

March 7, 2006

10 CFR 54

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Mail Stop: OWFN P1-35  
Washington, D.C. 20555-0001

Gentlemen:

In the Matter of	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

**BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 1, 2, AND 3 -  
LICENSE RENEWAL APPLICATION (LRA) - SUPPLEMENTAL INFORMATION  
FOR THE UNIT 1 PERIODIC INSPECTION (TAC NOS. MC1704, MC1705,  
AND MC1706)**

By letter dated December 31, 2003, TVA submitted, for NRC review, an application pursuant to 10 CFR 54, to renew the operating licenses for the Browns Ferry Nuclear Plant, Units 1, 2, and 3. As part of its review of TVA's LRA, the NRC staff, through an informal request on March 1, 2006, requested supplemental information for the Unit 1 Periodic Inspection Program.

The enclosures to this letter contain revisions to the Unit 1 Periodic Inspection Program information contained in TVA's November 16, 2005, December 20, 2005, and January 31, 2006, letters.

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The revised Unit 1 Periodic Inspection Program does not take credit for the restart inspections. New baseline inspections will be performed for the program prior to Unit 1 restart. This is to ensure subsequent inspections can be accurately repeated at the same locations.

Enclosure 5 contains a list of the systems which are included in the Unit 1 Periodic Inspection Program.

The enclosures to this letter contain the following information:

- Enclosure 1:  
This enclosure revises the UFSAR description, A.2.4, of the Unit 1 Periodic Inspection contained in Attachment 1 of Enclosure 2 of TVA's November 16, 2005 letter.
- Enclosure 2:  
This enclosure revises the Unit 1 Periodic Inspection Program description, B.2.1.42, contained in Enclosure 2 of TVA's December 20, 2005 letter.
- Enclosure 3:  
This enclosure revises the Unit 1 Periodic Inspection Program Table 3 information provided in the January 31, 2006 Annual Update letter.
- Enclosure 4:  
This enclosure provides the Unit 1 Periodic Inspection Program Table 3 information for the additional systems added to the sampling population.
- Enclosure 5:  
This enclosure provides a list of the systems which are included in the Unit 1 Periodic Inspection Program.

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If you have any questions regarding this information,  
please contact Bill Crouch, Browns Ferry Manager of  
Licensing and Industry Affairs, at (256) 729-2636.

I declare under penalty of perjury that the foregoing is  
true and correct. Executed on this 7<sup>th</sup> day of March, 2006.

Sincerely,

Original signed by:

Brian O'Grady

cc: See page 4.

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Enclosures

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Enclosure

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ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY  
BROWNS FERRY NUCLEAR PLANT (BFN)  
UNITS 1, 2, AND 3  
LICENSE RENEWAL APPLICATION (LRA)

SUPPLEMENTAL INFORMATION FOR THE UNIT 1  
PERIODIC INSPECTION PROGRAM

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(SEE ATTACHED)

## **ENCLOSURE 1**

### **TENNESSEE VALLEY AUTHORITY BROWNS FERRY NUCLEAR PLANT (BFN) UNITS 1, 2, AND 3 LICENSE RENEWAL APPLICATION (LRA)**

#### **SUPPLEMENTAL INFORMATION FOR THE UNIT 1 PERIODIC INSPECTION PROGRAM**

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By letter dated December 31, 2003, TVA submitted, for NRC review, an application pursuant to 10 CFR 54, to renew the operating licenses for the Browns Ferry Nuclear Plant, Units 1, 2, and 3. As part of its review of TVA's LRA, the NRC staff, through an informal request on March 1, 2006, requested supplemental information on the Unit 1 Periodic Inspection Program.

This enclosure revises the UFSAR description, A.2.4, of the Unit 1 Periodic Inspection contained in Attachment 1 of Enclosure 2 of TVA's November 16, 2005, letter.

Appendices A.2.4 and B.2.1.42 were revised to address several concerns. The program has been revised to select inspection locations from areas where degradation would be expected as well as areas where degradation would not be expected. Previously the location of the inspections was based upon identifying areas where water may have accumulated if the layup process was not successful (i.e., low places) or where engineering judgment indicated that service induced wear may have occurred. The revised program now includes other areas where unacceptable degradation would not be expected.

The program was revised to use NUREG-1475. The sample size and acceptance for the 95/95 assurance criterion will be based on NUREG-1475.

Welds were originally included in the program. After further review it was determined that the weld examinations listed in the May 18, 2005, letter were re-baseline inspections performed to support the Inservice Inspection (ISI) Program. The ISI Program is utilized to obtain data through nondestructive examinations (NDE) required by ASME Section XI. The NDE results are used to verify structural integrity of the subject components and their acceptability for continued service. Since these welds are included in the ISI program, including them in the Unit 1 Periodic Inspection Program is not considered necessary. A selection of welds from the systems not covered by



ASME Section XI will be included in the program. TVA will perform ultrasonic thickness inspections to identify metal loss.

#### **A.2.4 Unit 1 Periodic Inspection Program**

The Unit 1 Periodic Inspection Program is a new program that performs periodic inspections of the non-replaced piping/fittings that were not in service supporting operation of Units 2 and 3 following the extended Unit 1 outage to verify that no latent aging effects are occurring, and to correct degraded conditions prior to loss of function.

The piping in the program is carbon/low-alloy or stainless steel that: 1) was exposed to air, treated water or raw water during the extended Unit 1 shutdown; and 2) will be exposed to treated water or raw water during normal operation. The inspection locations will be selected from non-replaced piping which is in-scope for license renewal and will include areas where degradation would be expected as well as areas where degradation would not be expected. The sample selected for periodic inspection will be based on a 95/95 confidence level on a common material and environment bases. The sample size for the 95/95 assurance criterion for the common material and environment groupings will be based on NUREG-1475 as described in Chapter 21 which is based on a large or infinite lot size.

The initial sample, once selected, will be utilized in subsequent inspections. The initial baseline inspection of the sample locations will be performed prior to restart. The first Unit 1 periodic inspection of all sample locations will be performed after Unit 1 is returned to operation but prior to the end of the current operating period. The second periodic inspection of all sample locations will be completed within the first ten years of the period of extended operation. The inspection frequency is re-evaluated each time the inspection is performed and can be changed based on the trend of the results. The inspections will continue until the trend of the results provides a basis to discontinue the inspections. However, as a minimum, periodic inspections of all selected sample locations must be performed: 1) after Unit 1 is returned to operation but prior to the end of the current operating period; and 2) within the first ten years of the period of extended operation.

The inspection techniques utilized evaluate internal conditions that are sensitive to the presence of unacceptable conditions including wear, erosion, and corrosion (including crevice corrosion) if present. If unacceptable degradation is detected in any sample location, the unacceptable degradation will be evaluated and dispositioned using the Corrective Action Program.

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY  
BROWNS FERRY NUCLEAR PLANT (BFN)  
UNITS 1, 2, AND 3  
LICENSE RENEWAL APPLICATION (LRA)

SUPPLEMENTAL INFORMATION FOR THE UNIT 1  
PERIODIC INSPECTION PROGRAM

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(SEE ATTACHED)

## ENCLOSURE 2

**TENNESSEE VALLEY AUTHORITY  
BROWNS FERRY NUCLEAR PLANT (BFN)  
UNITS 1, 2, AND 3  
LICENSE RENEWAL APPLICATION (LRA)**

**SUPPLEMENTAL INFORMATION FOR THE UNIT 1  
PERIODIC INSPECTION PROGRAM**

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By letter dated December 31, 2003, TVA submitted, for NRC review, an application pursuant to 10 CFR 54, to renew the operating licenses for the Browns Ferry Nuclear Plant, Units 1, 2, and 3. As part of its review of TVA's LRA, the NRC staff, through an informal request on March 1, 2006, requested additional clarifications on the Unit 1 Periodic Inspection Program.

This enclosure revises the Unit 1 Periodic Inspection Program description, B.2.1.42, contained in Enclosure 2 of TVA's December 20, 2005 letter.

See Enclosure 1 of for discussion of changes made to A.2.4 and B.2.1.42.

#### **B.2.1.42 Unit 1 Periodic Inspection Program**

The Unit 1 Periodic Inspection Program is a new program that performs periodic inspections to verify that no latent aging effects are occurring and to correct degraded conditions prior to loss of function.

#### **Aging Management Program Elements**

The requirements of the Unit 1 Periodic Inspection Program are described below along with an evaluation of the program demonstrating compliance with the program elements of Appendix A of NUREG-1800.

#### **Element 1 - Scope of Program**

1. The specific program necessary for license renewal should be identified. The scope of the program should include the specific structures and components of which the program manages the aging.

#### **BFN Description and Evaluation for Element 1**

The Unit 1 Periodic Inspection Program provides periodic monitoring of the Unit 1 non-replaced piping/fittings in systems that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3. The piping in the program is carbon/low-alloy or stainless steel that: 1) was exposed to air, treated water or raw water during the extended Unit 1 shutdown; and 2) will be exposed to treated water or raw water during normal operation. The inspection locations will be selected from non-replaced piping which is in-scope for license renewal and will include areas where degradation would be expected as well as areas where degradation would not be expected.

For the areas where degradation would be expected, the Unit 1 Periodic Inspection Program will select inspection locations from piping examined and not replaced as described in the TVA Letter to the U.S. Nuclear Regulatory Commission, Document Control Desk, "Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - License Renewal Application (LRA) - Response to NRC Request for Additional Information Concerning the Unit 1 Lay-up Program (TAC Nos. MC1704, MC1705, and MC1706)" dated May 18, 2005. As stated in TVA Response to Follow-Up to RAI 3.0-9 LP contained in this letter, the location of the targeted restart inspection was based upon identifying areas where water may have accumulated if the layup process was not successful (i.e., low places) or where engineering judgment indicated that service

induced wear may have occurred. The May 18, 2005 letter included piping in the following systems:

- Main Steam System (001)
- Feedwater System (003)
- Residual Heat Removal Service Water System (023) - A&C loops in the tunnels
- Raw Cooling Water System (024)
- Fire Protection System (026)
- Emergency Equipment Cooling Water System (067)
- Reactor Building Closed Cooling Water System (070)
- Reactor Core Isolation System (071)
- High Pressure Core Injection System (073)
- Residual Heat Removal System (074)
- Core Spray System (075)
- Control Rod Drive System (085)

For the areas where degradation would not be expected, the Unit 1 Periodic Inspection Program will select inspection locations from the above systems which were not inspected because degradation was not expected as well as locations from other water systems containing Unit 1 non-replaced piping. These other systems include:

- Condensate and Demineralized Water System (002)
- Heater Drains and Vents System (006)
- Turbine Drains and Miscellaneous Piping System (008)
- Reactor Vessel Vents and Drains System (010)
- Gland Seal System (037)
- Sampling and Water Quality System (043)
- Standby Liquid Control System (063)
- Containment System (064)
- Reactor Recirculation System (068)
- Reactor Water Cleanup System (069)
- Containment Inerting System (076)
- Radwaste System (077)
- Radiation Monitoring System (090)

At least 20% of the inspection locations will contain areas where degradation would not be expected.

## **Element 2 - Preventive Actions**

1. The activities for prevention and mitigation programs should be described. These actions should mitigate or prevent aging degradation.
2. For condition or performance monitoring programs, they do not rely on preventive actions and thus, this information need not be provided. More than one type of aging management program may be implemented to ensure that aging effects are managed.

## **BFN Description and Evaluation for Element 2**

The Unit 1 Periodic Inspection Program is a condition monitoring program and does not include preventive elements.

## **Element 3 - Parameters Monitored or Inspected**

1. The parameters to be monitored or inspected should be identified and linked to the degradation of the particular structure and component intended function(s).
2. For a condition monitoring program, the parameter monitored or inspected should detect the presence and extent of aging effects. Some examples are measurements of wall thickness and detection and sizing of cracks.
3. For a performance monitoring program, a link should be established between the degradation of the particular structure or component intended function(s) and the parameter(s) being monitored. An example of linking the degradation of a passive component intended function with the performance being monitored is linking the fouling of heat exchanger tubes with the heat transfer intended function. This could be monitored by periodic heat balances. Since this example deals only with one intended function of the tubes, heat transfer, additional programs may be necessary to manage other intended function(s) of the tubes, such as pressure boundary.

A performance monitoring program may not ensure the structure and component intended function(s) without linking the degradation of passive intended functions with the performance being monitored. For example, a periodic diesel generator test alone would not provide assurance that the diesel will start and run properly under all applicable design conditions. While the test verifies that the diesel will perform if all the support systems function, it provides little information related to the material condition of the

support components and their ability to withstand DBE loads. Thus, a DBE, such as a seismic event, could cause the diesel supports, such as the diesel embedment plate anchors or the fuel oil tank, to fail if the effects of aging on these components are not managed during the period of extended operation.

4. For prevention and mitigation programs, the parameters monitored should be the specific parameters being controlled to achieve prevention or mitigation of aging effects. An example is the coolant oxygen level that is being controlled in a water chemistry program to mitigate pipe cracking.

### **BFN Description and Evaluation for Element 3**

The Unit 1 Periodic Inspection Program is a condition monitoring program; thus, only the first two items for Element 3 are applicable.

The Unit 1 Periodic Inspection Program is not a stand alone aging management program. The program provides an additional level of assurance to verify that no latent aging effects are occurring in the BFN Unit 1 components that were not replaced as part of the Unit 1 restart program. The normal aging management programs for the Unit 1 non-replaced components are the same as the programs used for Units 2 and 3. The normal aging management programs provide control and prevention of component degradation, as well as monitoring to confirm the program's effectiveness. The monitoring and trending performed by the Unit 1 Periodic Inspection Program is in addition to the monitoring performed by the normal aging management programs.

The non-replaced components monitored by the Unit 1 Periodic Inspection Program have three internal environments during normal operation: raw water, treated water, and closed cooling (treated) water. Raw water is the most corrosive environment of these environments. The Open-Cycle Cooling Water System Program manages components in the raw water environment and includes monitoring for program effectiveness as a part of the program. For example, the program includes internal inspections of the raw water side of the heat exchangers and cleaning /eddy current testing of the heat exchanger tubes. These are scheduled, on-going examinations that will be performed throughout the period of extended operation. In addition, procedure 0-TI-389, Raw Water Fouling and Corrosion Control, states "Visual inspections shall be performed by a system engineer, or the maintenance shift manager if a system engineer is not available. ... Visual inspection on GL 89-13 components must be performed by a system engineer. ... Visual inspections shall be completed



before performing any cleaning, testing, maintenance, or modifications."

Treated water and closed cooling (treated) water environments are less corrosive than raw water; however, they both have prevention and effectiveness monitoring identified as a part of their aging management programs. Treated water systems, such as Feedwater and Main Steam utilize the One-Time Inspection Program to confirm the effectiveness of the Chemistry Control Program. The One-Time Inspection Program includes a variety of inspections to ensure effectiveness, including visual inspections when components are opened. For closed cooling water systems, the Closed-Cooling Water System Program includes testing and inspection in accordance with EPRI TR-107396 to evaluate system and component performance.

For the Unit 1 Periodic Inspection Program, the selected sample will be examined by UT thickness for piping and welds not covered by ASME Section XI. The inspection techniques utilized evaluate internal conditions are sensitive to the presence of unacceptable conditions including wear, erosion, and corrosion (including crevice corrosion) if present.

The sample selected for periodic inspection will be based on a 95/95 confidence level on a common material and environment bases. The sample size for the 95/95 assurance criterion for the common material and environment groupings will be based on NUREG-1475 as described in Chapter 21 which is based on a large or infinite lot size. The samples will be selected from the systems listed in Element 1 and will be distributed among the various system locations that are grouped based on a common material and environment. For a large or infinite lot size, NUREG-1475 requires a minimum sample size of 59 locations for each material and environment combination. To meet the 95/95 assurance criterion for a sample size of 59, all inspection locations must meet the acceptance criteria. If any inspection location fails to meet the acceptance criteria, the entire material and environment combination sampled is considered suspect and the unacceptable degradation must be evaluated and dispositioned using the Corrective Action Program. If a criterion other than 95/95 is utilized, the deviation will be justified and NRC approval will be requested prior to implementing a differing criteria.

Samples will be grouped by the following material types and environments:

- Stainless Steel/Treated Water
- Stainless Steel/Raw Water
- Carbon Steel/Treated Water
- Carbon Steel/Closed Cooling (Treated) Water
- Carbon Steel/Raw Water

The material/environment groupings defined above are consistent with the material/environment groupings used in GALL for loss of material aging effects.

#### **Element 4 - Detection of Aging Effects**

1. Detection of aging effects should occur before there is a loss of the structure and component intended function(s). The parameters to be monitored or inspected should be appropriate to ensure that the structure and component intended function(s) will be adequately maintained for license renewal under all CLB design conditions. This includes aspects such as method or technique (e.g., visual, volumetric, surface inspection), frequency, sample size, data collection and timing of new/one-time inspections to ensure timely detection of aging effects. Provide information that links the parameters to be monitored or inspected to the aging effects being managed.
2. Nuclear power plants are licensed based on redundancy, diversity, and defense-in-depth principles. A degraded or failed component reduces the reliability of the system, challenges safety systems, and contributes to plant risk. Thus, the effects of aging on a structure or component should be managed to ensure its availability to perform its intended function(s) as designed when called upon. In this way, all system level intended function(s), including redundancy, diversity, and defense-in-depth consistent with the plant's CLB, would be maintained for license renewal. A program based solely on detecting structure and component failure should not be considered as an effective aging management program for license renewal.
3. This program element describes "when," "where," and "how" program data are collected (i.e., all aspects of activities to collect data as part of the program).

4. The method or technique and frequency may be linked to plant-specific or industry-wide operating experience. Provide justification, including codes and standards referenced, that the technique and frequency are adequate to detect the aging effects before a loss of SC intended function. A program based solely on detecting SC failures is not considered an effective aging management program.
5. When sampling is used to inspect a group of SCs, provide the basis for the inspection population and sample size. The inspection population should be based on such aspects of the SCs as a similarity of materials of construction, fabrication, procurement, design, installation, operating environment, or aging effects. The sample size should be based on such aspects of the SCs as the specific aging effect, location, existing technical information, system and structure design, materials of construction, service environment, or previous failure history. The samples should be biased toward locations most susceptible to the specific aging effect of concern in the period of extended operation. Provisions should also be included on expanding the sample size when degradation is detected in the initial sample.

#### **BFN Description and Evaluation for Element 4**

The Unit 1 Periodic Inspection Program is a plant unique inspection and trending program that is not covered by industry codes or standards. To allow trending, the periodic inspection program methodologies will be consistent with those utilized for the baseline inspections performed prior to restart.

As discussed in Element 3, the Unit 1 Periodic Inspection Program is not a stand alone aging management program. The program provides an additional level of assurance to verify that no latent aging effects are occurring in the BFN Unit 1 components that were not replaced as part of the Unit 1 restart program. The normal aging management programs for the Unit 1 non-replaced components are the same as the programs used for Units 2 and 3. The examination and trending performed by the Unit 1 Periodic Inspection Program supplements the normal aging management programs.

Ultrasonic thickness measurements will be used for the baseline inspections.

The BFN Description and Evaluation for Element 3 discusses the sample selection and Element 5 discusses the frequency of the periodic inspections. The inspection techniques utilized evaluate internal conditions that are sensitive to the presence

of unacceptable conditions including wear, erosion, and corrosion (including crevice corrosion) if present.

The baseline inspections will be performed on the selected sample locations prior to restart to ensure accurate repeatable baseline values are available. These sample locations will be identified on controlled drawings contained in the Technical Instruction for the periodic inspection program.

If unacceptable degradation is detected in any sample location, the entire material and environment combination sampled is considered suspect and must be evaluated and dispositioned using the Corrective Action Program discussed in Elements 7, 8 and 9.

#### **Element 5 - Monitoring and Trending**

1. Monitoring and trending activities should be described, and they should provide predictability of the extent of degradation and thus effect timely corrective or mitigative actions. Plant specific and/or industry-wide operating experience may be considered in evaluating the appropriateness of the technique and frequency.
2. This program element describes "how" the data collected are evaluated and may also include trending for a forward look. This includes an evaluation of the results against the acceptance criteria and a prediction regarding the rate of degradation in order to confirm that timing of the next scheduled inspection will occur before a loss of SC intended function. Although aging indicators may be quantitative or qualitative, aging indicators should be quantified, to the extent possible, to allow trending. The parameter or indicator trended should be described. The methodology for analyzing the inspection or test results against the acceptance criteria should be described. Trending is a comparison of the current monitoring results with previous monitoring results in order to make predictions for the future.

#### **BFN Description and Evaluation for Element 5**

The baseline inspections will be performed on the selected sample locations prior to restart. The first Unit 1 periodic inspection of all sample locations will be performed after Unit 1 is returned to operation but prior to the end of the current operating period. The second periodic inspection of all sample locations will be completed within the first ten years of the period of extended operation. The inspection frequency is re-evaluated each time the inspection is performed and can be

changed based on the trend of the results. The inspections will continue until the trend of the results provides a basis to discontinue the inspections. However, as a minimum, periodic inspections of all selected sample locations must be performed: 1) after Unit 1 is returned to operation but prior to the end of the current operating period; and 2) within the first ten years of the period of extended operation.

#### **Element 6 - Acceptance Criteria**

1. The acceptance criteria of the program and its basis should be described. The acceptance criteria, against which the need for corrective actions will be evaluated, should ensure that the structure and component intended function(s) are maintained under all CLB design conditions during the period of extended operation. The program should include a methodology for analyzing the results against applicable acceptance criteria. For example, carbon steel pipe wall thinning may occur under certain conditions due to erosion-corrosion. An aging management program for erosion-corrosion may consist of periodically measuring the pipe wall thickness and comparing that to a specific minimum wall acceptance criterion. Corrective action is taken, such as piping replacement, before reaching this acceptance criterion. This piping may be designed for thermal, pressure, NUREG-1800 A.1-6 April 2001 deadweight, seismic, and other loads, and this acceptance criterion must be appropriate to ensure that the thinned piping would be able to carry these CLB design loads. This acceptance criterion should provide for timely corrective action before loss of intended function under these CLB design loads.
2. Acceptance criteria could be specific numerical values, or could consist of a discussion of the process for calculating specific numerical values of conditional acceptance criteria to ensure that the structure and component intended function(s) will be maintained under all CLB design conditions. Information from available references may be cited.
3. It is not necessary to justify any acceptance criteria taken directly from the design basis information that is included in the FSAR because that is a part of the CLB. Also, it is not necessary to discuss CLB design loads if the acceptance criteria do not permit degradation because a structure and component without degradation should continue to function as originally designed. Acceptance criteria, which do permit degradation, are based on maintaining the intended function under all CLB design loads.

4. Qualitative inspections should be performed to same predetermined criteria as quantitative inspections by personnel in accordance with ASME Code and through approved site specific programs.

#### **BFN Description and Evaluation for Element 6**

The acceptance criterion for these periodic inspections is that the pipe wall will remain above minimum design acceptable wall thickness until the next periodic inspection. The calculation for minimum design acceptable wall thickness considers stresses such as hoop, pressure, dead weight, thermal and seismic, as applicable based on the Code of Record and applicable approved code cases.

#### **Element 7 - Corrective Actions**

1. Actions to be taken when the acceptance criteria are not met should be described. Corrective actions, including root cause determination and prevention of recurrence, should be timely.
2. If corrective actions permit analysis without repair or replacement, the analysis should ensure that the structure and component intended function(s) will be maintained consistent with the CLB.

#### **BFN Description and Evaluation for Element 7**

The Corrective Action Program is administered by TVAN procedure SPP-3.1 in accordance with 10 CFR Part 50, Appendix B, and meets the conditions to be used for corrective actions, confirmation process, and administrative controls for aging management during the period of extended operation. The Corrective Action Program includes requirements for root or apparent cause determination and extent of condition determination.

#### **Element 8 - Confirmation Process**

1. The confirmation process should be described. It should ensure that preventive actions are adequate and that appropriate corrective actions have been completed and are effective.
2. The effectiveness of prevention and mitigation programs should be verified periodically. For example, in managing internal corrosion of piping, a mitigation program (water chemistry) may be used to minimize susceptibility to corrosion. However, it may also be necessary to have a

condition monitoring program (ultrasonic inspection) to verify that corrosion is indeed insignificant.

3. When corrective actions are necessary, there should be follow-up activities to confirm that the corrective actions were completed, the root cause determination was performed, and recurrence is prevented.

#### **BFN Description and Evaluation for Element 8**

The Unit 1 Periodic Inspection Program is a condition monitoring program; thus, item 2 for Element 8 is not applicable.

See BFN Description and Evaluation for Element 7 for the remainder of Element 8.

#### **Element 9 - Administrative Controls**

1. The administrative controls of the program should be described. They should provide a formal review and approval process.
2. Any aging management programs to be relied on for license renewal should have regulatory and administrative controls. That is the basis for 10 CFR 54.21(d) to require that the FSAR supplement includes a summary description of the programs and activities for managing the effects of aging for license renewal. Thus, any informal programs relied on to manage aging for license renewal must be administratively controlled and included in the FSAR supplement.

#### **BFN Description and Evaluation for Element 9**

1. See BFN Description and Evaluation for Element 7.
2. The proposed UFSAR description of the Unit 1 Periodic Inspection Program is provided in Enclosure 1 of this letter.

#### **Element 10 - Operating Experience**

1. Operating experience with existing programs should be discussed. The operating experience of aging management programs, including past corrective actions resulting in program enhancements or additional programs, should be considered. A past failure would not necessarily invalidate an aging management program because the feedback from operating experience should have resulted in appropriate program enhancements or new programs. This information can show where an existing program has succeeded and where it has failed (if at all) in intercepting aging degradation in a

timely manner. This information should provide objective evidence to support the conclusion that the effects of aging will be managed adequately so that the structure and component intended function(s) will be maintained during the period of extended operation.

2. An applicant may have to commit to providing operating experience in the future for new programs to confirm their effectiveness.

### **BFN Description and Evaluation for Element 10**

The Unit 1 Periodic Inspection Program is a new program that will monitor the operating condition of Unit 1 components that were not replaced during the Unit 1 restart. Therefore, there is no applicable operating experience for this inspection program.

Relevant Unit 2/3 operating experience is passed on to Unit 1. The TVA Corrective Action Program (CAP) applies to all TVA organizations involved in nuclear power activities. This program is not unit specific and, as applicable, a condition identified at any BFN unit is reviewed for generic implications potentially applicable to the other units. TVA also has an administrative procedure for the review and dissemination of operating experience obtained from both external and internal sources. This procedure requires screening of such information for potential BFN applicability. This information is received from sources such as NRC Information Notices, Institute of Nuclear Power Operations, NSSS vendor reports/ notices and in-house operating experience. If an item is determined to be applicable to BFN, then the information is addressed in the CAP. Thus, these programs help ensure that relevant operating experience (OE) is applied to all three units.

The trending data developed in accordance with Element 5 demonstrates the effectiveness of the Unit 1 Periodic Inspection Program during the period of extended operation.

### **Conclusion**

The Unit 1 Periodic Inspection Program is a new program identified to monitor system piping that did not require replacement following the extended Unit 1 outage. The Unit 1 Periodic Inspection Program will verify that no latent aging effects are occurring. New baseline inspections will be performed for the program prior to Unit 1 restart. The first Unit 1 periodic inspection of all sample locations will be performed after Unit 1 is returned to operation and prior to the



end of the current operating period. The second periodic inspection of all sample locations will be completed within the first ten years of the period of extended operation. The inspection frequency is re-evaluated each time the inspection is performed and can be changed based on the trend of the results. The inspections will continue until the trend of the results provides a basis to discontinue the inspections.

ENCLOSURE 3

TENNESSEE VALLEY AUTHORITY  
BROWNS FERRY NUCLEAR PLANT (BFN)  
UNITS 1, 2, AND 3  
LICENSE RENEWAL APPLICATION (LRA)

SUPPLEMENTAL INFORMATION FOR THE UNIT 1  
PERIODIC INSPECTION PROGRAM

---

(SEE ATTACHED)

**ENCLOSURE 3**

**TENNESSEE VALLEY AUTHORITY  
BROWNS FERRY NUCLEAR PLANT (BFN)  
UNITS 1, 2, AND 3  
LICENSE RENEWAL APPLICATION (LRA)**

**SUPPLEMENTAL INFORMATION FOR THE UNIT 1  
PERIODIC INSPECTION PROGRAM**

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By letter dated December 31, 2003, TVA submitted, for NRC review, an application pursuant to 10 CFR 54, to renew the operating licenses for the Browns Ferry Nuclear Plant, Units 1, 2, and 3. As part of its review of TVA's LRA, the NRC staff, through an informal request on March 1, 2006, requested supplemental information on the Unit 1 Periodic Inspection Program.

This enclosure revises the Unit 1 Periodic Inspection Program Table 3 information provided in the January 31, 2006 Annual Update letter.

The Table 3 information provided in the January 31, 2006, Annual Update letter should be revised as follows to be consistent with the revisions made to the Unit 1 Periodic Program contained in this letter.

#### **MAIN STEAM SYSTEM (01)**

In Table 3.4.2.1: Main Steam System (01) - Summary of Aging Management Evaluation:

- Revise Note 9 to read: "The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage."
- For Component Type Fittings add "10" to the Notes column.
- Add Note 10 to read: "Only butt welded fittings are included in the Unit 1 Periodic Inspection Program."

#### **FEEDWATER SYSTEM (03)**

In Table 3.4.2.3: Feedwater System (03) - Summary of Aging Management Evaluation:

- Revise Note 7 to read: "The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage."
- For Component Type Fittings add "8" to the Notes column.
- Add Note 8 to read: "Only butt welded fittings are included in the Unit 1 Periodic Inspection Program."

#### **RESIDUAL HEAT REMOVAL SERVICE WATER SYSTEM (23)**

In Table 3.3.2.3: Residual Heat Removal Service Water System (23) - Summary of Aging Management Evaluation:

- Revise Note 9 to read: "The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage."

- For Component Type Fittings add "10" to the Notes column.
- Add Note 10 to read: "Only butt welded fittings are included in the Unit 1 Periodic Inspection Program."

#### **RAW COOLING WATER SYSTEM (24)**

In Table 3.3.2.4: Raw Cooling Water System (24) - Summary of Aging Management Evaluation:

- Revise Note 10 to read: "The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage."
- For Component Type Fittings add "11" to the Notes column.
- Add Note 11 to read: "Only butt welded fittings are included in the Unit 1 Periodic Inspection Program."

#### **HIGH PRESSURE FIRE PROTECTION SYSTEM (26)**

In Table 3.3.2.6: High Pressure Fire Protection System (26) - Summary of Aging Management Evaluation:

- Revise Note 9 to read: "The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage."
- For Component Type Fittings add "10" to the Notes column.
- Add Note 10 to read: "Only butt welded fittings are included in the Unit 1 Periodic Inspection Program."

#### **EMERGENCY EQUIPMENT COOLING WATER SYSTEM (67)**

In Table 3.3.2.20: Emergency Equipment Cooling Water System (67) - Summary of Aging Management Evaluation:

- Revise Note 5 to read: "The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status

or supporting operation of Units 2 and 3 following the extended Unit 1 outage."

- For Component Type Fittings add "6" to the Notes column.
- Add Note 6 to read: "Only butt welded fittings are included in the Unit 1 Periodic Inspection Program."

#### **REACTOR BUILDING CLOSED COOLING WATER SYSTEM (70)**

In Table 3.3.2.22: Reactor Building Closed Cooling Water System (70) - Summary of Aging Management Evaluation:

- Revise Note 5 to read: "The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage."
- For Component Type Fittings add "6" to the Notes column.
- Add Note 6 to read: "Only butt welded fittings are included in the Unit 1 Periodic Inspection Program."

#### **REACTOR CORE ISOLATION COOLING SYSTEM (71)**

In Table 3.3.2.23: Reactor Core Isolation Cooling System (71) - Summary of Aging Management Evaluation:

- Revise Note 8 to read: "The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage."
- For Component Type Fittings add "9" to the Notes column.
- Add Note 9 to read: "Only butt welded fittings are included in the Unit 1 Periodic Inspection Program."

#### **HIGH PRESSURE COOLANT INJECTION SYSTEM (73)**

In Table 3.2.2.3: High Pressure Coolant Injection System (73) - Summary of Aging Management Evaluation:

- Revise Note 9 to read: "The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that

were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage."

- For Component Type Fittings add "10" to the Notes column.
- Add Note 10 to read: "Only butt welded fittings are included in the Unit 1 Periodic Inspection Program."

#### **RESIDUAL HEAT REMOVAL SYSTEM (74)**

In Table 3.2.2.4: Residual Heat Removal System (74) - Summary of Aging Management Evaluation:

- Revise Note 9 to read: "The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage."
- For Component Type Fittings add "9" to the Notes column.
- Add Note 9 to read: "Only butt welded fittings are included in the Unit 1 Periodic Inspection Program."

#### **CORE SPRAY SYSTEM (75)**

In Table 3.2.2.5: Core Spray System (75) - Summary of Aging Management Evaluation:

- Revise Note 7 to read: "The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage."
- For Component Type Fittings add "8" to the Notes column.
- Add Note 8 to read: "Only butt welded fittings are included in the Unit 1 Periodic Inspection Program."

#### **CONTROL ROD DRIVE SYSTEM (85)**

In Table 3.3.2.29: Control Rod Drive System (85) - Summary of Aging Management Evaluation:

- Revise Note 8 to read: "The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that

were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage."

- For Component Type Fittings add "9" to the Notes column.
- Add Note 9 to read: "Only butt welded fittings are included in the Unit 1 Periodic Inspection Program."



ENCLOSURE 4

TENNESSEE VALLEY AUTHORITY  
BROWNS FERRY NUCLEAR PLANT (BFN)  
UNITS 1, 2, AND 3  
LICENSE RENEWAL APPLICATION (LRA)

SUPPLEMENTAL INFORMATION FOR THE UNIT 1  
PERIODIC INSPECTION PROGRAM

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(SEE ATTACHED)

## **ENCLOSURE 4**

### **TENNESSEE VALLEY AUTHORITY BROWNS FERRY NUCLEAR PLANT (BFN) UNITS 1, 2, AND 3 LICENSE RENEWAL APPLICATION (LRA)**

#### **SUPPLEMENTAL INFORMATION FOR THE UNIT 1 PERIODIC INSPECTION PROGRAM**

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By letter dated December 31, 2003, TVA submitted, for NRC review, an application pursuant to 10 CFR 54, to renew the operating licenses for the Browns Ferry Nuclear Plant, Units 1, 2, and 3. As part of its review of TVA's LRA, the NRC staff, through an informal request on March 1, 2006, requested supplemental information on the Unit 1 Periodic Inspection Program.

This enclosure provides the Unit 1 Periodic Inspection Program Table 3 information to define the material/environment of the additional systems added to the sampling population. The additional systems are:

- Condensate and Demineralized Water System (002)
- Heater Drains and Vents System (006)
- Turbine Drains and Miscellaneous Piping System (008)
- Reactor Vessel Vents and Drains System (010)
- Gland Seal System (037)
- Sampling and Water Quality System (043)
- Standby Liquid Control System (063)
- Containment System (064)
- Reactor Recirculation System (068)
- Reactor Water Cleanup System (069)
- Containment Inerting System (076)
- Radwaste System (077)
- Radiation Monitoring System (090)

### **Condensate and Demineralized Water System (002)**

The following line items and Notes are added to Table 3.4.2.2 for the Unit 1 Periodic Inspection Program:

**Table 3.4.2.2: Condensate and Demineralized Water System (002) - Summary of Aging Management Evaluation**

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG - 1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Fittings (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 6, 7
Fittings (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 6, 7
Piping (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 6
Piping (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 6

**Table Notes:**

**Industry Standard Notes:**

Note E: Consistent with NUREG-1801 item for material, environment, and aging effect, a different AMP is credited.

**Plant Specific Notes:**

6. The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage.
7. Only butt welded fittings are included in the Unit 1 Periodic Inspection Program.

### **Heater Drains and Vents System (006)**

The following line items and Notes are added to Table 3.4.2.4 for the Unit 1 Periodic Inspection Program:

**Table 3.4.2.4: Heater Drains and Vents System (006) - Summary of Aging Management Evaluation**

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG - 1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Fittings (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 4, 5
Piping (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 4

#### **Table Notes:**

#### **Industry Standard Notes:**

Note E: Consistent with NUREG-1801 item for material, environment, and aging effect, a different AMP is credited.

#### **Plant Specific Notes:**

4. The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage.
5. Only butt welded fittings are included in the Unit 1 Periodic Inspection Program.

### **Turbine Drains and Miscellaneous Piping System (008)**

The following line items and Notes are added to Table 3.4.2.5 for the Unit 1 Periodic Inspection Program:

**Table 3.4.2.5: Turbine Drains and Miscellaneous Piping System (008) - Summary of Aging Management Evaluation**

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG - 1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Fittings (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 4, 5
Piping (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 4

#### **Table Notes:**

#### **Industry Standard Notes:**

Note E: Consistent with NUREG-1801 item for material, environment, and aging effect, a different AMP is credited.

#### **Plant Specific Notes:**

4. The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage.
5. Only butt welded fittings are included in the Unit 1 Periodic Inspection Program.

### **Reactor Vessel Vents and Drains System (010)**

The following line items and Notes are added to Table 3.1.2.3 for the Unit 1 Periodic Inspection Program:

**Table 3.1.2.3: Reactor Vessel Vents and Drains System (010) - Summary of Aging Management Evaluation**

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG-1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Fittings (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7, 8
Fittings (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7, 8
Piping (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7
Piping (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7

**Table Notes:**

**Plant Specific Notes:**

Note E: Consistent with NUREG-1801 item for material, environment, and aging effect, a different AMP is credit.

**Plant Specific Notes:**

7. The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage.
8. Only butt welded fittings are included in the Unit 1 Periodic Inspection Program.

### **Gland Seal Water System (037)**

The following line items and Notes are added to Table 3.4.2.7 for the Unit 1 Periodic Inspection Program:

**Table 3.4.2.7: Gland Seal Water System (037) - Summary of Aging Management Evaluation**

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG - 1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Fittings (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 4, 5
Piping (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 4

**Table Notes:**

**Industry Standard Notes:**

Note E: Consistent with NUREG-1801 item for material, environment, and aging effect, a different AMP is credit.

**Plant Specific Notes:**

4. The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage.
5. Only butt welded fittings are included in the Unit 1 Periodic Inspection Program.

### **Sampling and Water Quality System (043)**

The following line items and Notes are added to Table 3.3.2.14 for the Unit 1 Periodic Inspection Program:

**Table 3.3.2.14: Sampling and Water Quality System (043) - Summary of Aging Management Evaluation**

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG - 1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Fittings (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7, 8
Fittings (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7, 8
Piping (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7
Piping (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7

**Table Notes:**

**Industry Standard Notes:**

Note E: Consistent with NUREG-1801 item for material, environment, and aging effect, a different AMP is credit.

**Plant Specific Notes:**

7. The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage.
8. Only butt welded fittings are included in the Unit 1 Periodic Inspection Program.



### **Standby Liquid Control System (063)**

The following line items and Notes are added to Table 3.3.2.18 for the Unit 1 Periodic Inspection Program:

**Table 3.3.2.18: Standby Liquid Control System (063) - Summary of Aging Management Evaluation**

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG - 1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Fittings (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E,8,9
Fittings (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E,8,9
Piping (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E,8
Piping (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E,8

**Table Notes:**

**Industry Standard Notes:**

Note E: Consistent with NUREG-1801 item for material, environment, and aging effect, a different AMP is credit.

**Plant Specific Notes:**

8. The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage.
9. Only butt welded fittings are included in the Unit 1 Periodic Inspection Program.

### **Containment System (064)**

The following line items and Notes are added to Table 3.2.2.1 for the Unit 1 Periodic Inspection Program:

**Table 3.2.2.1: Containment System (064) - Summary of Aging Management Evaluation**

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG - 1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Fittings (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 5, 6
Fittings (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 5, 6
Piping (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 5
Piping (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 5

**Table Notes:**

**Industry Standard Notes:**

Note E: Consistent with NUREG-1801 item for material, environment, and aging effect, a different AMP is credited.

**Plant Specific Notes:**

5. The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage.
6. Only butt welded fittings are included in the Unit 1 Periodic Inspection Program.

### **Reactor Recirculation System (068)**

The following line items and Notes are added to Table 3.1.2.4 for the Unit 1 Periodic Inspection Program:

**Table 3.1.2.4: Reactor Recirculation System (068) - Summary of Aging Management Evaluation**

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG - 1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Fittings (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 9, 10
Fittings (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 9, 10
Piping (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 9
Piping (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 9

**Table Notes:**

**Industry Standard Notes:**

Note E: Consistent with NUREG-1801 item for material, environment, and aging effect, a different AMP is credited.

**Plant Specific Notes:**

9. The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage.
10. Only butt welded fittings are included in the Unit 1 Periodic Inspection Program.

### **Reactor Water Cleanup System (069)**

The following line items and Notes are added to Table 3.3.2.21 for the Unit 1 Periodic Inspection Program:

**Table 3.3.2.21: Reactor Water Cleanup System (069) - Summary of Aging Management Evaluation**

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG - 1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Fittings (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 6, 7
Fittings (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 6, 7
Piping (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 6
Piping (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 6

**Table Notes:**

**Industry Standard Notes:**

Note E: Consistent with NUREG-1801 item for material, environment, and aging effect, a different AMP is credited.

**Plant Specific Notes:**

6. The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage.
7. Only butt welded fittings are included in the Unit 1 Periodic Inspection Program.

### **Containment Inerting System (076)**

The following line items and Notes are added to Table 3.2.2.6 for the Unit 1 Periodic Inspection Program:

**Table 3.2.2.6: Containment Inerting System (076) - Summary of Aging Management Evaluation**

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG - 1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Fittings (Unit 1 Only)	PB	Stainless Steel	Raw Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 4, 5
Piping (Unit 1 Only)	PB	Stainless Steel	Raw Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 4

**Table Notes:**

**Plant Specific Notes:**

Note E: Consistent with NUREG-1801 item for material, environment, and aging effect, a different AMP is credited.

**Plant Specific Notes:**

4. The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage.
5. Only butt welded fittings are included in the Unit 1 Periodic Inspection Program.

### **Radioactive Waste Treatment System (077)**

The following line items and Notes are added to Table 3.3.2.25 for the Unit 1 Periodic Inspection Program:

**Table 3.3.2.25: Radioactive Waste Treatment System (077) - Summary of Aging Management Evaluation**

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG - 1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Fittings (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Raw Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7, 8
Fittings (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7, 8
Fittings (Unit 1 Only)	PB	Stainless Steel	Raw Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7, 8
Fittings (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7, 8
Piping (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Raw Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7
Piping (Unit 1 Only)	PB	Carbon and Low Alloy Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7
Piping (Unit 1 Only)	PB	Stainless Steel	Raw Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7
Piping (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 7

**Table Notes:**

**Industry Standard Notes:**

Note E: Consistent with NUREG-1801 item for material, environment, and aging effect, a different AMP is credited.

**Plant Specific Notes:**

7. The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage.
8. Only butt welded fittings are included in the Unit 1 Periodic Inspection Program.

### **Radiation Monitoring System (090)**

The following line items and Notes are added to Table 3.3.2.31 for the Unit 1 Periodic Inspection Program:

**Table 3.3.2.31: Radiation Monitoring System (090) - Summary of Aging Management Evaluation**

<b>Component Type</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NUREG - 1801 Vol. 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Fittings (Unit 1 Only)	PB	Stainless Steel	Raw Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 5, 6
Fittings (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 5, 6
Piping (Unit 1 Only)	PB	Stainless Steel	Raw Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 5
Piping (Unit 1 Only)	PB	Stainless Steel	Treated Water (internal)	Loss of material	Periodic Inspection Program (B.2.1.42)	None	None	E, 5

**Table Notes:**

**Industry Standard Notes:**

Note E: Consistent with NUREG-1801 item for material, environment, and aging effect, a different AMP is credited.

**Plant Specific Notes:**

5. The Unit 1 Periodic Inspection Program applies only to non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 following the extended Unit 1 outage.
6. Only butt welded fittings are included in the Unit 1 Periodic Inspection Program.

ENCLOSURE 5

TENNESSEE VALLEY AUTHORITY  
BROWNS FERRY NUCLEAR PLANT (BFN)  
UNITS 1, 2, AND 3  
LICENSE RENEWAL APPLICATION (LRA)

SUPPLEMENTAL INFORMATION FOR THE UNIT 1  
PERIODIC INSPECTION PROGRAM

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(SEE ATTACHED)



## ENCLOSURE 5

**TENNESSEE VALLEY AUTHORITY  
BROWNS FERRY NUCLEAR PLANT (BFN)  
UNITS 1, 2, AND 3  
LICENSE RENEWAL APPLICATION (LRA)**

**SUPPLEMENTAL INFORMATION FOR THE UNIT 1  
PERIODIC INSPECTION PROGRAM**

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By letter dated December 31, 2003, TVA submitted, for NRC review, an application pursuant to 10 CFR 54, to renew the operating licenses for the Browns Ferry Nuclear Plant, Units 1, 2, and 3. As part of its review of TVA's LRA, the NRC staff, through an informal request on March 1, 2006, requested supplemental information on the Unit 1 Periodic Inspection Program.

The Unit 1 non-replaced piping/fittings that were not in service as required by the Unit 1 defueled status or supporting operation of Units 2 and 3 of the following systems are included in the Unit 1 Periodic Inspection Program:

- Main Steam System (001)
- Condensate and Demineralized Water System (002)
- Feedwater System (003)
- Heater Drains and Vents System (006)
- Turbine Drains and Miscellaneous Piping System (008)
- Reactor Vessel Vents and Drains System (010)
- Residual Heat Removal Service Water System (023)
- Raw Cooling Water System (024)
- Fire Protection System (026)
- Gland Seal System (037)
- Sampling and Water Quality System (043)
- Standby Liquid Control System (063)
- Containment System (064)
- Emergency Equipment Cooling Water System (067)
- Reactor Recirculation System (068)
- Reactor Water Cleanup System (069)
- Reactor Building Closed Cooling Water System (070)
- Reactor Core Isolation System (071)
- High Pressure Core Injection System (073)
- Residual Heat Removal System (074)
- Core Spray System (075)
- Containment Inerting System (076)
- Radwaste System (077)
- Control Rod Drive System (085)
- Radiation Monitoring System (090)