February 11, 2004

Mr. J. A. Scalice
Chief Nuclear Officer and
Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNIT 3 - RELIEF REQUESTS NOS. 3-ISI-13, 3-ISI-14, AND 3-ISI-15 RELATED TO THE SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM (TAC NOS. MB8955, MB8956, AND MB8957)

Dear Mr. Scalice:

By letter dated May 9, 2003, the Tennessee Valley Authority (TVA) submitted three relief requests (RRs), Nos. 3-ISI-13, 3-ISI-14, and 3-ISI-15, for Browns Ferry Nuclear Plant, Unit 3 (BFN Unit 3). TVA subsequently withdrew RR No. 3-ISI-13 in a letter dated January 16, 2004.

The U.S. Nuclear Regulatory Commission staff has reviewed and evaluated the information provided in support of RRs 3-ISI-14 and 3-ISI-15. Based on the conclusions contained in the enclosed safety evaluation, the staff finds the following:

- For RR 3-ISI-14, relief is authorized pursuant to 10 CFR Section 50.55a(a)(3)(i), on the basis that an enhanced remote visual examination capable of a 1-mil (0.001 inch) wire resolution provides an acceptable level of quality and safety as an alternative to the required volumetric examination for the identified nozzles, where plant configuration is such that visual examination may be performed on essentially 100 percent of the inner radius.

- For RR 3-ISI-15, relief is authorized pursuant to 10 CFR Section 50.55a(a)(3)(ii) to perform an enhanced remote visual examination capable of 1-mil wire resolution for the identified nozzles where visual examination of the inner radius is limited by physical obstructions. Relief is authorized on the basis that compliance with the specified requirement would result in hardship without a compensating increase in the level of quality and safety.

Granting relief pursuant to 10 CFR 50.55a(a)(3)(i) and 10 CFR 50.55a(a)(3)(ii) is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. Relief is authorized for the above requests for

the duration of the second 10-year inservice inspection interval for BFN Unit 3. All other American Society of Mechanical Engineers Code, Section XI requirements for which relief was not specifically requested and approved in these relief requests remain applicable, including third party review by the authorized nuclear inservice inspector.

Sincerely,

/RA by M L Marshall for/

Allen G. Howe, Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-296

Enclosure: Safety Evaluation

cc w/enclosure: See next page

the duration of the second 10-year inservice inspection interval for BFN Unit 3. All other American Society of Mechanical Engineers Code, Section XI requirements for which relief was not specifically requested and approved in these relief requests remain applicable, including third party review by the authorized nuclear inservice inspector.

Sincerely,

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Docket No. 50-296

Enclosure: As stated

cc w/enclosure: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM

RELIEF REQUESTS 3-ISI-13, 3-ISI-14, AND 3-ISI-15

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNIT 3

DOCKET NO. 50-296

1.0 INTRODUCTION

By letter dated May 9, 2003, the Tennessee Valley Authority (TVA, the licensee) submitted three relief requests (RRs), Nos. 3-ISI-13, 3-ISI-14, and 3-ISI-15, for the Second 10-Year Interval Inservice Inspection (ISI) Program for Browns Ferry Nuclear Plant, Unit 3 (BFN Unit 3). TVA subsequently withdrew RR No. 3-ISI-13 in a letter dated January 16, 2004. The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided in support of RRs 3-ISI-14 and 3-ISI-15, and its safety evaluation is provided below.

2.0 REGULATORY REQUIREMENTS

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a, paragraph (g) requires that ISI of certain American Society of Mechanical Engineers (ASME) Code Class 1, 2 and 3 components be performed in accordance with Section XI of the ASME *Boiler and Pressure Vessel Code* (Code) applicable Edition and Addenda, except where specific relief has been requested by the licensee and authorized by the NRC pursuant to 10 CFR 50.55a(g)(6)(i). The regulation at 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the licensee demonstrates that (i) the proposed alternative provides an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, “Rules for Inservice Inspection of Nuclear Power Plant Components,” to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI 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.

BFN, Unit 3 is currently operating in the second 10-year ISI interval, which began on November 19, 1996, and ends on November 18, 2005. The Code of record for the BFN Unit 3, second 10-year ISI interval is the 1989 Edition (no Addenda) of the ASME *Boiler and Pressure Vessel Code*.

3.1 RELIEF REQUEST 3-ISI-14

Code Requirement:

ASME Section XI, "Rules for Inservice Inspection of Nuclear Power plant Components," 1989 Edition, no Addenda, Table IWB-2500-1, Examination Category B-D, "Full Penetration Welds of Nozzles in Vessels," Item No. B3.100, "Nozzle Inside Radius Section" requires a volumetric examination of the inside radius section of all nozzles in reactor pressure vessels.

Component Identification:

This request covers the inner radii of the following reactor pressure vessel (RPV) nozzles:

(1) Reactor recirculation suction loop nozzles (2)
(2) Main steam nozzles (4)
(3) Control rod drive (CRD) return line - capped (1)

Licensee's Code Relief Request (as stated):

Relief is requested from the requirement to perform a volumetric examination of the reactor pressure vessel nozzles inner radius section (Nozzles N1A, N1B, N3A, N3B, N3C, N3D, and N9).

Licensee's Proposed Alternative (as stated):

In accordance with 10 CFR 50.55a(a)(3)(i) TVA will perform the following alternate examinations:

For the Reactor pressure vessel nozzles inner radius sections, (N1A, N1B, N3A, N3B, N3C, N3D, and N9), TVA will perform an enhanced remote visual examination (VT-1), capable of a 1-mil wire resolution, in accordance with ASME Section XI, VT-1 requirements. This examination will be a remote visual exam utilizing cameras. Essentially 100 percent Code coverage will be attained.

TVA is proposing to perform enhanced visual (VT-1) examinations using the most conservative surface flaw acceptance criteria of Table IWB-3512-1 of the 1989 Edition, no Addenda of ASME Section XI Code. A maximum allowable a/t value of 2.5 percent will be used for the acceptance criteria with surface indications encountered using this alternative visual examination.

As used above, "enhanced" in enhanced visual (VT-1) examination refers to the 1-mil standard at two feet that is to be demonstrated by the examiners to assure acceptable resolution sensitivity.

Surface indications that exceed 2.5 percent a/t value will be unacceptable for continued service until such time that they are deemed acceptable based on supplemental examinations performed in accordance with paragraph IWB-3412.2, the relevant conditions corrected or repaired in accordance with IWB-3412.3, or demonstrated to be acceptable through analytical evaluation in accordance with paragraph IWB-3412.4.

The remote in-vessel enhanced visual examinations will be performed on the RPV nozzles using approved procedures requiring that the resolution sensitivity be established using a 1-mil wire standard.

Licensee's Basis for Requesting Relief (as stated):

The volumetric examinations (ultrasonic) conducted from the outside surfaces are difficult and time consuming due to the asymmetrical configuration of both the nozzle outside surface (where the transducers are manipulated) and the inner radius section of the nozzle being interrogated. Examination of the asymmetrical surfaces may require several different transducer/wedge angle combinations and these are applied at certain azimuths around the nozzle weld blend area of the vessel surface. Different size nozzles usually require a separate set of transducer/wedge angle combinations and calibrations. Several hours may be required for the calibrations and examination of a typical nozzle inner radius section.

An enhanced visual (VT-1) examination of the nozzles inner radius section would provide assurance of the required coverage and indicate the presence of surface flaws. The option to perform an enhanced visual (VT-1) examination will provide an acceptable examination without compromising the level of quality and safety.

The proposed alternative will also provide a significant savings in examination resources and radiation exposure to examination and support personnel.

Licensee's Basis for Proposed Alternative (as stated):

The RPV nozzles were nondestructively examined during fabrication and have previously been examined using inservice ultrasonic techniques specific to the nozzle configuration. No indication of fabrication defects or service related cracking has been detected by these examinations.

The RPV nozzles inner radius sections are the only non-welded areas (excluding the RPV head bolts) requiring examination on the reactor vessel. This requirement was deterministically made early in the development of ASME Section XI. For all nozzles, other than Feedwater, there is no significant thermal cycling during operation. From a risk perspective, there is no need to perform a volumetric examination on any nozzle other than the Feedwater and CRD return nozzles. No service related cracking has ever been discovered in any of the BWR [boiling water reactor] fleet nozzles other than on Feedwater or CRD return lines.

NRC Staff Evaluation:

In the mid-1970s, fatigue-initiated cracking was discovered in the nozzle inner radius section of feedwater nozzles at 18 BWRs. The cracks were found using visual examination. Ultrasonic testing (UT) failed to reveal the presence of these cracks, which prompted the NRC to prepare NUREG-0619, which modified inspection requirements for these components.

In NUREG-0619, the NRC staff concluded that UT of the vessel nozzle inner radius section involves complex geometries, long examination metal paths, and inherent UT beam spread, scatter, and attenuation. During the intervening years, improvements in UT technologies were introduced (e.g., computer modeling, tip diffraction, and phased array scanning), which improved the quality of the examination for this component. However, the area remains difficult to examine completely.

The NRC staff finds that even with vessel examinations using improved nondestructive examination (NDE) technology from the outside surface, the complex geometry of the RPV nozzle inner radius sections prevents complete UT coverage. For the RPV nozzles, the licensee proposed to perform what the licensee has identified as an enhanced remote VT-1 (ERVT) visual examination with 'essentially 100-percent coverage' in lieu of the UT. Enhanced in this case refers to the 1-mil width resolution standard at 2 feet that is to be demonstrated by the examiners. The estimated coverage for each nozzle is provided in the licensee's May 9, 2003, submittal. The licensee indicated that measures will be taken to assure that examination conditions, including adequacy of lighting, will be consistent with the conditions used to demonstrate examiner competency.

The primary degradation mode in RPV nozzles is fatigue, which produces hairline surface indications along the circumference of the nozzle at the inner radius section. Given the 1-mil width resolution capability of the ERVT, it is highly unlikely that the licensee would not detect such flaws using high magnification cameras that can examine 100 percent of the nozzle inner radius section surface area. The staff has determined that the high resolution image from the camera may be used in lieu of UT of the inner nozzle radius to provide adequate assurance of structural integrity. The staff notes that the licensee has indicated their intention to use examination equipment with a demonstrated capability of a 1-mil wire resolution for this examination.

The licensee has committed to using an aspect ratio of 0.50 and surface flaw depth of 2.5 percent for calculating the flaw acceptance criteria as specified in Table IWB-3512-1. The conservatism in the allowable flaw length specified provides for an extension of the crack that is not visible using the alternative method, but would be if the licensee was using the UT method.

Based on the licensee's ability to demonstrate equipment and operator qualification to a 1-mil width resolution at 2 feet during the examinations and conservative flaw acceptance criteria based on Table IWB-3512-1, the NRC staff has determined that the licensee's proposal to use enhanced remote visual examination for the RPV nozzle inner radius sections (N1A, N1B, N3A, N3B, N3C, N3D, and N9) will result in an acceptable level of quality and safety.

Based on the information provided in the licensee's submittal, the NRC staff has determined that the proposed alternative in RR 3-ISI-14 provides an acceptable level of quality and safety.

Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the remainder of the second 10-year ISI interval at BFN Unit 3. This authorization is limited to those components described in Section 3.1 above.

3.2 RELIEF REQUEST 3-ISI-15

Component Function/Description:

This request covers the inner radii of the following RPV nozzles:

(1) Reactor recirculation inlet loop nozzles (10)
(2) Core Spray nozzles (2)
(3) Jet Pump instrumentation (2)

Code Requirement:

ASME Section XI, "Rules for Inservice Inspection of Nuclear Power plant Components," 1989 Edition, no Addenda, Table IWB-2500-1, Examination Category B-D, "Full Penetration Welds of Nozzles in Vessels," Item No. B3.100, "Nozzle Inside Radius Section," requires a volumetric examination of the inside radius section of all nozzles in reactor pressure vessels.

Licensee's Code Relief Request (as stated):

> Relief is requested from the requirement to perform the volumetric examination of the reactor pressure vessel nozzles inner radius section (Nozzles N2A, N2B, N2C, N2D, N2E, N2F, N2G, N2H, N2J, N2K, N5A, N5B, N8A, N8B).

Licensee's Proposed Alternative (as stated):

> TVA will perform the following examination on the specified nozzles:
>
> For the reactor pressure vessel nozzles inner radius sections, (N2A, N2B, N2C, N2D, N2E, N2F, N2G, N2H, N2J, N2K, N5A, N5B, N8A, and N8B), TVA will perform an enhanced remote visual examination (VT-1), capable of a 1-mil wire resolution, in accordance with ASME Section XI, VT-1 requirements. This examination will be a remote visual examination utilizing cameras. Visual examination of the inner radius section for the above nozzles is limited because the reactor internal piping configuration prevents placement of the camera in all positions necessary to examine the surface M-N [see Figures IWB-2500-7(a) through (d)] over the full circumference. This prevents the examination from obtaining essentially 100 percent coverage.
>
> As used above, "enhanced" in enhanced visual (VT-1) examination refers to the 1-mil standard at two feet that is to be demonstrated by the examiners to assure acceptable resolution sensitivity.
>
> TVA is proposing to perform enhanced visual (VT-1) examinations using the most conservative surface flaw acceptance criteria of Table IWB-3512-1 of the 1989 Edition, no Addenda of ASME Section XI Code. A maximum allowable a/t value of

2.5 percent will be used for the acceptance criteria with surface indications encountered using this alternative visual examination.

Surface indications that exceed 2.5 percent a/t value will be unacceptable for continued service until such time that they are deemed acceptable based on supplemental examinations performed in accordance with paragraph IWB-3412.2, the relevant conditions corrected or repaired in accordance with IWB-3412.3, or demonstrated to be acceptable through analytical evaluation in accordance with paragraph IWB-3412.4.

The estimate enhanced remote visual (VT-1) examination coverage for each nozzle is provided below.

Nozzle Type/No.	Estimated Coverage
Recirc Inlet, N2 (10 Nozzles)	50%
Core Spray, N5 (2 Nozzles)	40%
Jet Pump Instrumentation, N8 (2 Nozzles)	60%

Licensee's Basis for Requesting Relief (as stated):

Pursuant to 10 CFR 50.55a(a)(3)(ii) TVA is requesting relief from ASME Section XI requirements to perform the volumetric examination described above. Performance of the volumetric examination results in significant personnel radiation exposure without a compensating increase in the level of plant quality and safety. TVA is proposing to perform a remote enhanced visual (VT-1) examination, capable of a 1-mil resolution, of the accessible portions of the nozzle inner radius region from inside the vessel for the specified RPV nozzles.

The volumetric examinations (ultrasonic) conducted from the outside surfaces are difficult and time consuming due to the asymmetrical configuration of both the nozzle outside surface (where the transducers are manipulated) and the inner radius section of the nozzle being interrogated. Examination of the asymmetrical surfaces may require several different transducer/wedge angle combinations and these are applied at certain azimuths around the nozzle weld blend area of the vessel surface. Different size nozzles usually require a separate set of transducer/wedge angle combinations and calibrations. Several hours may be required for the calibrations and examination of one typical 6-inch diameter nozzle inner radius section.

An enhanced remote visual (VT-1) examination of the accessible regions of the nozzle inner radius sections from inside the RPV would provide assurance of the required coverage and indicate the presence of surface flaws. The performance of an enhanced remote visual (VT-1) examination would provide an acceptable examination without compromising the level of quality and safety.

The proposed alternative will also provide a significant savings in examination resources and radiation exposure to examination and support personnel.

Licensee's Basis for Proposed Alternative (as stated):

The RPV nozzles were nondestructively examined during fabrication and have previously been examined using inservice ultrasonic techniques specific to the nozzle configuration. No indication of fabrication defects or service related cracking has been detected by these examinations.

The limited remote visual (VT-1) examination of the RPV nozzles inner radius section does not significantly reduce the level of plant quality and safety for the following reasons:

There are no mechanisms of damage other than fatigue for the nozzle inner radius, and for other than Feedwater nozzles, there is no cause for significant thermal cycling. Therefore, the primary flaw of concern would be a flaw that was not detected during the manufacturing process. The BFN Unit 3 RPV nozzles were examined during and after manufacturing by surface and volumetric techniques. Additionally, preservice and inservice ultrasonic examinations have detected no flaws. It is unlikely that flaws would be initiated by the fatigue mechanism.

After approximately 18 years of operation (Unit 3 was shut down from March 1985 to November 1995), no cracking in the subject BFN Unit 3 RPV nozzles inner radius region has been found.

Fracture toughness test performed at Oak Ridge National Labs indicate there is a large flaw tolerance for BWR Nozzle inner radius regions. Even if flaw propagation was assumed, test results indicate a leak before break scenario would occur, which would not result in a significant increase in core damage frequency. In addition, system pressure testing continues to be performed each refueling outage, and during plant operation the containment is monitored for changes in unidentified leakage.

More than 50 percent of the total RPV nozzle population receives a complete (i.e., essentially 100 percent) nozzle inner radius examination.

Visual examination of the accessible nozzle inner radius surface (zone M-N) provides reasonable assurance that deep flaws are not present. Additionally, when flaws are initiated by the fatigue mechanism, they typically are encountered over a significant portion of the circumference as was the case for cracking of Feedwater nozzles addressed in NUREG-0619.

In summary, fatigue cracking is the only relevant degradation mechanism for the RPV nozzle inner radius region, and for all nozzles other than Feedwater there is no significant thermal cycling during operation

Therefore, from an industry experience perspective, there is no need to perform volumetric examination on any nozzles other than Feedwater and CRD return lines. This is supported by the fact that no service related cracking has ever been

discovered in any of the BWR fleet RPV nozzles other than on Feedwater and CRD return lines.

The BFN Unit 3 Feedwater nozzles inner radius section will continue to be examined with ultrasonic techniques developed and qualified in accordance with GE-NE-523-A71-0594-A, Revision 1. The NRC accepted this methodology by letter to the Boiling Water Reactor Owners Group (BWROG) dated March 10, 2000. TVA notified the NRC by letter dated October 23, 2000 that it was adopting the BWROG methodology.

The Feedwater nozzles alone represent 20 percent of all RPV nozzles currently requiring volumetric inner radius examination, which is more than industry accepted risk sampling requirements for similar items. Additionally, BFN request for relief 3-ISI-14 provides for a full (i.e., essentially 100 percent) enhanced visual (VT-1) examination of 7 other RPV nozzles, resulting in a complete examination of more than 50 percent of the total BFN Unit 3 RPV nozzle population.

Dose rates for the specified RPV nozzles are in the range of 500 to 1200 millirem per hour, with shielding in place. Performance of these examinations results in an estimated personnel exposure of about 4.5 Rem per inspection interval. Performance of a visual examination using remote cameras essentially eliminates any personnel exposure.

TVA believes complying with the specified Code requirements would result in hardship without a compensating increase in the level of quality and safety, and the proposed alternative provides reasonable assurance of structural integrity of the subject nozzles while providing a significant reduction in personnel dose.

NRC Staff Evaluation:

In the mid-1970s, fatigue-initiated cracking was discovered in the nozzle inner radius section of feedwater nozzles at 18 BWRs. The cracks were found using visual examination. UT failed to reveal the presence of these cracks, which prompted the NRC to prepare NUREG-0619, which modified inspection requirements for these components.

In NUREG-0619, the NRC staff concluded that UT of the vessel nozzle inner radius section involves complex geometries, long examination metal paths, and inherent UT beam spread, scatter, and attenuation. During the intervening years, improvements in UT technologies were introduced (e.g., computer modeling, tip diffraction, and phased array scanning), which improved the quality of the examination for this component. However, the area remains difficult to examine completely.

The NRC staff finds that even with vessel examinations using improved NDE technology from the outside surface, the complex geometry of the RPV nozzle inner radius sections prevents complete UT coverage. At the same time, performance of UT on these components requires the examiner to enter and remain inside the biological shield penetration area around the nozzle for the duration of the UT, which takes approximately 1 hour. The licensee stated that dose rates for the specified RPV nozzles are in the range of 500 to 1200 millirem per hour with shielding in place, which results in an estimated personnel exposure of about 4.5 rem per

inspection interval. Performance of a visual examination using remote cameras essentially eliminates any personnel exposure.

For the RPV nozzles listed above, the licensee proposed to perform what the licensee has identified as an ERVT visual examination with limited coverage in lieu of the UT. Enhanced in this case refers to the 1-mil wide resolution standard at 2 feet that is to be demonstrated by the examiners. The resolution sensitivity for this remote in-vessel exam will be established using a 1-mil diameter wire. The licensee indicated that measures will be taken to assure that examination conditions, including adequacy of lighting, will be consistent with the conditions used to demonstrate examiner competency. The estimated coverage for each nozzle is provided in the licensee's May 9, 2003, submittal. The licensee stated that the estimated coverage for these nozzles will be in the range of 40-60 percent. The licensee provided a detailed account of the examination limitations for each of the nozzles covered by this relief request. These examination limitations are due to reactor internal piping configurations, which prevent placement of the camera for obtaining full coverage.

The primary degradation mode in RPV nozzles is fatigue. Fatigue produces hairline surface indications along the circumference of the nozzle at the inner radius section. Given the resolution capacities of the ERVT, it is highly unlikely that the licensee would not detect such flaws using high-magnification cameras that can examine the accessible portions of the nozzle inner radius section surface area. The staff has determined that the high-resolution image from the camera provides adequate assurance of structural integrity. Therefore, the staff has determined that the ERVT may be used in lieu of UT of the inner nozzle radius because the UT examination results in hardship and is unusually difficult to perform, and the ERVT provides adequate assurance of structural integrity.

The licensee has committed to using an aspect ratio of 0.50 and surface flaw depth of 2.5 percent for calculating the flaw acceptance criteria as specified in Table IWB-3512-1. The conservatism in the allowable flaw length specified provides for an extension of the crack that is not visible using the alternative method, but would be visible if the licensee was using the UT method.

While the proposed visual examination on these components will be limited to about 40-60 percent estimated coverage, the NRC staff believes it still provides reasonable assurance that flaws of significant size will be detected. When flaws are initiated by the fatigue mechanism, they typically are encountered over a significant portion of the nozzle circumference, as was the case for cracking of feedwater nozzles addressed in NUREG-0619. The NRC staff also recognizes that the industry has stated that they have experienced no reported cracking in the subject nozzle inner radius regions, and that the subject nozzles are not subjected to significant thermal cycling. In addition, the staff notes that the inner radius sections of BFN Unit 3 Feedwater nozzles will continue to undergo the Code-required volumetric examinations. Furthermore, the RPV nozzles covered by BFN RR 3-ISI-14 will undergo a full enhanced VT-1 examination. Therefore, more than 50 percent of the BFN Unit 3 RPV nozzles will undergo a complete inner radius examination, where such examinations are performed by either UT or full enhanced VT-1.

Based on the licensee's ability to demonstrate high magnification equipment qualification to a 1-mil wide resolution standard at 2 feet during the examinations and reasonable flaw acceptance criteria based on Table IWB-3512-1, the NRC staff has determined that the licensee's proposal to use enhanced remote visual examination for the RPV nozzle inner radius

sections (N2A, N2B, N2C, N2D, N2E, N2F, N2G, N2H, N2J, N2K, N5A, N5B, N8A, and N8B) will result in reasonable assurance of structural integrity of the subject components.

Based on the information provided in the licensee's submittal, the NRC staff has determined that complying with the specified requirements would result in hardship and unusual difficulty without a compensating increase in the level of quality and safety, and the proposed alternative provides reasonable assurance of structural integrity of the subject components. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the remainder of the second 10-year ISI interval at BFN Unit 3. This authorization is limited to those components described in Section 3.2 above.

4.0 CONCLUSION

The NRC staff concludes that for RR 3-ISI-14, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that it provides an acceptable level of quality and safety. For RR 3-ISI-15, the alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) on the basis that compliance with the specified requirements would result in hardship without a compensating increase in the level of quality and safety, and the proposed alternative provides reasonable assurance of structural integrity of the subject components.

The relief and authorizations for the above requests are for the duration of the second 10-year ISI interval. All other ASME Code, Section XI requirements for which relief was not specifically requested and approved in this request remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

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Date: February 11, 2004

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