IST Program Deficiencies, identified by corporate self-assessment, was initiated July 2008 and the Functional Evaluation approved August 2009. Corrective Action 1 due date allowed a year to validate the findings of the assessment, Corrective Action 2 extended five times for a year and action was ineffective at addressing the issues; and,
- NRC issued substantive cross-cutting issue with the aspects of thorough evaluation of identified problems and appropriate and timely corrective actions.

The extent of causes for the root causes and contributing causes are as follows.

RC 1 Extent of Cause

An undersized thread barrel (manufacturing defect), when subjected to system differential pressure greater than the capacity of the reduced thread engagement, caused skirt/disc separation in 1-FCV-74-66.

Extent of Cause

The cause identified was a manufacturing defect which manifested itself when the affected component (valve) was subjected to differential pressure which exceeded the capacity of the valve skirt/disc connection due to the defect. A manufacturing defect that is not detected and corrected prior to installation becomes latent and may not be found until it becomes self-revealing.

TVA reported the event in accordance with 10 CFR Part 21 by Licensee Event Report 50-259/2010-003, Revision 1, on April 1, 2011. A Part 21 notification will ensure appropriate review and notification of other potentially affected utilities.

Since the investigation determined that there were no breakdowns in the receipt inspection process, the extent of cause will consider what should have been in place to allow defects to be identified in a timely manner.

RC 2 Extent of Cause

Lack of requirement for verification of thread dimensions during reassembly of 1-FCV-74-66 using a new disc with the old disc-skirt in 1983 resulted in failure to identify and correct the undersized thread barrel leading to the valve failure.

Extent of Cause

The cause was a lack of thread dimension check in a procedure affecting safety-related globe valves.

The extent of cause includes other procedures that lack thread dimension checks for other safety-related valves. The extent of cause has also been expanded to include critical dimension checks for all safety-related valves. Actions are included to require revisions to identified procedures governing reassembly of all safety-related valves identified to provide verification and inspection of critical dimensions when load bearing threaded connections involve the use of replacement parts.

RC 3 Extent of Cause

Misapplication of criteria for determination of active/passive function of Valve 1-FCV-74-66 resulted in inappropriate classification and removal from the GL 89-10 program. This resulted in missed opportunities to identify and correct the valve failure.

Extent of Cause

This cause applies to regulatory commitments in which criterion allowing scope exclusion could be misapplied, resulting in a nonconforming condition with regulatory programs.

Reviews of the MOV program and IST program indicate that scoping criteria are not being applied effectively in accordance with source documents. This is evident in the PERs identifying scope inadequacies within the programs generated through the reviews performed in support of the PER 369800 Root Cause Analysis.

Procedural requirements in TVA procedure NPG-SPP-03.10, "Managing TVA's Interface with NRC," governing the verification of information contained in NRC submittals were enhanced in 2002. These enhancements included the following, and are contained in the current revision of NPG-SPP-03.10.:

- Designating oversight responsibility for the submittal verification process to Licensing;
- Specifying which NRC submittals require verification;
- Describing which types of statements in NRC submittals require verification; and
- Providing detailed requirements for verification packages.

With respect to the failure of BFN Unit 1 restart licensing personnel to follow the procedure governing the verification process for regulatory submittals, procedure use and adherence has since been reinforced as one of TVA's fundamental human performance tools. Management expectations regarding procedure use and adherence are communicated regularly through TVA Nuclear corporate and site communications and are further reinforced through TVA's Nuclear Fleet Focus Handbook.

Based on the vulnerability discussed above, the regulatory programs identified for evaluation in RC3 will be included in the extent of cause. Corrective actions have been provided to conduct a review of these programs for scoping issues.

Corrective Steps Taken and Results Achieved

TVA has initiated a number of actions to enhance the IST program. Most significantly, TVA assembled a team of industry-recognized IST experts that conducted a review of BFN's IST Program and its implementation for compliance and performance issues. Other corrective actions were identified as the root cause analysis was completed and approved. Completion of these corrective actions will establish new regulatory baselines for these re-evaluated program enhancements and modifications made as a result of this root cause analysis and restore compliance with NRC required programs.

Corrective actions have been provided to prevent recurrence of the event and strengthen barriers to ensure sustainability. Effectiveness measures are provided to ensure the results of the actions are measured and performance improvement is periodically reviewed by the senior management team.

As of March 1, 2013, the Tennessee Valley Authority has implemented the following corrective actions to prevent recurrence in response to this violation to address the root causes, contributing causes, and the associated extent of conditions and extent of causes:

- Valve 1-FCV-74-66 was repaired to vendor specifications during the U1R8 refueling outage.
- The following valves were redesigned and gussets installed with a structural weld to preclude the need for the correct thread engagement:
 - BFN-2-FCV-74-66, RHR System II LPCI Outboard Injection Valve
 - BFN-3-FCV-74-66, RHR System II LPCI Outboard Injection Valve
 - BFN-1-FCV-74-52, RHR System I LPCI Outboard Injection Valve
 - BFN-2-FCV-74-52, RHR System I LPCI Outboard Injection Valve
 - BFN-3-FCV-74-52, RHR System I LPCI Outboard Injection Valve
- Revised MCI-0-74-VLV008, Maintenance of Residual Heat Removal Motor Operated Valves FCV-74-52 and FCV-74-66, to require verification of thread dimensions of the stem skirt to valve disc during valve reassembly involving replacement parts.
- Identified maintenance procedures governing reassembly of all safety-related valves.
- Revised the maintenance procedures governing reassembly of all safety-related valves to provide verification and inspection of critical dimensions when load bearing threaded connections involve the use of replacement parts.
- Reviewed the established Maintenance Procedures and determined the following populations:
 - Those that contain NO load bearing threaded connections involving replacement parts.
 - Those that contain load bearing threaded connections involving replacement parts.
- Revised Maintenance Procedures to include the location of critical dimensions and definition of the standard for determining the engagement of load bearing threaded connections added the following:

- Location of load bearing threaded connections/critical dimensions.
 - Step to determine if the work to be performed will affect load bearing connections.
 - Step to verify the engagement of load bearing threaded connections are within the defined standard.
- Revised an existing procedure to specifically provide the criteria for determining GL 89-10 program scope, including active/passive classification.
 - Revised calculation MD-Q0999-910034, NRC Generic Letter 89-10 MOV Evaluation BFNP - Units 1, 2, and 3, to apply the criteria for determining GL 89-10 program scope.
 - For the various programs at Browns Ferry, such as Air Operated Valve Program, Buried Cable Program, Motor Operated Valve Program, etc., a focused self-assessment was performed in accordance with NPG-SPP-03.1.11, "NPG Self-Assessment Program," to: (1) verify regulatory required scoping criteria have been correctly applied to establish program scope, and (2) ensure that the basis for program scope (inclusion/exclusion) is documented and readily retrievable. Generated SRs to correct discrepancies and create/revise fleet program document to reference associated basis documents.

Corrective Steps That Will be Taken

- Add 1, 2, 3 - FCV-74-52 and 1, 2, 3 -FCV-74-66 to the GL 89-10 program.

The previously discussed items were those classified as items to prevent recurrence that were explicitly covered in the Corrective Actions section of the Root Cause for PER 369800.

Date of Full Compliance

Valve 1-FCV-74-66 was repaired and restored to operable status during the Unit 1 refueling outage that ended November 23, 2010. Other similar RHR LPCI valves were examined and modified during shutdowns of all three units that ended as follows: Unit 1 on May 26, 2011; Unit 2 on April 2, 2011; and Unit 3 on May 31, 2011.