UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 28, 2011

Mr. R. M. Krich
Vice President, Nuclear Licensing
Tennessee Valley Authority
3R Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNIT 1 - SAFETY EVALUATION FOR RELIEF REQUEST 1-ISI-26, "RISK INFORMED INSERVICE INSPECTION PROGRAM" (TAC NO. ME3405)

Dear Mr. Krich:

By letter dated February 11, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML100480125), as supplemented on November 22, 2010 (ADAMS Accession No. ML103270411), the Tennessee Valley Authority, licensee for Browns Ferry Nuclear Plant (BFN), Unit 1, submitted a proposed alternative under Request for Relief (RR) 1-ISI-26, in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 55a(a)(3)(i). RR 1-ISI-26 describes the use of a risk-informed program for examination of American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, Class 1 and 2 piping in lieu of the ASME Code, Section XI requirements.

Based on the information provided in the relief request, the Nuclear Regulatory Commission staff concludes the licensee's proposed alternative provides an acceptable level of quality and safety as required by 10 CFR 50.55a(a)(3)(i). Therefore, the licensee's proposed alternative is authorized in accordance with 10 CFR 50.55a(a)(3)(i) for the second 10-Year inservice inspection program interval at BFN Unit 1 that is scheduled to end on June 1, 2017. All other ASME Code, Section XI requirements for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

If you have any questions regarding this matter, please contact Christopher Gratton at (301) 415-1055.

Sincerely,

Douglas A. Broaddus, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-259

Enclosure: Safety Evaluation

cc w/enclosure: Distribution via Listserv

UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RISK-INFORMED INSERVICE INSPECTION PROGRAM

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNIT 1

SECOND 10-YEAR INSERVICE INSPECTION INTERVAL

DOCKET NO. 50-259 (TAC NO. ME3405)

1.0 INTRODUCTION

In an application dated February 11, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML100480125), as supplemented on November 22, 2010 (ADAMS Accession No. ML103270411), the Tennessee Valley Authority (licensee or TVA), requested authorization to use a proposed alternative to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," inservice inspection (ISI) requirements for certain Class 1 and Class 2 piping at the Browns Ferry Nuclear Plant (BFN), Unit 1. The application contained two enclosures that described developments and results of the Risk-Informed Inservice Inspection (RI-ISI) Program.

The licensee's RI-ISI program was developed in accordance with WCAP-14572, Revision 1-NP-A (herein referred to as the WCAP) (ADAMS Accession No. ML042610469), "Westinghouse Owners Group (WOG) Application of Risk-Informed Methods to Piping Inservice Inspection Topical Report," with four deviations. The WCAP was previously reviewed and approved by the NRC staff on December 15, 1998. The proposed alternative maintains the fundamental requirements of the ASME Code, Section XI, such as the examination technology, examination frequency, and flaw acceptance criteria. However, the proposed alternative approach significantly reduces the number of examination locations.

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g) requires that ISI of the ASME Code Class 1, 2, and 3 components be performed in accordance with Section XI of the ASME Code and applicable addenda, except where specific relief has been granted by the NRC. The objective of the ISI program, as described in Section XI of the ASME Code and applicable addenda, is to identify conditions (i.e., flaw indications) that are precursors to leaks and ruptures in the pressure boundary of these components that may impact plant safety.

The regulations require that ISI of components conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The requirements for the second 10-year ISI interval at the BFN, Unit 1 are contained in the 2001 Edition through 2003 Addenda of Section XI, Division 1 of the ASME Code. Pursuant to 10 CFR 50.55a(g), a percentage of ASME Code, Examination Category B-F, B-J, C-F-1, and C-F-2 pressure retaining piping welds must receive ISIs during each 10-year ISI interval. The ASME Code requires 100 percent of all B-F welds and 25 percent of all B-J welds greater than 1-inch nominal pipe size be selected for volumetric or surface examination, or both, on the basis of existing stress analyses. For C-F-1 and C-F-2 piping welds, 7.5 percent of non-exempt welds are selected for volumetric or surface examination, or both. According to 10 CFR 50.55a(a)(3), the NRC staff may authorize alternatives to the requirements of 10 CFR 50.55a(g), if an applicant demonstrates that the proposed alternatives would provide an acceptable level of quality and safety, or that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The licensee's proposed RI-ISI program, including those portions related to the applicable methodology and processes contained in the WCAP, and Code Case N-577, Table 1, shall be reviewed based on guidance and acceptance criteria provided in RGs 1.174, 1.178, and 1.200 and the Standard Review Plan (SRP) Chapter 3.9.8 (References 1, 2, 6, and 3 respectively).

3.0 TECHNICAL EVALUATION

3.1 Licensee's Proposed Alternative

Pursuant to 10 CFR 50.55a(a)(3)(i), TVA's proposed alternative is to implement an RI-ISI piping program as described in RGs 1.174 and 1.178 (References 1 and 2, respectively), that is consistent with the methodology described in ASME Code Case N-577, "Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method A" (Reference 4) and the WCAP, as modified by WOG's letter dated September 30, 1998, with the four deviations listed herein.

1. Calculation of Failure Rate: The WCAP methodology uses the Westinghouse Structural Reliability and Risk Assessment computer code to calculate failure rates. TVA uses the computer code WinPRAISE to calculate failure rates. The original version of this code (PC-PRAISE), a probabilistic facture mechanics computer code for piping reliability analysis, was developed for the NRC. WinPRAISE is a Windows version of PC-PRAISE.

2. Determination of the Failure Rate for a Segment: In the WCAP process, the most susceptible failure mechanisms were postulated for each segment and a failure probability was calculated using the most limiting condition for the segment. At TVA, failure rates are quantified for the individual elements in a segment, and the highest individual failure rate is used to determine segment risk.
3. Structural Element Selection: In the WCAP process, selection of elements of low failure potential in Regions 1 and 2 of the Structural Element Selection Matrix is determined by a

statistical evaluation process. At TVA, two methods are used to select the elements. For those elements with a quantified failure potential, the risk of the individual element was utilized in selecting examination locations. For those elements with no quantified failure potential, the existing examination requirements of Section XI of the ASME Code were used.

4. Examination of Category A Welds: As part of BFN, Unit 1 restart effort, large portions of piping subjected to intergranular stress-corrosion cracking (IGSCC) were replaced by resistant materials or subjected to mitigating measures that lowered failure rates. Consequently, some Category A welds in segments whose failures could result in a large loss-of-coolant accident (LOCA) were assigned from high to low safety significance. In the WCAP process, BWRVIP-75 (Reference 5) Category A weld augmented inspections for IGSCC can be reduced to the recommended RI-ISI program sample size. The TVA RI-ISI program will continue to follow BWRVIP-75, Category A inspection requirements for segments susceptible to large LOCAs.

Based on the discussions and analyses below, the staff concludes that these deviations were acceptable. All deviations between the TVA methodology and the approved WCAP methodology are discussed in this safety evaluation.

3.2 NRC Staff Evaluation

3.2.1 Proposed Changes to the ISI Program

The scope of the licensee's proposed RI-ISI program is limited to ASME Class 1 and Class 2 piping only, consisting of Category B-F and B-J welds, and Class 2 piping, Categories C-F-1, and C-F-2 welds. The RI-ISI program was proposed as an alternative to the existing ISI program that is based on the requirements of the ASME Code. A general description of the proposed changes to the ISI program was provided in the licensee's submittal. Table 5-1 of the application provides a comparison summary of inspection selections between the current ISI program and the proposed RI-ISI program. The NRC staff finds that the information submitted adequately defines the proposed changes resulting from the RI-ISI program.

TVA stated that all augmented programs listed in the BFN, Unit 1 Surveillance Instruction Program, 1-SI-4.6.G, are unaffected by this application and all examinations committed in those programs will continue. No changes were made to BFN, Unit 1 updated final safety analysis report for the implementation of the RI-ISI program. The applicable aspects of the ASME Code not affected by the change will be retained, such as inspection methods, acceptance guidelines, pressure testing, corrective measures, documentation requirements, and quality control requirements.

3.2.2 Engineering Analysis

In accordance with the WCAP methodology, TVA reviewed the failure history of piping systems at BFN Unit 1 and industry experience to analyze each system for parameters indicative of particular degradation mechanisms. TVA noted that their application deviated from the approved WCAP methodology in two areas related to the determination of failure probabilities for the pipe segments.

The WCAP process postulates the worst-case parameters (e.g., most susceptible failure mechanisms and stress levels) within the segment and then calculates a failure probability using the most limiting condition for the segment. At TVA, failure rates are quantified for each individual element in a segment, and the highest individual failure rate is used to determine segment risk. This represents a deviation from the approved methodology. Studies performed for BFN Unit 3, RI-ISI program (Reference 7) indicated that the TVA method produced results equivalent to those of the approved WCAP methodology.

The WCAP methodology uses the Westinghouse structural reliability risk assessment (SRRA) computer code to calculate failure probability rates. TVA used the WinPRAISE computer code to calculate failure probability rates where applicable; if not applicable, deterministic methods were used. The use of the WinPRAISE computer code represents a deviation from the approved WCAP methodology. During the review of the BFN Unit 3, RI-ISI program (Reference 7), the NRC staff reviewed the documentation and calculations related to the determination of failure frequencies for piping segments using the WinPRAISE code. The staff found that, on the whole, the methods used to estimate failure frequencies were consistent with those described in the WCAP methodology. The WinPRAISE and SRRA codes are based on similar methods and have been shown in past studies to predict similar values of failure probabilities if input parameters are assigned the same values for each code.

Early in plant life, the BFN Unit 1, was subjected to an extended shutdown. In preparation for restart, the licensee evaluated the effects of high energy postulated pipe ruptures both inside and outside containment. Walkdowns were conducted to determine the effects of pipe whip or jet impingement on adjacent boundaries. Any effects initially identified as a result of the evaluations were reconciled either by analysis or modification as part of the overall effort. Potential effects scenarios for low pressure piping failure resulting in spray were evaluated through walkdowns to support the RI-ISI analysis.

The approved WCAP methodology requires that a range of piping failure modes be used (i.e., leaks, disabling leak, or rupture). The WCAP methodology defines which consequential failure effects can be expected for each failure mode. For example, spray effects from a small leak could cause consequential failure of nearby electrical equipment, but not the diversion of sufficient flow to disable the leaking pipe's function. The three failure sizes were used in the WCAP because unstable structural failure (causing a rupture) almost always requires an unusual loading and, therefore, limited structural failure (causing a small or large leak) is the most likely failure mode. The structural mechanical modes in the WinPRAISE computer code reflect this property and ruptures are calculated to occur much less frequently than leaks.

3.2.3 <u>Probabilistic Risk Assessment</u>

Quantitative results of the probabilistic risk assessment (PRA) are used, in combination with a quantitative characterization of the pipe segment failure likelihood, to support the development of broad safety significance categories reflecting the relative impact of pipe segment failures on core damage frequency (CDF) and large early release fraction (LERF). The safety significance categories determined from the PRA are considered, together with the individual weld or element failure likelihood, to support the determination of the number of elements to inspect in each segment. Inaccuracies in the PRA models, or assumptions large enough to invalidate the broad categorizations developed to support RI-ISI, should have been identified in the licensee or the staff reviews. The NRC staff found that the quality of the BFN Unit 1, PRA is adequate to support the application because any minor errors or inappropriate assumptions that might remain in the models would only affect the consequence calculations of a few segments and should not invalidate the general results or conclusions.

During the BFN Unit 1, restart effort, a large portion of the piping subject to IGSCC was replaced by resistant materials or was subjected to mitigative measures, such that failure rates were greatly reduced. As a result, some segments whose failure could result in a large LOCA were determined to be low safety significant (LSS). For defense-in-depth, BFN Unit 1 categorized any segment whose failure could result in a large LOCA to be examined under an augmented inspection schedule, with no reduction in inspections due to the risk-informed process.

To assess safety significance, the Risk Reduction Worth (RRW) was calculated for each piping segment. The Risk Achievement Worth (RAW) was not calculated. The WCAP states that the RAW should be calculated and provided to the expert panel, but there are no guidelines in the WCAP on what value of RAW constitutes a high safety significant (HSS) segment. The TVA application stated that the examination of Category A welds in any segment that could result in a large LOCA would continue, regardless of RRW. The NRC staff finds that this is sufficient evidence that the expert panel was sensitive to the potential consequences of segment failure, and sensitivity to the consequences was the reason the WCAP includes the RAW estimate for consideration by the expert panel.

The approved WCAP methodology requires that a sensitivity study be done where uncertainty distributions are assigned to the segment failure likelihoods and the PRA results. The aim of the study is to investigate the potential movement of segments from low to high based on variation in the quantitative inputs and the guideline values defining the high, medium, and low RRW ranges. After consideration of the sensitivity studies, the expert panel classified medium segments as HSS segments. With this addition, the HSS segments account for 100 percent of total core damage frequency due to piping failures. An additional LSS segment was also classified as HSS based on sensitivity study.

The WCAP method requires that the change in CDF and change in LERF calculations be performed twice; once assuming all such actions are successful (failure probability of 0.0), and once assuming that all such actions fail (failure probability of 1.0). These estimated changes in risk are used as described in Section 4.4.2 of the WCAP to illustrate the acceptability of the proposed change in the ISI program.

TVA estimated the change in risk calculation assuming that all such operator actions fail. However, TVA did not estimate the change in risk assuming that all actions are successful, but instead, calculated a best estimate CDF and LERF. The best estimate CDF and LERF value for each segment includes or excludes the impact of operator actions depending on the judgment of the expert panel. That is, each potential operator action was evaluated by the expert panel and it decided if the success or the failure of the operator action was the most appropriate assumption. The intent of the change in risk calculations assuming that all operator actions are successful is to illustrate the change in risk that includes the potential impact of the plant personnel's attempts to control and mitigate the rupture. The NRC staff finds that the best estimate CDF and LERF, as defined in the submittal, also illustrate the change in risk reflecting the potential impact of actions by the plant personnel and is, therefore, an acceptable alternative.

Based on the use of the approved methodology and on the reported results, the NRC staff finds that any change in risk associated with the implementation of the RI-ISI program will be small and consistent with the intent of the Commission's Policy Statement and RG 1.178.

3.2.4 Integrated Decision Making

As described in the February 11, 2010, application, an integrated approach is utilized in defining the proposed RI-ISI program by considering, in concert, the traditional engineering analysis, the risk evaluation, and the implementation and performance monitoring of piping under the program. This is consistent with the guidance of RG 1.178.

The BFN Unit 1, RI-ISI program was reviewed by an expert panel of representatives knowledgeable in probabilistic risk assessment, operations, engineering, maintenance, and inservice inspection. The expert panel is supplemented with metallurgists and piping stress engineers, as needed. This is the same expert panel assembled for reviewing the RI-ISI programs at BFN Unit 2, and BFN Unit 3. All of the skills listed in WCAP Section 3.6 were represented on the BFN expert panel.

The expert panel evaluated each piping segment within the program scope for CDF and LERF. The evaluation considered the consequence with or without operator action as appropriate and was designated as the controlling case. The CDF controlling case due to pipe failure with operator action was 3.3393E-06, and 3.3396E-06 without operator action. The LERF controlling case due to pipe failure with operator action was 3.7577E-08, and 3.7561E-08 without operator action. The expert panel evaluated 167 segments and determined that 21 segments were HSS and 146 were LSS. Based on a sensitivity study, the expert panel included within this HSS value, a medium risk segment associated with the feedwater system, and an LSS segment associated with the high pressure coolant injection system.

The TVA method to select locations to inspect within segments deviates from the approved WCAP methodology. HSS piping segments are placed in Regions 1 or 2 of Figure 3.7-1 in the WCAP topical report. In the same Figure 3.7-1, Regions 3 and 4 pipe segments are LSS, and are considered in an "Owner Defined Program" outside of the scope of the RI-ISI program. As illustrated in Figure 3.7-1, HSS locations in segments in Region 1 are further subdivided into Regions 1A and 1B based on exposure to a degradation mechanism (Region 1A) or nonexposure to any degradation mechanism (Region 1B). The WCAP requires that all locations placed in Region 1A be inspected. If the location is already being inspected in an augmented program, such as flow-accelerated corrosion, that inspection is sufficient. Finally, the WCAP specifies that a statistical sampling technique may be used to determine how many locations should be inspected in Region 1B and within all segments in Region 2.

Instead of the methods described in the WCAP, TVA calculates the RRW value for each location in each HSS segment in Region 1A, 1B, and 2. Any individual location in each HSS segment with an RRW greater than 1.001 is considered for inspection. Locations within HSS segments with calculated failure rates of 0.0 are grouped and the ASME Code selection criteria are applied to the group. That is, if the locations are ASME Code Class 1, 25 percent of this group is selected. Locations in LSS segments that could cause a large LOCA are selected by the expert panel. Locations exposed to degradation mechanisms in LSS segments that were chosen to provide coverage of all degradation mechanisms are also selected by the expert panel.

3.2.5 Implementation and Monitoring

Pursuant to 10 CFR 50.55a(a)(3)(i), an alternative to the ASME Code must have an adequate level of quality and safety. RG 1.178, Element 3, "Implementation, Performance Monitoring, and Corrective Action Strategies," and SRP 3.9.8 provides guidance for licensees' consideration. The objective of Element 3 is to assess performance of the affected piping systems under the proposed RI-ISI program by implementing monitoring strategies that confirm the assumptions and analyses used in the development of the RI-ISI program. An alternative must include inspection scope, examination methods, and methods of evaluation of examination results.

The licensee's application stated that TVA's Surveillance Instruction 1-SI-4.6.G for BFN Unit 1, which is consistent with Nuclear Energy Institute (NEI) document 04-05 (Reference 10), will be revised to implement and monitor the RI-ISI program. The revision will comply with the guidelines in RG 1.174 and RG 1.178. Upon approval of the RI-ISI program, procedures that comply with the WCAP guidelines will be prepared to implement and monitor the RI-ISI program. The licensee stated that the applicable portions of the ASME Code not affected by the change (e.g., inspection methods, acceptance guidelines, pressure testing, corrective measures, documentation requirements, and quality control requirements) would be retained.

The licensee stated in Section 4 of the application that the RI-ISI program is a living program requiring feedback of new, relevant information to ensure the appropriate identification of HSS piping locations. Significant changes to basis documents, for example, the plant PRA, will be evaluated for impact on the risk ranking of piping segments when such changes are identified. As a minimum, risk ranking of piping segments will be reviewed and adjusted on an ASME period basis. Significant changes may require more frequent adjustment, as directed by NRC Bulletin or Generic Letter, or by plant-specific feedback.

The proposed periodic reporting requirements meet existing ASME Code requirements and applicable regulations, and therefore, are acceptable. The proposed process for RI-ISI program updates meets the guidelines of RG 1.174 that stipulates risk-informed applications must include performance monitoring and feedback provisions; therefore, the process for program updates is acceptable.

4.0 CONCLUSION

Pursuant to 10 CFR 50.55a(a)(3)(i), alternatives to the requirements of Section (c) through (h) of 10 CFR 50.55a may be authorized by the NRC staff if the applicant demonstrates that the alternative provides an acceptable level of quality and safety. In this case, the licensee's proposed alternative is to use the RI-ISI process described in the NRC staff-approved WCAP, with some deviations. The impact of the deviations from the WCAP methodology on the licensee's results and conclusions has been evaluated by TVA and the NRC staff. The NRC staff concludes that TVA's proposed RI-ISI program, as described in the WCAP, with the deviations identified in this SE, will provide an acceptable level of quality and safety pursuant to 10 CFR 50.55a for the proposed alternative to the piping ISI requirements with regard to the number of inspection, locations of inspections, and methods of inspection.

The NRC staff finds that the results of different elements of the engineering analysis are considered in an integrated decision-making process. The impact of the proposed changes to the ISI program is founded on the adequacy of the engineering analysis and acceptable change in plant risk in accordance with RG 1.174 and RG 1.178 guidelines.

The BFN Unit 1 methodology also considers implementation and performance monitoring strategies. Inspection strategies ensure that failure mechanisms of concern have been addressed and there is adequate assurance of detecting damage before structural integrity is affected. The risk significance of piping segments is taken into account in defining the inspection scope for the RI-ISI program.

System pressure tests and visual examination of piping structural elements will continue to be performed on all Code Class 1 and 2 systems in accordance with the ASME Code Section XI program. The RI-ISI program applies the same performance measurement strategies as existing ASME Code requirements. In addition, the program increases the inspection volumes at weld locations that are exposed to selected degradation mechanisms in Table 4.1-1 of the WCAP.

The BFN Unit 1 risk-informed methodology provides for conducting an analysis of the proposed changes using a combination of engineering analysis with supporting insights from a PRA. Defense-in-depth and quality are not degraded in that the methodology provides reasonable confidence that any reduction in existing inspections will not lead to degraded piping performance when compared to existing performance levels. Inspections are focused on locations with active degradation mechanisms as well as selected locations that monitor for unanticipated degradation of system piping.

As discussed above, the NRC staff reviewed the licensee's proposed RI-ISI program and concludes that it is an acceptable alternative to the current ISI program for ASME Code Class 1, Examination Categories B-F and B-J piping welds, and for ASME Code Class 2, Examination Categories C-F-1 and C-F-2 piping welds. In addition, the licensee has met the applicable criteria described in SRP 3.9.8. Based on risk considerations and the criteria of the SRP, the NRC staff concludes that the TVA's proposed alternative for BFN Unit 1 will provide an acceptable level of quality and safety as required by 10 CFR 50.55a(a)(3)(i). Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the TVA's proposed RI-ISI program is authorized for the second 10-year ISI interval at BFN1. All other ASME Code, Section XI requirements for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

5.0 REFERENCES

1. NRC Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," July 1998.

2. NRC Regulatory Guide 1.178, "An Approach for Plant-Specific Risk-Informed Decision Making: Inservice Inspection of Piping," September 1998.

3. NRC NUREG-0800, Chapter 3.9.8, "Standard Review Plan for Trial Use for the Review of Risk-Informed Inservice Inspection of Piping," May 1998.

4. ASME Code Case N-577, "Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method A," Section XI, Division 1, September 2, 1997.

5. BWRVIP-75-A, "BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules," Electric Power Research Institute Topical Report 1012621, October 2006.

6. NRC Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," Revision 2, March 2009.

7. Richard P. Correia (NRC) letter to J.A. Scalice (TVA), "Browns Ferry Unit 3 ASME Code Relief for Risk-Informed Inservice Inspection of Piping," dated February 11, 2000, (ADAMS Accession No. ML003682680).

8. R.M. Krich (TVA) letter, "American Society of Mechanical Engineers, Section XI Inservice Inspection Program for the Unit 1 Second Ten-Year Inspection Interval, Request for Relief 1-ISI-26, Risk-Informed Inservice Inspection Program," February 11, 2010.

9. R.M. Krich (TVA) letter, "Response to Request for Additional Information – American Society of Mechanical Engineers, Section XI Inservice Inspection Program for the Unit 1 Second Ten-year Inspection Interval, Request for Relief 1-ISI-26, Risk-Informed Inservice Inspection Program," November 22, 2010.

10. NEI 04-05, "Living Program Guidance to Maintain Risk-Informed Inservice Inspection Programs for Nuclear Piping Systems," April 2004.

Principal Contributors: J. Patel
D. Naujock

Date: February 28, 2011

If you have any questions regarding this matter, please contact Christopher Gratton at (301) 415-1055.

Sincerely,

/RA/

Douglas A. Broaddus, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-259

Enclosure: Safety Evaluation

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J. Patel, NRR
D. Naujock, NRR

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