UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

November 7, 2005

Tennessee Valley Authority
ATTN: Mr. Karl W. Singer
Chief Nuclear Officer and
Executive Vice President
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT - INSPECTION REPORT
05000259/2005013, 05000260/2005013, AND 05000296/2005013

Dear Mr. Singer:

On September 23, 2005, the NRC completed an inspection regarding the application for license renewal for your Browns Ferry Nuclear Plant. The enclosed report documents the inspection findings, which were discussed on September 23, 2004, with Mr. B. O'Grady and other members of your staff in an exit meeting at the Browns Ferry Nuclear Plant.

The purpose of this inspection was an examination of activities that support the application for a renewed license for the Browns Ferry Nuclear Plant. The inspection consisted of a selected examination of procedures and representative records, and interviews with personnel regarding implementation of your aging management programs (AMPs) to support license renewal.

The inspection concluded that your license renewal activities had made significant progress toward implementation of AMPs. A reviewed and approved implementation package existed for each AMP, although the inspectors concluded that these were not meticulously reviewed as several errors were detected in the packages as described in this report.

Your staff initially stated they planned to track future LR actions using the Tracking and Reporting of Open Items (TROI) commitment tracking system. Subsequently it was decided to additionally track future LR actions using the Problem Evaluation Report (PER) process and PER 89791 was initiated for that purpose. The NRC will perform another inspection to follow up on open items when your staff has progressed further with AMP implementation.

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 (PDR) or from the Publicly Available Records (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, please contact Caudle A. Julian at (404) 562-4603.

Sincerely,

/RA/

Harold O. Christensen, Deputy Director
Division of Reactor Safety

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

Enclosure: Inspection Report

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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 Nos.:	05000259/2005013, 05000260/2005013, and 05000296/2005013,
Licensee:	Tennessee Valley Authority
Facility:	Browns Ferry Nuclear Plant
Location:	10833 Shaw Road Athens, AL 35611
Dates:	September 19 - 23, 2005
Inspectors:	C. Julian, Team Leader J. Fuller, Reactor Inspector T. Nazario, Reactor Inspector K. VanDoorn, Senior Reactor Inspector
Approved by:	Harold O. Christensen, Deputy Director Division of Reactor Safety

Enclosure

INSPECTION SUMMARY

IR 05000259/2005-013,05000260/2005-013,05000296/2005-013; 9/19-23/2005; Browns Ferry Nuclear Plant; License Renewal Inspection Program, Aging Management Programs.

This inspection of License Renewal (LR) activities was performed by four regional office engineering inspectors. The inspection program followed was described in NRC Manual Chapter 2516 and NRC Inspection Procedure 71002. This inspection did not identify any "findings" as defined in NRC Manual Chapter 0612.

The inspection concluded that LR activities were conducted as described in the License Renewal Application (LRA). The inspection also concluded that existing programs to be credited as aging management programs (AMPs) for license renewal are generally functioning well.

During a previous LR inspection documented in inspection report 05000259, 260, & 296/2004-012, the inspectors observed that the applicant had not yet begun the implementation process for new and enhanced AMPs and that the AMP procedures have yet to be defined and composed. Therefore it was concluded that NRC would perform another inspection when the applicant had progressed further with AMP implementation.

The inspectors concluded during this inspection that the applicant had made significant progress toward implementation of AMPs. A reviewed and approved implementation package existed for each AMP, although the inspectors concluded that these were not meticulously reviewed, as several errors were detected in the packages as described in this report.

During the previous LR inspection, the applicant agreed to perform a one time inspection of RHR service water suction pipes in the intake structure and the inspectors included that information in inspection report 05000259, 260, & 296/2004-012. During this inspection the applicant informed the inspectors that they no longer intend to perform a one time inspection of the interior of this piping because of the difficulty of performing such an inspection with any of the nuclear units running, requiring flow through the pipes. The applicant initiated PER 89865 on 09/23/2005 to document this discrepancy and the NRC will review the resolution of this issue during a future inspection.

The applicant initially stated they planed to track future LR actions using their Tracking and Reporting of Open Items (TROI) commitment tracking system. The applicant decided at the end of the inspection to additionally track future LR actions using the Problem Evaluation Report (PER) process and initiated PER 89791 for this purpose. NRC Region II will follow up on these issues during a future inspection.

Attachment 1 to this report contains a partial list of persons contacted and a list of documents reviewed. The Aging Management Programs selected for review during this inspection are listed in Attachment 2 to this report. Attachment 3 is a list of acronyms used in this report.

Report Details

I. Inspection Scope

This inspection was conducted by NRC Region II inspectors to interview applicant personnel and to examine a sample of documentation which supports the license renewal application (LRA) for Browns Ferry Nuclear Plant (BFN). This inspection reviewed the implementation of the applicant's Aging Management Programs (AMPs). The inspectors reviewed supporting documentation to confirm the accuracy of the LRA conclusions. For a sample of plant systems, inspectors performed visual examination of accessible portions of the systems to observe any effects of equipment aging. Attachment 1 of this report lists the applicant personnel contacted and the documents reviewed. The Aging Management Programs selected for review during this inspection are listed in Attachment 2 to this report. A list of acronyms used in this report is provided in Attachment 3.

II. Findings and Observations

A. Status of TVA implementation of LR activities

In 1985, TVA shut down all three units at BFN to address management and technical issues. Upon successful resolution of these issues, Unit 2 was restarted in 1991. Unit 3 was restarted in 1995. TVA has stated that it will not restart Unit 1 without prior approval from the NRC. With the exception of Unit 1 systems and components that are required to be in-service to support the current defueled status of Unit 1 or to support the operation of Units 2 and 3, Unit 1 has remained shutdown since 1985 with key systems and components placed in layup. TVA has initiated a restart plan to return Unit 1 to service. TVA has stated that the basic TVA principle for the Unit 1 Restart is that all three BFN units will be operationally identical upon completion of Unit 1 restart activities. To meet this principle, TVA plans for the Unit 1 current licensing basis (CLB) at restart to be the same as the CLB of Units 2 and 3. The LRA states that the Unit 1 restart program will result in three operationally identical BFN units, providing assurance that the Unit 1 CLB changes implemented prior to restart will result in the same AMPs for each unit. BFN has a single Updated Final Safety Analysis Report (UFSAR) and the LRA identifies and describes the AMPs that are required for all three units. All AMPs, are common to all three units except one. The Periodic Inspection AMP is to be unique to Unit 1 and will require inspections for certain Unit 1 piping that was in layup during the shutdown period. The Periodic Inspection AMP specifies that there be a baseline inspection and another inspection prior to entering the period of twenty years extended operation. The purpose of the Periodic Inspection Program is to attempt to detect any unanticipated aging effects that may have been caused by the layup. The BFN procedures for AMPs will be applicable site-wide. BFN procedures for new AMPs and existing AMP enhancements will be issued for all three units.

During the first License Renewal (LR) inspection documented in inspection report 05000259, 260, & 296/2004-012, the inspectors learned that the applicant had not yet begun the implementation process for new and enhanced AMPs. The AMP procedures have yet to be defined and composed. Also for existing programs, the identification and selection of which particular existing procedures constitute the AMP had yet to be done.

A tracking system had yet to be developed for open items and commitments for future applicant actions related to LR. An implementation plan had yet to be developed to transition the responsibility for implementing LR programs to the plant operating staff. The inspectors concluded that NRC would perform another inspection when the applicant had progressed further with AMP implementation.

During this inspection, the inspectors determined that the applicant had made significant progress toward implementation of the AMPs. A reviewed and approved implementation package existed for each AMP, although the inspectors concluded that these were not meticulously reviewed, as several errors were detected in the packages as described in this report. The applicant initiated Problem Evaluation Report (PER) 89836 for identification of causes of the errors and determination of corrective actions.

The applicant initially stated that they plan to track future LR actions using the Tracking and Reporting of Open Items (TROI) commitment tracking system. The inspectors observed at the start of the inspection that although LR items were entered into the TROI system the items did not contain a reference to the Electronic Document Management System (EDMS) file number for the implementation packages. The applicant initiated PER 89792 for this issue and promptly provided a TROI printout that contained the EDMS references.

For the inspection sample of AMPs selected, the inspectors were able to find all the future commitments in the TROI printout. However there was much duplication and varying entry format resulting in a confusing document. The applicant decided at the end of the inspection to additionally track future LR actions using the PER process and initiated PER 89791 for this purpose.

The inspectors observed that an implementation plan had yet to be developed to transition the responsibility for implementing LR programs to the plant operating staff. The inspectors concluded that NRC will perform another inspection to follow up on these issues when the applicant has progressed further with AMP implementation.

B. Review of Mechanical Aging Management Programs

1. Fire Protection

The applicant credits two AMPs, Fire Protection Aging Management Program and Fire Water System Aging Management Program to accomplish the fire protection function of the LRA. The inspectors reviewed the document B44 050912 020 Fire Protection Program Implementation Package, Rev. 0. The package listed 26 existing plant surveillance and test procedures which will be credited as the AMP for license renewal.

The package contained copies of proposed revisions to existing procedures. Where no technical content change to the procedure was necessary, the revisions consisted of the addition of two statements in the Scope and Commitments sections which say that this procedure is a License Renewal commitment as defined in Chapter 15 of the BFN FSAR. Chapter 15 is to be the place where LR commitments will appear in the FSAR.

The inspector observed that four of the designated procedures were not included in the package. The applicant investigated and found that one of the procedures, 3-SI-4.11.A.1(1), Local Fire Control Panel 3-LPNL-025-0543 Unit 3 Diesel Generator Bldg Detection Operability Test, Rev. 8 had been modified to reference LR but had inadvertently not been included in the package. The three other procedures were as follows:

MPI-0-026-INS002, Inside/Outside Loop Annual Diesel Fire Pump Inspection, Rev. 12
MPI-0-026-INS003, Inside/Outside Loop BI-Annual Diesel Fire Pump Inspection, Rev. 10
MPI-0-026-INS010, Inside/Outside Loop 6-Year Diesel Fire Pump Inspection, Rev. 8

An applicant representative stated that the judgement was made that it was not necessary to modify these procedures to reference LR because they invoked several other surveillance procedures for post maintenance testing which were themselves referenced. After this question was raised by the inspectors the applicant promptly produced copies of the four proposed modified procedures referencing LR in the same manner.

The inspectors observed that the package contained a proposed page to be included in the UFSAR Chapter 15 as Section 15.1.21, Fire Protection Program. The last sentence read "This program will be enhanced to update the Fire Protection Report to include Unit 1 as an operating unit prior to the period of extended operation." The inspectors pointed out that the correct commitment should be that the fire protection report be updated to include Unit 1 and the fire protection program fully implemented on Unit 1 prior to Unit 1 restart. The commitment appears in section F.3, Fire Protection of the LRA and again as Table 2, item 21., Fire Protection Program in the Appendix A, Commitments for License Renewal of BFN Units 1, 2, and 3 submitted to NRR by letter of August 9, 2005. The inspectors found several other examples of implementation packages that contained a erroneous proposed UFSAR Chapter 15 page that specified Unit 1 implementation prior to the period of extended operation rather than prior to Unit 1 restart. An applicant representative did a prompt preliminary review and reported there were eleven packages containing this error.

The inspectors concluded that the Fire Protection package referenced appropriate existing plant procedures but contained several types of errors that were not detected during the implementation package preparation, review, and approval. On 9/22/2005 the applicant initiated PER 89836 to document errors in the AMP Implementation Packages identified by the NRC during this inspection.

2. Buried Piping and Tanks Inspection Program

This program is categorized in the application as an existing program which is credited for aging management of external surfaces on buried piping. There are no buried tanks at Browns Ferry or included in the scope of this program. Buried piping will be inspected when excavated for any reason. The inspectors reviewed the document B44 050912 027, Buried Piping and Tanks Inspection Program Implementation Package, Rev. 0. The package listed 8 existing corporate and plant procedures which will be credited as the AMP for license renewal.

The package contained copies of proposed revisions to existing procedures. Where no technical content change to the procedure was necessary, the revisions consisted of the addition of two statements in the Scope and Commitments sections which say that this procedure is a License Renewal commitment as defined in Chapter 15 of the BFN FSAR. The inspectors reviewed the proposed revised procedures and found them acceptable. The text of the package contained some minor typographical errors which were promptly corrected by the applicant.

3. ASME Section XI Subsections IWB, IWC, and IWD Inservice Inspection (ISI) Program [Including Reactor Vessel Inside Diameter Attachment Welds Program, Feedwater Nozzle Program, Control Rod Drive (CRD) Return Line Nozzle Program, Stress Corrosion Cracking Program, and Penetrations Program]

The Inservice Inspection (ISI) Program, including the above subsets of this program, is an existing program, subject to regular NRC inspections. In order to address industry issues, the Boiling Water Reactor (BWR) owners group established the Vessel and Internals Project (BWRVIP) to provide a generic response to the various issues. A number of BWRVIP documents have been issued covering the various subsets of the ISI program listed above. These BWRVIP documents have served to provide for additional inspections and/or modifications of ASME ISI requirements. The applicant has maintained Units 2 and 3 up to date for the latest Code and BWRVIP requirements. In addition, the applicant is in process of enhancing the Unit 1 program to include the BWRVIP requirements. The applicant has implemented improvement modifications and cracking mitigation actions similar to or better than those implemented on Units 2 and 3 to address Intergranular Stress Corrosion Cracking (IGSCC) for Unit 1. The applicant has provided a report to the NRC detailing the mitigation activities for Unit 1. The NRC has inspected the applicant's IGSCC mitigation and inspection activities via the inspection program established by NRC/Region II for Unit 1 restart activities (see NRC Report No. 50-259/2005-008).

The inspectors reviewed the LR program implementation packages, site proposed procedure changes, and open item tracking information and discussed the program with applicant personnel. The inspectors noted minor problems such as procedure markup inconsistencies relative to location of LR references, and an error in the markup for procedure NEDP-23 which was corrected during the inspection. The applicant initiated PER 89836 to track a planned generic review of the implementation packages for administrative errors. The inspectors concluded that the ISI Program was in place and included elements described in the LRA and associated Requests for Additional Information (RAIs). Some enhancements for Unit 1 were ongoing, but are appropriately covered by the NRC/Region II restart inspection process. The applicant had identified procedures to be credited for LR and had established a tracking mechanism for assurance of completion of required actions.

4. Reactor Head Closure Studs Program

The applicant has maintained an ongoing, periodically updated existing program for inspection of reactor vessel studs as part of the ISI program. The applicant plans to inspect the Unit 1 studs prior to startup. In addition, the applicant has implemented controls to assure use of approved lubricants via maintenance procedures.

The inspectors reviewed the LR program implementation package, site proposed procedure changes, and open item tracking information and discussed the program with applicant personnel. The inspectors concluded that the Reactor Head Closure Studs Program was in place and included elements described in the LRA and associated RAIs. The applicant had identified procedures to be credited for LR and had established a tracking mechanism for assurance of completion of required future actions.

5. Reactor Vessel Internals Program (Including the Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel Program)

The Reactor Vessel Internals Program, which includes inspection of cast austenitic stainless steel components, is an existing program which has been maintained in accordance with the Code and the BWRVIP process for Units 2 and 3. The applicant has upgraded the Unit 1 program to the BWRVIP requirements and conducted most of the required inspections.

The inspectors reviewed the LR program implementation package, site proposed procedure changes, and open item tracking information and discussed the program with applicant personnel. The inspectors noted that two applicable BWRVIPs were not listed in the package and an inappropriate procedure markup was included. These problems were corrected during the inspection. The inspectors concluded that the Reactor Vessel Internals Program was in place and included elements described in the LRA and associated RAIs. Further inspection is planned for Unit 1 via the NRC/Region II restart inspection process. The applicant had identified procedures to be credited for LR and had established a tracking mechanism for assurance of completion of required future actions.

6. Flow Accelerated Corrosion (FAC) Program

The FAC program is an existing program credited for management of flow accelerated corrosion which will be enhanced to include the latest industry guidance. The applicant also is repairing or replacing susceptible piping components for Unit 1 prior to startup and conducting baseline inspections. The applicant's program consists of periodic inspections and evaluation of the data to detect wall thinning and compare data to current requirements and historical data values to predict when and if minimum wall thickness will occur. Piping replacements are then planned prior to wall thickness reaching minimum requirements. Inspection points and inspection periodicity are periodically adjusted dependant on inspection data, plant operations history, and industry information.

The inspectors reviewed the LR program implementation package, site proposed procedure changes, and open item tracking information and discussed the program with applicant personnel. The program has functioned to assure timely piping replacements and appropriately adjust inspections according to plant and industry experience. The inspectors concluded that the FAC program was in place and included elements described in the LRA and associated RAIs. Enhancements for Unit 1 were ongoing. Further inspection is planned for Unit 1 via the NRC/Region II restart inspection process. The applicant had identified procedures to be credited for LR and had established a tracking mechanism for assurance of completion of required future actions.

7. Reactor Vessel Surveillance Program

The Reactor Vessel (RV) Surveillance Program is an existing program credited in the LRA as a program for managing RV irradiation embrittlement. The applicant's program consists of periodic testing of RV surveillance capsules and updating calculations for fracture toughness. The applicant has maintained the program in accordance with the BWRVIP process and the BWR Integrated Surveillance Program (ISP). The applicant was in the process of including Unit 1 into the ISP program. In addition, the applicant plans to conform to BWRVIP-116; BWR Vessel and Internals Project, Integrated Surveillance Program for License Renewal, which is currently under review by NRC, for all three vessels.

The inspectors reviewed the LR program implementation package, site proposed procedure changes, and open item tracking information and discussed the program with applicant personnel. The inspectors concluded that the Reactor Vessel Surveillance Program was in place and included elements described in the LRA and associated RAIs. Enhancements for Unit 1 were ongoing. Further inspection is planned via the NRC/Region II restart inspection process. The applicant had identified procedures to be credited for LR and had established a tracking mechanism for assurance of completion of required future actions.

8. Compressed Air Monitoring Program

This is an existing condition monitoring program that includes inspection and testing of the entire system, i.e. frequent leak testing of valves, piping, and other system components. The program also includes air quality monitoring for oil, water, rust, dirt and other contaminants. Program enhancements for aging management included program and procedural upgrades to verify that industry air standards referenced in the NRC endorsed GALL report were incorporated into the station program and that Unit 1 procedures were upgraded to fully implement the compressed air monitoring program on Unit 1 prior to restart. These enhancements will be implemented prior to the period of extended operation and are generally described in the LRA, section B.2.1.21, Compressed Air Monitoring Program.

The inspectors reviewed B44 050912 018, Compressed Air Monitoring Program Implementation Package, Revision 0, site proposed procedure changes, open item tracking information, and discussed the program with applicant personnel. The inspectors concluded that the Compressed Air Monitoring Program was in place and included elements described in the LRA and associated RAIs. Some enhancements for Unit 1 were ongoing and are appropriately being tracked by the applicant to ensure that they are complete prior to the restart of Unit 1. As currently implemented on Units 2 and 3, this aging management program will provide reasonable assurance that the intended function of the compressed air systems will be maintained throughout the period of extended operation.

9. One Time Inspection Program

This is a new program to perform one time inspections of various components to verify that unacceptable degradation is not occurring. There are a large number of SSCs

identified for one time inspections including RCS pressure boundary piping, valves, and fittings, ventilation duct work, heat exchangers, and many other components. The program inspections will include Non Destructive Examinations (NDE) by qualified personnel following procedures consistent with the ASME Code and 10 CFR 50, Appendix B. The required program elements and general statement of scope are identified in the LRA, section B.2.1.29, One-Time Inspection Program. This scope of one time inspection SSCs is specifically identified in the Browns Ferry License Renewal Data Base.

The inspectors reviewed new procedures concerning the sampling basis and draft technical instructions for the one-time inspection program. The inspectors reviewed the program description in the application, the scope identification in the Browns Ferry License Renewal Data Base, and discussed the program development and implementation with the responsible engineers. The inspectors reviewed the document B44 050912 025, One-Time Inspection Program Implementation Package, Rev 0. The package included proposed new procedures, and open item tracking information. The inspectors concluded that the One-Time Inspection Program will be in place prior to the period of extended operation, and that it will include elements described in the LRA and associated RAIs. The applicant had identified procedures to be credited for LR and had established a tracking mechanism for assurance of completion of required future actions.

10. Selective Leaching of Materials Program

This is a new program that will perform one time visual inspections and hardness measurements of representative components identified in the LRA's aging management review results. Components exposed to raw water, treated water, or ground water environments and constructed of cast iron, brass, bronze, or aluminum bronze may be susceptible to selective leaching. The required program elements and general statement of scope are identified in the LRA, section B.2.1.30, Selective Leaching of Materials Program.

The inspectors reviewed the document B44 050912 026, Selective Leaching of Materials Program Implementation Package, Revision 0 and draft Revision 1. Additionally, the inspectors reviewed site proposed procedure changes, and open item tracking information and discussed the program with applicant personnel. During review of the AMP implementation package, the inspectors identified that the package contained inspection methods that were inconsistent with those described in the original license renewal application. The applicant was aware of this discrepancy, but had not yet submitted the description of the change in inspection methods to the NRC for review. The applicant initiated PER 89841 regarding this discrepancy and immediately revised the implementation package to reflect the test methods contained in the original license renewal application. The applicant plans to submit the test method changes to the NRC for review at a later date. The inspectors reviewed the draft version of the Selective Leaching of Materials Program Instructions document, which includes a table of susceptible material locations that will be used for the one time inspection sample selection. The applicant plans to develop a technical instruction that will provide specific guidance for sample selection, test methods, acceptance criteria, reporting of results

and corrective actions. The inspectors discussed the elements of the technical instruction with knowledgeable applicant personnel.

The applicant LRA committed that the Selective Leaching of Materials inspection program will be in place prior to the period of extended operation. Specific procedures and inspection methods still need to be developed, but the inspectors verified that these required future actions were appropriately tracked for assurance of completion prior to the period of extended operation.

11. Bolting Integrity Program

The Bolting Integrity Program, described in LRA Section B2.1.16 is an existing program but is to be enhanced. The inspectors reviewed the document B44 050912 014, Bolting Integrity Program Implementation Package, Rev. 0. This document listed several existing site documents that perform bolting inspections. The AMP listed two exceptions to the Gall (NUREG-1801) program that the applicant considered open items. The first exception was that structures bolting is not included in the program but is included in the Structure Monitoring Program. The inspectors reviewed the Structure Monitoring Program and Inspection of Water-Control Structures Program AMPs that are to be enhanced under the structural bolting program. Two maintenance rule (NRC's 10CFR 50.65) procedures (0-TI-346, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting- 10CFR50.65, Rev. 22 and LCEI-CI-C9, Procedure for Walkdown of Structures for Maintenance Rule, Rev. 4 were to be changed to enhance the program, and the inspectors verified that draft revisions to these procedures included the enhancements.

The second exception was that the bolting program does not address Class 1 NSSS component support bolts. Class 1 NSSS component support bolts are covered by Procedure SI-4.6, ASME Section XI, Subsection IWF. That procedure was identified by the applicant as requiring enhancement, and the inspectors verified that draft revisions to these procedures included the enhancements specified in the LRA.

The inspectors reviewed the LR program implementation packages, open item tracking information, and discussed the program with applicant personnel. Additionally, the inspectors reviewed the proposed procedure changes and verified that the affected procedures are referenced as license renewal documents. The inspectors concluded that the Bolting Integrity Program is a functioning program and included elements described in the LRA and associated RAIs. The applicant had identified procedures to be credited for LR and had established a tracking mechanism for assurance of completion of required future actions.

The inspectors also closed out Confirmatory Item (CI) 3.3.2.35-1 from the NRC's Safety Evaluation Report.

The inspectors verified that the applicant has not identified any examples of high strength bolting materials installed in auxiliary systems that would be susceptible to stress corrosion cracking (SCC). The inspectors also reviewed procedures that prohibit the use of thread lubricant such as molybdenum disulfide, which has been know to assist in the initiation of SCC. The applicant conducted a thorough review of past

procurement records of bolting materials installed at BFN, where material specifications are available, and found that there are no high strength bolts with yield strengths greater than 150 KSI purchased for BFN. The licensee's material specifications stated the required mechanical properties for different grades of bolting materials. The hardness range allowed by the procurement specification had a maximum and minimum value, which would limit the maximum tensile and yield strength.

The applicant has reviewed applicable BFN and industry operating experience with respect to SCC of bolted closures and incorporated industry recognized good bolting practices into plant procedures. As an example of such efforts, the inspectors reviewed licensee corrective action document PER 45640-003-002, which concerns OE from Diablo Canyon, which involved a steam dump valve to bonnet bolting failure due to incorrect use of high strength bolting. The applicant developed an action plan for identifying components or parts that are considered susceptible to SCC and/or hydrogen embrittlement. The action plan considered any necessary inspections, repairs, replacement, etc. The inspectors noted this as an example of the licensee looking at installed components that might be susceptible to SCC. The inspectors noted that the applicant was in fact responding to industry OE by initiating PERs in their corrective action program.

The inspectors inquired of the applicant if there has been a history of bolting problems at BFN and were told there was not. The applicant has responded to industry OE concerning bolting failures, and dispositioned the OE through their corrective action program. Additionally system engineers perform periodic walkdowns of plant systems to identify any system leakage and have it corrected. During the first LR inspection documented in report 05000259, 260, & 296/2004-012, the inspectors performed extensive walkdowns of the plant and did not observe any examples of extensive or abnormal leakage from liquid systems. The inspector concluded from the absence of leakage that the bolting practices are functioning adequately.

12. Open Cycle Cooling Water System Program (OCCW)

This is an existing program described in LRA Section B.2.1.17 that will be enhanced to implement NRC Generic Letter 89-13 for Unit 1 prior to the period of extended operation as stated in Section A.1.16 of the LRA. The inspectors reviewed a document B44 050912 015, Revision 0 and proposed Revision 1, Open Cycle Cooling Water System Program Implementation Package. The existing program has been in effect for over 10 years as the implementation of the NRC Generic Letter 89-13 recommendations. The AMP listed a number of systems that were in scope. The inspectors concentrated on the Emergency Equipment Cooling Water (EECW) and Residual Heat Removal Service Water (RHRSW) systems. The Unit 1 systems will have to be brought to operational readiness prior to that unit being returned to service.

The inspectors reviewed proposed procedure changes for the specific procedures that the implementation package identified as within the scope of license renewal. Through the review of the procedure markups in the package, the inspectors identified that procedure 0-TI-154, Coupons and Monitoring For Corrosion and Deposit Control, had not been included in the OCCW implementation package. Applicant representatives promptly provided the inspectors a copy of the procedure with proposed references to

LR. The licensee credits this procedure for measuring the surface condition and the extent of wall thinning in OCCW components as part of the Aging Management Program Evaluation, Element 4, Detection of Aging Effects.

The inspectors reviewed the implementation package, proposed procedure changes, and open item tracking information and discussed the program with applicant personnel. The implementation of GL 89-13 is ongoing for Unit 1 and is appropriately being tracked by the applicant to ensure that it is complete prior to the restart of Unit 1. The inspectors concluded that the OCCW program was in place for Units 2 and 3 and included elements described in the LRA and associated RAIs. The applicant had identified procedures to be credited for LR and had established a tracking mechanism for assurance of completion of required future actions.

There are three RHRSW / EECW 24" cast iron suction pipes that are imbedded in the concrete of the intake structure that provide the water flow path from near the front of the structure to a rear enclosed bay that contains the pumps' suction bells. Suction water for the 12 pumps travels through the three pipes. To their recollection, the applicant has not inspected the three pipes since their installation. During the previous LR inspection, the applicant agreed to perform a one time inspection of these pipes and the inspectors included that information in inspection report 05000259, 260, & 296/2004-012. During this inspection the applicant informed the inspectors that their staff misunderstood the physical configuration of the components and had intended to inspect the pipe exterior, which is impossible since the pipe is embedded in concrete. The applicant stated they no longer intend to perform a one time inspection of the interior of this piping because of the difficulty of performing such an inspection with any of the nuclear units running which require flow through the pipes. The applicant first stated they would inspect the sluice gate valves at the entrance of the pipes instead. However, NRC found during this inspection that those valves have already become extremely rusty as depicted in previous inspection pictures and four of the six have been replaced over the years. The applicant then contended that the rusted sluice valves would not be indicative of the condition of the pipe interior since chemical treatment corrosion inhibitor and biocide are continuously injected through the open valves into the pipes. The applicant is searching for plant records to determine if the pipes are internally cement lined or coated with coal-tar varnish which would inhibit corrosion. The applicant initiated PER 89865 on 09/23/2005 to document this discrepancy and the NRC will review the resolution of this issue during a future inspection.

Similarly, the 12 RHRSW system discharge lines exit the reactor building going underground and into the intake canal and through the enclosing dike between the canal and the river. The applicant has agreed to perform a one time inspection of these pipes.

The EECW system discharges from the plant via other paths. During the previous LR inspection the inspectors attempted to locate the EECW catch basins that receive part of the system discharge. The basins, which are similar to in-ground storm drains with about 3 by 4 foot cast iron grates, are outside of the reactor building with the grates at ground level. Should a seismic event block flow from the non-seismic pipe down stream of the basin, the system discharge could flow up out the grate and across the yard with no loss of system function. The grates on Units 2 ands 3 basins were covered with rock, mud, debris, and erosion retention fencing fabric. They appeared to have become

covered as a result of installation of temporary construction trailers for Unit 1 work. The Unit 3 basin was covered by a construction trailer. The Unit 1 basin was uncovered as it should be, even though the system was not in use. The applicant wrote PER 73662 document to evaluate the conditions found. Additionally, the applicant immediately removed the material covering the grates.

Following the inspection, the applicant provided the inspectors a copy of a document titled Functional Evaluation 40826 for PER 73662, EECW Discharge Flow Path into Yard Catch Basins. The document evaluated the as found condition and concluded that even if a seismic event blocked the drain path from the basin to the canal, the resulting EECW discharge pressure would be sufficient to dislodge the debris and the EECW would still be capable of performing its intended function. After reviewing the document the inspectors agreed with that conclusion. The inspectors concluded that this was a minor issue and would not be pursued for enforcement because it had no actual safety consequences, little or no potential to impact safety, no impact on the regulatory process, and was not willful.

During this inspection, the inspectors again examined the condition of the EECW catch basins with the system engineer and found them essentially unchanged. The system engineer stated that she now examined the basins weekly and if they become obstructed she would initiate a work order to get them cleared. The inspectors found that the PER was closed on 6/16/2005. Action 3 of the PER was to initiate work orders to post a sign at each of the EECW catch basins, to increase awareness of the catch basins and to help insure that they are not covered with rocks, mud, debris, etc. That action was completed 1/20/2005 with the issue of the work orders but the signs had not yet been posted. When the inspectors brought this to the applicant's attention prompt action was taken to post the signs the next day.

13. Inspection of Overhead Heavy Load and Light Load Handling Systems Program

This program is described in LRA Section B.2.1.20 and is an existing program that will not be enhanced. The inspectors reviewed the document B44 050912 017, Inspection of Overhead Heavy Load and Light Load Handling Systems Program Implementation Package, Revision 0 and draft Revision 1. The inspectors observed that Revision 0 of the implementation package contained a procedure which listed all cranes on site and did not define a subgroup of cranes which are in scope for license renewal. Applicant representatives provided a proposed Revision 1 of the package which identified the cranes in scope for license renewal.

The Brown's Ferry Crane program has been in existence for a number of years. Review of CAP issues on crane problems showed very limited findings. Program instructions follow industry guidance (NUREG-0612 and ASME B30.2) and have incorporated industry operational history. For license renewal, the primary crane components of interest are the structural components that make up the bridge, trolley, and rails. The Implementation of the crane and hoist programs provide reasonable assurance that the aging effects will be managed such that the equipment will continue to perform its intended function.

C. Review of Electrical Aging Management Programs

The Browns Ferry LRA concluded that the only electrical components that require an aging management program are electrical cables and connectors and electrical busses.

The AMPs proposed by the applicant are as follows:

- Accessible Non-Environmental Qualification Cables and Connections Inspection Program
- Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program
- Bus Inspection Program
- Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits Program

Bus Inspection Program

The Bus Inspection Program is a new program to be developed to inspect isolated and nonsegregated phase electrical switchyard busses for deterioration from heat cycling and loosening of fasteners. This program is to be implemented prior to the period of extended operation. The inspectors reviewed the document B44 050912 037, Bus Inspection Program Implementation Package, Rev 0. It contained proposed new procedures 0-TI-new, Bus Inspection Program and EPI-0-242-new, Isolated and Non-Segregated Phase Bus. The inspector found the package complete and the proposed procedures technically adequate.

The Bus Inspection Implementation Package was typical of the other electrical packages which have distant implementation dates. The inspector observed that these proposed procedures were further along in development than the other electrical AMPs.

D. Review of Structural Aging Management Programs

1. Structures Monitoring and Water-Control Structures

The Structures Monitoring Program (SMP) is an existing program which the LRA states will be enhanced to identify all structures and structural components within the scope of license renewal and all aging effects and associated mechanisms for inspection. The applicant's existing program consists of periodic inspections and monitoring of accessible areas of structures. The inspectors reviewed the LR program implementation packages, site proposed procedure changes, and open item tracking information and discussed the program with applicant personnel.

Proposed revisions to existing procedure 0-TI-346, "Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting- 10CFR50.65," have been enhanced to identify all structures and structural components within the scope of license renewal and includes a table listing Structures Requiring Aging Management for License Renewal,

Attachment 38 (Gate Structure #2 is marked as “No” in the table for License Renewal which means LR does not apply.

0-TI-346 and LCEI-CI-C9, “Procedure for Walkdown of Structures for Maintenance Rule,” both are enhanced to require that a sample of the raw service water in close proximity to the Intake Pumping Station shall be taken at least once every five years and analyzed for pH, sulfates and chlorides to confirm that the submerged concrete is not in an aggressive water environment.

The proposed revisions to procedures, 0-TI-346 and LCEI-CI-C9, also include a special inspection of the structures noted below. This inspection should be conducted within 30 days following unusual events such as flood, earthquake, tornadoes, or other events that may effect the integrity of structures (Reference 0-TI-246):

- Intake Pumping Station
- Gate Structure #3
- Intake Channel
- North Bank of Cool Water Channel East of Gate Structure #2
- South Dike of the Cool Water Channel between Gate Structure 2 and 3

Proposed revisions to procedure LCEI-CI-C9, Appendix A, includes Underground Concrete Encased Structures, Radwaste Building, Vent Vaults, Off-Gas Treatment Building, and Service Building within the scope of LR as a result of commitments made in response to an NRC request for additional information. The applicant also plans to include inspection of the piles of the High Pressure Fire Pump house structure for loss of material.

The applicant has also enhanced 0-TI-412, “Work Permits,” Rev. 13 to include inspection by civil engineering on their Excavation and Trenching Permit, Appendix D. This enhancement requires inspection of inaccessible portions of concrete to be performed by a civil engineer when exposed during excavations.

Proposed Technical Instruction, “One-Time Inspection of the Intake Pumping Station (IPS) Concrete,” contains procedures for performing a visual inspection of submerged concrete surfaces in one bay of the intake pumping station and to document the results accordingly on the inspection checklist (Attachments 1 and 2).

The inspectors also reviewed proposed revisions to procedure 0-TI-246, “Inspection of Ponds, Dikes, and Channels," which specifies the method, frequency, and criteria for the periodic inspection of water-control structures. The applicant has incorporated in 0-TI-246 a statement requiring coordinating with the Lead Civil Engineer on any deficient conditions identified during inspection.

The inspectors conducted a walkdown of the service building and the radwaste building which are in scope for LR because portions contain fire protection piping and Standby Gas Treatment drain lines. The inspectors also conducted a walkdown of gate structure #2. This is a structure described in the FSAR and design criteria documents as a structure that provides a protective safety related function by separating the cool water channel from the intake structure to prevent the potential thermal mixing of the two

bodies of water to ensure the residual heat removal service water supply does not exceed the 95° F limit (design criteria BFN-50-7023). This structure is also immediately adjacent to the High Pressure Fire Protection (HPFP) pump house which is independently supported by piles. The HPFP house is in the scope of license renewal due to the fire protection equipment contained inside the structure.

A sink hole developed in the sheet piling cell number 4 on the south side of gate structure # 2 and was caused by washing out of the crushed stone backfill in the cell from water intrusion due to separation of a drain pipe and higher than normal water levels in the cool water channel. As a result several PERs and functional evaluations were written to address the issue, including corrective actions to rework the cells, backfill, and replace the drain pipes with a different piping material. The inspectors reviewed the corrective actions, viewed underwater inspection video of the sheet pilings on gate structure #2, inspected the sink hole, and questioned whether the structural integrity of the cells could be maintained. An extent of condition was also performed to evaluate the potential impact of a similar sink hole on safety related gate structure #3; however, the cells in gate structure #3 do not have similar embedded drain pipes per the drawings and the cells adjacent to the gate (gate guide cells) are filled with concrete which minimizes the impact of such adverse condition described for gate structure #2.

In addition, during the evaluation of the sinkhole, the licensee wrote a PER addressing inconsistencies contained in design criteria documents and FSAR on the safety classification of gate structure #2. As part of the corrective actions the licensee has determined Gate Structure # 2 to be safety related and plans to evaluate license renewal implications.

During the inspection the inspector questioned whether corrosion rate data was available for the sheet piling on both gate structures. Subsequently, the licensee indicated that this information was not available; however, a sample was going to be extracted to determine these corrosion rates and their impact on material degradation for carbon steel. The inspectors will evaluate the information once the results are available.

The applicant had identified procedures to be credited for LR and has established a tracking mechanism for assurance of completion of required future actions. The inspectors concluded that when the enhancements are made there is reasonable assurance that the AMPs will adequately monitor the condition of structures and structural components through the period of extended operation.

2. ASME Section XI, Subsection IWE/IWF Inservice Inspection Program

The BFN ASME Section XI, Subsection IWE, Containment Inservice Inspection (ISI) Program was developed in response to the requirements of 10 CFR 50.55a and the ASME Code. The program is an existing program which includes visual examinations of steel containment (MC) shells and their integral attachments; containment hatches and airlocks; seals, gaskets, and moisture barriers; and pressure-retaining bolting. This existing program has been in place and functioning for the life of the plant. The applicant stated that plans are in place to replace 100% of the dry well moisture seal

barrier on Unit 1 prior to restart and Units 2 and 3 will be subject to ongoing IWE periodic inspections.

The ASME Section XI, Subsection IWF program is part of the overall ISI programs for BFN. BFN surveillance instructions 1-SI-4.6.G, 2-SI-4.6.G and 3-SI-4.6.G direct the visual examination of ASME Section XI Class 1, 2, and 3 component supports in accordance with the requirements of ASME Section XI, Subsection IWF and Code Case N–491. The ASME Section XI Subsection IWF Program will be enhanced to manage the drywell, torus and vent system equivalent Class MC supports during the period of extended operation. The Chemistry Control Program (including a one-time inspection for chemistry verification) will be used to manage the ASME equivalent Class MC supports that are submerged in suppression pool water during the period of extended operation.

Proposed procedure, 0-TI-376-Appendix 9.8, “Non-ASME Section XI Augmented ISI Program for Class MC Equivalent Supports,” is a technical instruction utilized to obtain data through nondestructive examinations required by ASME Section XI, Subsection IWF for Code Class MC supports. This instruction will be enhanced to reference that it is credited for LR.

“One-Time Inspection Program” proposed technical instruction (Appendix 1) addresses visual examination (VT-3) of the accessible portions of the submerged Class MC equivalent supports in the suppression chamber/torus . The VT-3 will be conducted to determine the general mechanical and structural condition of the supports. Unit 1 will complete 100% of the examinations as pre-service or re-baseline exams prior to restart as required in Examination Categories of Table IWF-2500-1, except those exceptions excluded by 10 CFR 50.55a and except where written relief has been granted by the NRC. The ASME 1995 Edition, including 1996 Addenda will be implemented for Unit 1. This augmented inspection program is planned to be in effect at the start of the extended period of operation for all three units.

The inspectors reviewed the LR program implementation packages, proposed procedure changes, and open item tracking information and discussed the program with applicant personnel. The applicant had identified in the implementation package procedures to be credited for LR and has established a tracking mechanism for assurance of completion of required future actions. The inspectors concluded that the ASME Section XI, Subsections IWE/IWF Inservice Inspection Programs were in place, had been implemented, and included the elements identified in the LRA. When implemented as described, there is reasonable assurance that adequate inspections required by ASME will be performed through the period of extended operation.

III. Conclusions

The inspection concluded that LR activities were conducted as described in the License Renewal Application. The inspection also concluded that existing aging management programs are generally functioning well.

The inspectors concluded during this inspection that the applicant had made significant progress toward implementation of AMPs. A reviewed and approved implementation

package existed for each AMP, although the inspectors concluded that these were not meticulously reviewed, as several errors were detected in the packages as described in this report.

Exit Meeting Summary

The results of this inspection were discussed on September 23, 2005, with Mr. B. O'Grady and other members of the applicant staff in an exit meeting at the Browns Ferry Site. The applicant acknowledged the results presented and presented no dissenting comments. The inspectors asked if any of the applicant materials reviewed were proprietary and were told that none were.

PARTIAL LIST OF PERSONS CONTACTED

Applicant

D. Arp, License Renewal Project/Electrical & I&C lead
B. Aukland, Plant Manager
K. Brune, Project Manager License Renewal
P. Byron, Unit 1 Licensing Engineer
W. Crouch, Site Licensing Manager
T. Elms, Operations Manager
T. Elton, Unit 1 Licensing Engineer
K. Gromek, Civil Engineering Design
K. Groom, Site Engineering - Mechanical/Nuclear Design
M. Hamby, License Renewal Project/Mechanical lead
K. Harvey, BOP System Engineer
R. Jansen, License Renewal Project/Civil lead
R. Jennings, License Renewal Project/ Scoping & Screening Specialist
D. Langley, Unit 2 & 3 Licensing Supervisor
J. McCarthy, Unit 1 Licensing Supervisor
J. McDaniel, Chemistry & Enviornmental Support Manager
F. Nilsen, Manager, System Engineering BOP
B. O'Grady, Site Vice President
R. Phillips, Corporate Materials Specialist
R. Rogers, Site Project Manager
T. Rogers, NSSS System Engineer
V. Schiavone, Site Engineering - Mechanical/Nuclear Design
K. Welch, Systems Engineering Manager
S. Wetzel, BOP System Engineer
A. Yarbrough, BOP System Engineer

NRC

H. Christensen, Deputy Division Director, DRS, RII
Y. Diaz, Project Manager, NRR
R. Monk, Resident Inspector
T. Ross, Senior Resident Inspector
R. Subbaratnam, Project Manager, NRR

LIST OF DOCUMENTS REVIEWED

Licensing Documents

Browns Ferry Nuclear Plant License Renewal Application dated December 31, 2003 and related Requests for Additional Information
Browns Ferry Updated Final Safety Analysis Report

License Renewal Documents

B44 050912 037, Bus Inspection Program Implementation Package, Rev 0
B44 050912 020 Fire Protection Program Implementation Package, Rev. 0
B44 050912 027, Buried Piping and Tanks Inspection Program Implementation Package, Rev. 0.
B44 050912 004, ASME Section XI Inservice Inspection Subsections IWB, IWC, and IWD Program Implementation Package, Rev. 0
B44 050912 007, Boiling Water Reactor Vessel Inside Diameter Attachment Welds Program Implementation Package, Rev. 0
B44 050912 008, Boiling Water Reactor Feedwater Nozzle Program Implementation Package, Rev. 0
B44 050912 009 Boiling Water Reactor Control Rod Drive Return Line Nozzle Program Implementation Package, Rev. 0
B44 050912 010, Boiling Water Reactor Stress Corrosion Cracking Program Implementation Package, Rev. 0
B44 050912 006, Reactor Head Closure Studs Program Implementation Package, Rev. 0
B44 050912 012, Boiling Water Reactor Vessel Internals Program Implementation Package, Rev. 0
B44 050912 013, Flow-Accelerated Corrosion Program Implementation Package, Rev. 0
B44 050912 024, Reactor Vessel Surveillance Program Implementation Package, Rev. 0
B44 050912 018, Compressed Air Monitoring Program Implementation Package, Rev. 0
B44 050912 026, Selective Leaching of Materials Program Implementation Package, Rev. 0 and draft Rev. 1
B44 050912 015, Open Cycle Cooling Water System Program Implementation Package, Rev. 0 and draft Rev. 1
B44 050912 025, One-Time Inspection Program Implementation Package, Rev. 0
B44 050912 014, Bolting Integrity Program Implementation Package, Rev. 0
B44 050912 017, Inspection of Overhead Heavy Load and Light Load Handling Systems Program Implementation Package, Rev. 0 and draft Rev. 1
B44 050912 028, ASME Section XI Subsection IWE Program Implementation Package, Rev. 0
B44 050912 029, ASME Section XI Subsection IWF Program Implementation Package, Rev. 0
B44 050912 031, Masonry Wall Program Implementation Package, Rev. 0
B44 050912 032, Structural Monitoring Program Implementation Package, Rev. 0
B44 050912 033, Inspection of Water-Control Structures Implementation Package, Rev. 0

Proposed Procedure Revisions

0-TI-new, Bus Inspection Program
EPI-0-242-new, Isolated and Non-Segregated Phase Bus
3-SI-4.11.A.1(1), Local Fire Control Panel 3-LPNL-025-0543 Unit 3 Diesel Generator Bldg Detection Operability Test, Rev. 8
MPI-0-026-INS002, Inside/Outside Loop Annual Diesel Fire Pump Inspection, Rev. 12
MPI-0-026-INS003, Inside/Outside Loop BI-Annual Diesel Fire Pump Inspection, Rev. 10

MPI-0-026-INS010, Inside/Outside Loop 6-Year Diesel Fire Pump Inspection, Rev. 8
SI-4.11.G.1.a, Visual Inspection of Fire Rated Barriers (Floors, Walls & Ceiling), Rev. 15
0-SI-4.11.G.1.a(1), Visual Inspection of Fire Wraps, Rev. 7
2-SI-4.11.G.1.a, Visual Inspection of Fire Rated Barriers, (Unit 2 Steam Tunnel Floors, Walls, & Ceilings), Rev. 1
3-SI-4.11.G.1.a, Visual Inspection of Fire Rated Barriers (Unit 3 Steam Tunnel Floors, Walls & Ceiling), Rev. 0
0-SI-4.11.G.1.c(2), Visual Inspection of Cable Tray Penetrations in Fire-rated Barriers, Rev. 12
0-SI-4.11.G.1.b(1), Visual Inspection of First Period Appendix R Fire Dampers, Rev. 8
0-SI-4.11.G.1.b(2), Visual Inspection of Second Period Appendix R Fire Dampers, Rev. 13
0-SI-4.11.G.1.b(4), Visual Inspection of Fourth Period Appendix R Fire Dampers, Rev. 11
0-SI-4.11.G.1.b(5), Visual Inspection of Fifth Period Appendix R Fire Dampers, Rev. 5
0-SI-4.11.G.1.b(6), Visual Inspection of Third Period Appendix R Fire Dampers, Rev. 5
0-SI-4.11.G.2.a, Monthly Functional Test of Fire Door Supervision Circuits, Rev. 9
0-SI-4.11.G.2.b, Fire Door Inspection, Rev. 14
3-SI-4.11.A.1(1), Local Fire Control Panel 3-lpnl-025-0543 Unit 3 Diesel Generator Bldg Detection Operability Test, Rev. 8
0-SI-4.11.G.2, Semiannual Fire Door Inspection, Rev. 20
0-SI-4.11.B.1.f(3), Diesel Driven Fire Pump Capability Test, Revision 26
0-SI-4.11.B.2.a, Diesel Driven Fire Pump Operability Test, Rev. 32
0-SI-4.11.B.2.C, Diesel Driven Fire Pump Inspection, Rev. 7
MPI-0-026-INS002, Inside/outside Loop Annual Diesel Fire Pump Inspection, Rev. 12
MPI-0-026-INS003, Inside/outside Loop Bi-annual Diesel Fire Pump Inspection, Rev. 10
MPI-0-026-INS010, Inside/outside Loop 6-year Diesel Fire Pump Inspection, Rev. 8
0-SI-4.11.B.2.b, Diesel Driven Fire Pump (Gate Structure No. 2) Fuel Oil Quality Check, Rev. 17
1/2-SI-4.11.D.1.b, Unit 1 & 2 Diesel Building Co_2 System Functional Test, Rev. 19
0-SI-4.11.D.1.b, Control Bay Co2 System Functional Test Rev. 16
3-SI-4.11.D.1.b, Unit 3 Diesel Building Co2 System Functional Test Rev. 21
0-TI-346, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting - 10 CFR 50.65 Rev. 25
LCEI-CI-C9, Lead Civil Engineer Instruction Procedure for Walkdown of Structures for Maintenance Rule Rev. 5
Fire Protection Report Volume 1
1-SI-4.6.G, Inservice Inspection Program Unit 1
2-SI-4.6.G, Inservice Inspection Program Unit 2
3-SI-4.6.G, Inservice Inspection Program Unit 3
SPP-9.1, ASME Section XI
MSI-0-001-VSL001, Reactor Vessel Disassembly and Reassembly
NEDP-23, BWR Pressure Vessel Internals Inspections (RPVII)
2-SI-3.3.1.A, ASME Section XI System Leakage Test of the Reactor Pressure Vessel and Associated Piping
3-SI-3.3.1.A, ASME Section XI System Leakage Test of the Reactor Pressure Vessel and Associated Piping
0-TI-365; Reactor Pressure Vessel Internals Inspection (RPVII) Units 1, 2, and 3
SPP-9.7, Corrosion Control Program

0-TI-381, Reactor Vessel Test Specimens
0-TI-140, Monitoring Program for Flow-Accelerated Corrosion
2-OI-3, Reactor Feedwater System
3-OI-3, Reactor Feedwater System
CI-13.1, Chemistry Program
MMDP-1, Maintenance Management System
0-TI-154, Coupons and Monitoring For Corrosion and Deposit Control
MPI-0-000-CRA001, Maintenance of Monorail Systems, Underhung Cranes and Overhead Hoist, Rev. 0
0-TI-376, ASME Section XI Containment Inservice Inspection Program Units 1, 2, and 3
0-TI-246, Inspection of Ponds, Dikes, and Channels
0-TI-412, Work Permits, Rev. 13
0-TI-XXX, One-Time Inspection Program
0-TI-XXX, One-Time Inspection of the Intake Pumping Station Concrete
2,3-TI-173, Primary Containment Inspection

Plant Drawings

31N420-1, Concrete Gate Structure No. 2 Outline, Rev. 8
31N420-2 Concrete Gate Structure No. 2 Outline, Rev. 8

Work Orders

05-714775-000, Indications of ground water inleakage
05-718912-000, Implement DCN 64849

Miscellaneous Documents

Functional Evaluation 40826, EECW Discharge Flow Path into Yard Catch Basins
Calculation CDQ030320050117, Evaluation of EECW Catch Basins, Rev 000
Functional Evaluation 41198, Safety Classification of Gate Structure No.2
Functional Evaluation 41190, Pavement Undermined on North Side of Gate Structure No. 2
BFN-50-C-7100, General Design Criteria Document, Design of Civil Structures, Rev. 15
BFN-50-C-7027, General Design Criteria Document, Condenser Circulating Water, Rev. 10
SPP-9.7, Corrosion Control Program, Rev. 8
DCN 64849A, The sheet piling for cell number 4 has locally deteriorated
Calculation CDQ0303884871, Cooling Tower System Gate Structure No. 2, Rev 03
DS-M4.2.1, Flow-Accelerated Corrosion Program Methods
BFN 50-779, Replacement of Selected Piping to Limit Susceptibility to IGSCC
BP-257, Integrated Materials Management Plan
R08 040721 718, Browns Ferry Nuclear Plant Unit 1 - Supplemental Response to Generic Letter 88-01, NRC Position on Intergranular Stress Corrosion Cracking in BWR Austenitic Stainless Steel Piping dated July 21, 2004

Problem Evaluation Reports

77263, U3 RCIC Ground Leakage
73662, EECW Catch Basin Blockage
86756, #2 Gate Structure Sinkhole
87670, Pavement Undermined on north side of Gate Structure 2
88217, Safety Classification of Gate Structure 2
89841, Selective Leaching of Materials Program Implementation Package
89836, Errors in AMP Implementation Packages
89865, License Renewal Inspection for RHRSW Suction Piping

BROWNS FERRY NUCLEAR PLANT

AGING MANAGEMENT PROGRAMS SELECTED FOR INSPECTION

Application Section - Title	New or Existing	Consistent with GALL?
B.2.1.1 - Accessible Non-Environmental Qualification Cables and Connections Inspection Program	New	Yes
B.2.1.2 - Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits Program	Existing	No
B.2.1.3 - Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program	New	Yes
B.2.1.40 - Bus Inspection Program	New	N/A
B.2.1.23 - Fire Protection Program	Existing	No
B.2.1.24 - Fire Water System Program	Existing	No
B.2.1.31 - Buried Piping and Tanks Inspection Program	Existing	Yes
B.2.1.4 - ASME Section XI Subsections IWB, IWC, and IWD Inservice Inspection Program	Existing	Yes
B.2.1.6 - Reactor Head Closure Studs Program	Existing	Yes
B.2.1.7 - Boiling Water Reactor Vessel Inside Diameter Attachment Welds Program	Existing	Yes
B.2.1.8 - Boiling Water Reactor Feedwater Nozzle Program	Existing	Yes
B.2.1.9 - Boiling Water Reactor Control Rod Drive Return Line Nozzle Program	Existing	Yes
B.2.1.10 - Boiling Water Reactor Stress Corrosion Cracking Program	Existing	Yes
B.2.1.11 - Boiling Water Reactor Penetrations Program	Existing	Yes

B.2.1.12 - Boiling Water Reactor Vessel Internals Program	Existing	Yes
B.2.1.14 - Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel Program	Existing	Yes
B.2.1.15 - Flow-Accelerated Corrosion Program	Existing	Yes
B.2.1.28 - Reactor Vessel Surveillance Program	Existing	Yes
B.2.1.16 - Bolting Integrity Program	Existing	No
B.2.1.17 - Open-Cycle Cooling Water Program	Existing	Yes
B.2.1.20 - Inspection of Overhead Heavy Load and Light Load Handling Systems Program	Existing	No
B.2.1.21 Compressed Air Monitoring Program	Existing	Yes
B.2.1.29 - One-Time Inspection Program	New	Yes
B.2.1.30 - Selective Leaching of Materials Program	New	Yes
B.2.1.32 - ASME Section XI Subsection IWE Program	Existing	No
B.2.1.33 - ASME Section XI Subsection IWF Program	Existing	No
B.2.1.35 - Masonry Wall Program	Existing	Yes
B.2.1.36 - Structures Monitoring Program	Existing	Yes
B.2.1.37 - Inspection of Water-Control Structures Program	Existing	Yes

LIST OF ACRONYMS USED

AMP	Aging Management Program
BFN	Browns Ferry Nuclear Plant
BWR	Boiling Water Reactor
CAP	Corrective Action Program
CLB	Current Licensing Basis
EDMS	Electronic Document Management System
EECW	Emergency Equipment Cooling Water System
EQ	Environmental Qualification Program
FAC	Flow Assisted Corrosion
FP	Fire Protection
GALL	Generic Aging Lessons Learned
GL	Generic Letter
HPFP	High Pressure Fire Protection
IGSCC	Intergranular Stress Corrosion Cracking
IPS	Intake Pumping Station
ISI	Inservice Inspection
ISP	Integrated Surveillance Program
LR	License Renewal
LRA	License Renewal Application
NDE	Non Destructive Examination
NRR	NRC Office of Nuclear Reactor Regulation
OCCW	Open Cycle Cooling Water
PER	Problem Evaluation Report
RAI	Request for Additional Information
RCS	Reactor Coolant System
RG	Regulatory Guide
RHR	Residual Heat Removal System
RHRSW	Residual Heat Removal Service Water System
RV	Reactor Vessel
SI	Surveillance Instruction
SMP	Structures Monitoring Program
SR	Safety Related
SCC	Stress Corrosion Cracking
SSC	Systems, Structures, and Components
TI	Technical Instruction
TLAA	Time Limited Aging Analysis
UFSAR	Updated Final Safety Analysis Report