

November 15, 2004

10 CFR 50.55a(a)(3)(i)

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. 50-260
Tennessee Valley Authority) 50-296

BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 2, AND 3 - AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI, INSERVICE INSPECTION (ISI) PROGRAM - REQUESTS FOR RELIEF 2-ISI-22, AND 3-ISI-18 FOR EXAMINATION OF REACTOR PRESSURE VESSEL (RPV) NOZZLE-TO-VESSEL SHELL WELDS AND NOZZLE BLEND RADII - REVISION TO INCORPORATE ASME CODE CASE N-702 AS TECHNICAL BASIS FOR RELIEF (TAC NOS. MC0167 AND MC0168)

This letter submits revised BFN Units 2 and 3 requests for relief 2-ISI-22 and 3-ISI-18 for NRC review and approval. These requests for relief were revised to incorporate ASME Code Case N-702, Alternative Requirements for Boiling Water Reactor (BWR) Nozzle Inner Radius and Nozzle-to-Shell Welds, Section XI, Division 1," as the technical basis for the requests. These revised relief requests supersede those initially submitted by TVA.

The requests for relief were initially submitted for NRC review by TVA letter dated July 25, 2003. These requests cited the Boiling Water Reactor Vessel Internals Project (BWRVIP) technical report entitled "BWRVIP-108: BWR Vessel and Internals Project, Technical Basis for the Reduction of Inspection Requirements for the Boiling Water Reactor Nozzle-To-Vessel Shell Welds and Nozzle Blend Radii," as the technical basis for the requests. Subsequent to TVA's requests for relief submittal, ASME issued Code Case N-702 (February 20, 2004).

ASME Code Case N-702 is based on the conclusions stated in the BWRVIP-108 report which used a probabilistic fracture mechanics evaluation considering: (1) sample size large enough to effectively identify aging degradation, (2) sample size consistent with current industry requirements, and

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(3) examination sampling size reduction sufficient to result in significant cost savings and radiological dose reduction.

ASME Code Case N-702 states that the nondestructive examination frequency for RPV nozzle-to-shell welds and nozzle inner radii may be reduced from 100 percent each 10-year inspection interval to 25 percent including at least one nozzle from each system and nominal pipe size. The Code Case also states that a visual examination (VT-1) may be used for ASME Section XI, Code Examination Category Item No. B3.100, RPV nozzle inner radius sections, in lieu of a volumetric examination.

Enclosure 1 of this letter contains revised BFN Unit 2 request for relief, 2-ISI-22, for NRC review and approval. The revised BFN Unit 3 request for relief, 3-ISI-18, is provided in Enclosure 2.

TVA requests approval of these requests for relief by November 18, 2005 (end of second ten-year inspection interval for Unit 3) to support resource planning for the Unit 3 Cycle 12 refueling outage (Spring 2006).

There are no new regulatory commitments in this letter. If you have any questions, please contact me at (256) 729-2636.

Sincerely,

ORIGINAL SIGNED BY:

T. E. Abney
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cc: See Page 3

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Enclosures

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JWD:BAB

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NSRB Support, LP 5M-C
EDMS WT CA-K

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ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 2
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI,
INSERVICE INSPECTION (ISI) PROGRAM
(THIRD TEN-YEAR INSPECTION INTERVAL)

REQUEST FOR RELIEF 2-ISI-22, REVISED TO INCORPORATE
ASME CODE CASE N-702

(SEE ATTACHED)

**TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 2
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI,
INSERVICE INSPECTION (ISI) PROGRAM
(THIRD TEN-YEAR INSPECTION INTERVAL)**

**REQUEST FOR RELIEF 2-ISI-22, REVISED TO INCORPORATE
ASME CODE CASE N-702**

**Executive
Summary:**

In accordance with 10 CFR 50.55a(a)(3)(i), TVA is requesting relief from inservice inspection requirements of the 1995 Edition, 1996 Addenda, Section XI of the ASME Boiler and Pressure Vessel Code for the volumetric examination of Class 1, reactor pressure vessel (RPV) nozzle-to-vessel welds and nozzle inner radius sections. The Code examination requirement is for a volumetric examination of 100 percent of the ASME Section XI, Examination Category B-D, "Full Penetration Welded Nozzles in Vessels," Item No. B3.90, "Reactor Vessel Nozzle to Vessel Welds, and Item No. B3.100, "Reactor Vessel Nozzle Inner Radius Section" each ten-year inspection interval.

This request for relief applies to the BFN Unit 2 Reactor Pressure Vessel and RPV Head nozzles, with the exception of the six (N4) feedwater and one (N9) Control Rod Drive Return Line (capped) nozzles. These nozzle-to-vessel welds and inner radius sections will continue to be examined with ultrasonic examination (UT) techniques in accordance with ASME, Section XI, Appendix VIII and the Performance Demonstration Initiative (PDI) Program.

TVA proposes to adopt ASME Code Case N-702, "Alternate Requirements for Boiling Water Reactor (BWR) Nozzle Inner Radius and Nozzle-To-Shell Welds Section XI, Division 1." This Code case provides an alternative for BWRs for the examination reduction of the nozzle-to-shell welds and nozzle inner radius sections from 100 percent to a minimum of 25 percent of the nozzles and nozzle inner radius sections every ten-year inspection interval. The 25 percent coverage refers to 25 percent of the nozzle-to-shell welds for each system and nominal pipe size (e.g., 1 of 4 Main Steam

nozzles) for items listed in ASME Section XI, Table IWB-2500-1, Examination Category B-D, Items Numbers B3.90, and B3.100.

For the reactor pressure vessel nozzle inner radius sections, TVA will perform an enhanced remote visual (VT-1) examination, capable of a 1-mil wire resolution. For the RPV head nozzle inner radius sections, TVA will perform an enhanced direct visual (VT-1) examination, capable of a 1-mil wire resolution, in accordance with ASME Section XI, VT-1 requirements.

Note: The change from volumetric (UT) to enhanced visual (VT-1) was submitted as two separate requests for relief, 2-ISI-16 and 2-ISI-17 to NRC by TVA letters dated April 23, and September 5, 2002, and approved by NRC letter dated October 7, 2002.

All examinations will be performed with personnel, procedures, and equipment qualified in accordance with the ASME Section XI Code, 1995 Edition, 1996 Addenda, Appendix VIII and the Performance Demonstration Initiative (PDI) Program requirements.

TVA considers the above proposed alternative examinations will provide an acceptable level of quality and safety. The 25 percent examination frequency, is sufficient to identify any aging degradation or failure mechanisms of the BFN RPV nozzles and nozzle inner radius sections. The proposed alternatives will also provide a significant savings in examination resources and radiation exposure.

Unit:

Two (2)

ISI Interval:

ASME Section XI, Third Ten-Year ISI Interval (May 25, 2001 to May 24, 2011)

**System(s) /
Components:**

Reactor Pressure Vessel (RPV), Nozzle-to-Vessel Welds and RPV Nozzle Inner Radius Sections (Total of 24 nozzles):

Reactor Recirculation Outlet Nozzles (28-inch diameter), N1A and N1B (Total of 2 nozzles)

Reactor Recirculation Inlet Nozzles (12-inch diameter), N2A, N2B, N2C, N2D, N2E, N2F, N2G, N2H, N2J, and N2K (Total of 10 nozzles)

Main Steam Nozzles (26-inch diameter), N3A, N3B, N3C, and N3D (Total of 4 nozzles)

Core Spray Nozzles (10-inch diameter), N5A and N5B (Total of 2 nozzles)

Reactor Pressure Vessel (RPV) Head Nozzles, N6A, N6B, (6-inch diameter) and N7 (4-inch diameter) (Total of 3 nozzles)

Jet Pump Instrumentation Nozzles (4-inch diameter), N8A and N8B (Total of 2 nozzles)

Standby Liquid Control Nozzle (1.5-inch diameter), N10 (Total of 1 nozzle)

ASME Code

Class:

ASME Code Class 1

ASME Section XI

Code Edition:

1995 Edition, 1996 Addenda

Note: The Code of Record for the BFN Unit 2 Second Ten-Year ISI Interval is the 1995 Edition, 1996 Addenda for component selection. TVA has also adopted the 1995 Edition with the 1996 addenda (all TVA nuclear sites) for performance of nondestructive examinations.

Code Table:

IWB-2500-1

Examination

Category:

B-D, "Full Penetration Welded Nozzles In Vessels"

Examination

Item Number(s):

B3.90, "Nozzle-To-Vessel Welds", and B3.100, "Nozzle Inner Radius Sections,"

Code Requirement:

The 1995 Edition, 1996 Addenda, ASME Section XI, Table IWB-2500-1, Examination Category B-D, Item No. B3.90 and Item No. B3.100, requires a volumetric examination of 100 percent of the reactor pressure vessel (RPV) nozzle-to-shell welds and nozzle inner radius sections each ten-year inspection interval.

**Code Requirements
From Which Relief
Is Requested:**

Relief is requested from the 1995 Edition, 1996 Addenda, ASME Section XI, Table IWB-2500-1, Examination Category B-D, Item No. B3.90 and Item No. B3.100, which requires a volumetric examination of 100 percent each ten-year inspection interval of the reactor pressure vessel (RPV) nozzle-to-shell welds and nozzle inner radius section.

**List Of Items
Associated
With The Relief
Request:**

Reactor Pressure Vessel Nozzles, N1A, N1B, N2A, N2B, N2C, N2D, N2E, N2F, N2G, N2H, N2J, N2K, N3A, N3B, N3C, N3D, N5A, N5B, N6A, N6B, N7, N8A, N8B, and N10 (Total of 24 nozzles)

Note: The six feedwater (N4), and one Control Rod Drive Return Line (N9) (capped) nozzle-to-vessel welds and nozzle inner radius sections will continue to be examined with ultrasonic examination (UT) techniques in accordance with ASME Section XI, Table IWB-2500-1, Appendix VIII, and the Performance Demonstration Initiative (PDI) Program. (TVA will take both ASME Section XI Code, and GE-NE-523-A71-0594-A examination credit for all six Feedwater nozzles.)

**Basis For Relief
Request:**

Pursuant to 10 CFR 50.55a(a)(3)(i) TVA is requesting relief from ASME Section XI requirements to perform the volumetric examinations described above.

TVA proposes to adopt ASME Code Case N-702, "Alternate Requirements for Boiling Water Reactor (BWR) Nozzle Inner Radius and Nozzle-to-Shell Welds, Section XI, Division 1."

This Code Case provides an alternative for BWRs for reduction of the nozzle-to-shell welds and nozzle blend radii examinations from 100 percent to 25 percent of the nozzles each 10-year inspection interval. The 25 percent examination coverage refers to 25 percent of the nozzles for each nozzle type and nominal pipe size (e.g., 1 of 4 main steam nozzles would be inspected).

The 25 percent examination frequency, is sufficient to identify any aging degradation or failure mechanisms of the BFN RPV nozzles and nozzle inner radius sections. The 25 percent sampling level is similar to industry practice and, in some cases, exceeds current practice. For example:

- ASME Code Section XI, IWB-2500 requires 25 percent of Category B-J (Item No. B9.11) circumferential welds to be inspected each inspection interval.
- ASME Code Case N-560, (Risk Informed Inspection) requires inspection of 10 percent of higher risk Class I Category B-J piping welds.
- ASME Code Case N-578, (Risk Informed Inspection) requires inspection of at least 25 percent of the highest risk, (Risk Category 1, 2, and 3) and
- At least 10 percent of the next highest risk, (Risk Category 4 or 5) Class I piping welds.
- ASME Code Section XI, IWC-2500 (Class II piping) Category C-F-1 and C-F-2 requires inspection of 7.5 percent of welds.
- Generic Letter 88-01 requires 25 percent inspection of Category A piping welds.

The 25 percent sampling provides a significant cost savings and reduces worker dose exposure. Several utilities have estimated that the proposed reduction of inspection requirements would result in a savings of up to \$750,000 per ten-year inspection interval, not including exposure considerations. The dose savings for BFN Unit 2 would be approximately 6.5 to 7 REM over a ten-year ISI inspection interval.

In the first Unit 2 ten-year inspection interval 30 of 31 reactor pressure vessel nozzle-to-shell welds and inner radius sections received a volumetric examination. In the second Unit 2 ten-year ISI inspection interval,

31 of the 31 reactor pressure vessel nozzle-to-shell welds and 30 inner radius sections received a volumetric examination. The examination results met ASME Section XI, IWB-3512 acceptance criteria.

In the third (current) Unit 2 ten-year ISI inspection interval, 6 of the 31 reactor pressure vessel nozzle-to-shell welds and inner radius sections have received a volumetric (UT) examination. The examination results met ASME Section XI, IWB-3512 acceptance criteria.

Also, in the third (current) Unit 2 ten-year inspection interval, seven (7) of 31 reactor pressure vessel nozzle-to-shell welds have received a volumetric examination. The inner radius sections of these nozzles received an enhanced visual (EVT-1) examination from the vessel inside diameter. The examination results met ASME Section XI, IWB-3512 acceptance criteria.

TVA considers the above proposed alternative examinations, when considered with the examination history of the BFN RPV nozzles, will provide an acceptable level of quality and safety. The proposed alternatives will also provide a significant savings in examination resources and radiation exposure.

Alternate Examination:

In accordance with 10 CFR 50.55a(a)(3)(i), TVA will adopt ASME Code Case N-702 (See Attachment A of this enclosure) and perform the following alternate examinations:

RPV Nozzle-To-Vessel Welds

TVA will perform volumetric (UT) examinations of 25 percent of the ASME Section XI, Examination Category B-D, Full Penetration Welded Nozzles in Vessels," Item No. B3.90, "Reactor Vessel Nozzle to Vessel Welds, each ten-year inspection interval. The 25 percent examination coverage refers to 25 percent of the nozzles for each nozzle type and nominal pipe size (e.g., 1 of 4 main steam nozzles would be inspected).

RPV Nozzle, Inner Radius Section

For the reactor pressure vessel nozzles inner radius section, ASME Section XI Item B3.100, TVA will perform an enhanced remote visual (VT-1) examination of 25 percent of the nozzles, capable of a 1-mil wire resolution in accordance with ASME Section XI, VT-1 requirements. The 25 percent examination coverage refers to 25 percent of the nozzles for each nozzle type and nominal pipe size (e.g., 1 of 4 main steam nozzles would be inspected).

RPV Head Nozzle, Inner Radius Section

For the RPV head nozzles inner radius section, TVA will perform an enhanced direct visual (VT-1) examination, capable of a 1-mil wire resolution, in accordance with ASME Section XI, VT-1 requirements. The 25 percent examination coverage refers to 25 percent of the nozzles for each nozzle type and nominal pipe size (e.g., 1 of 4 main steam nozzles would be inspected).

Note: The change from volumetric (UT) to enhanced visual (VT-1) was submitted by TVA as two separate requests for relief, 2-ISI-16 and 2-ISI-17 to NRC by letters dated April 23, and September 5, 2002. TVA's Requests were approved by NRC letter dated October 07, 2002.

The following nozzles will be examined during the current ten-year inspection interval: N1 (1 of 2), N2 (3 of 10), N3 (1 of 4), N5 (1 of 2), N6 (1 of 2), N7 (1 of 1), N8 (1 of 1), N9 (1 of 1), and N10 (1 of 1) (Total of 11 nozzles examined).

All examinations will be performed with personnel, procedures, and equipment qualified in accordance with the ASME Section XI Code, 1995 Edition, 1996 Addenda, Appendix VIII and the Performance Demonstration Initiative (PDI) Program requirements.

Justification For The Granting Of Relief:

The BFN Unit 2 RPV nozzles were nondestructively examined during fabrication and have previously been examined using

inservice ultrasonic (UT) techniques specific to the nozzle configuration.

No indication of fabrication defects or service related cracking has been detected by these examinations. See Attachment C of this enclosure for RPV nozzle and inner radius section listing, UT examinations performed, examination coverage, and examination results for the BFN Unit 2 first, second, and third ten-year ISI inspection intervals.

In the first Unit 2 inspection interval 30 of 31 reactor pressure vessel nozzle-to-shell welds and inner radius sections received a volumetric examination. In the second Unit 2 ten-year inspection interval, 31 of 31 reactor pressure vessel nozzle-to-shell welds and 30 inner radius sections received a volumetric examination. The examination results met ASME Section XI, IWB-3512 acceptance criteria.

In the third (current) Unit 2 ten-year inspection interval, 6 of 31 reactor pressure vessel nozzle-to-shell welds and inner radius sections have received a volumetric (UT) examination. The examination results met ASME Section XI, IWB-3512 acceptance criteria.

Also, in the third (current) Unit 2 ten-year inspection interval seven (7) of 31 reactor pressure vessel nozzle-to-shell welds received a volumetric examination. The inner radius sections of these seven nozzles received an enhanced visual (EVT-1) examination from the vessel ID. The examination results were acceptable.

A significant number of RPV nozzle weld examinations have been performed for BFN and other units in the BWR fleet, that have been operational for periods up to 30 years, using modern examination techniques capable of detecting significant cracking if it were present. No degradation or failure mechanism has been identified in nozzle-to-vessel or nozzle inner radius areas, other than feedwater and CRDM nozzles.

In summary, TVA requests a reduction in RPV nozzle and nozzle inner radius section examinations from 100 percent to 25 percent

(of each nozzle type and size) for each ten-year inspection interval. The 25 percent examination frequency, is sufficient to identify any aging degradation or failure mechanisms of the BFN RPV nozzles and nozzle inner radius sections. The 25 percent sampling alternative also provides a significant cost savings and reduces personnel dose exposure.

Implementation Schedule:

This request for relief is applicable to the BFN Unit 2, Third Ten-Year ASME Section XI Inservice Inspection Interval (May 25, 2001 to May 24, 2011).

Attachments:

Attachment A - ASME Code Case N-702

Attachment B - (7 sketches)

Sketch SK-B2001, Reactor Pressure Vessel Assembly

Sketch SK-B2017, N1, Recirculation Outlet Nozzles

Sketch SK-B2018, N2, Recirculation Inlet Nozzles, N3, Main Steam Nozzles, and N5, Core Spray Nozzles

Sketch SK-B2016, N6, Reactor Head Spray/Instrumentation Nozzle

Sketch SK-B2015, N7, Reactor Head Vent Nozzle

Sketch SK-B2019, N8, Jet Pump Instrumentation Nozzle

Sketch SK-B2022, N10, Differential Pressure and Liquid Volume Control Nozzle

Attachment C - Unit 2 RPV Nozzle and Inner Radius Section Examinations

Attachment A

2-ISI-22

ASME Code Case N-702

**CASE
N-702**

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: February 20, 2004

*See Numeric Index for expiration
and any reaffirmation dates.*

**Case N-702
Alternative Requirements for Boiling Water
Reactor (BWR) Nozzle Inner Radius and
Nozzle-to-Shell Welds
Section XI, Division 1**

Inquiry: What alternative to the inservice inspection requirements of Table IWB-2500-1, Examination Category B-D may be used for BWR nozzle inner radii and nozzle-to-shell welds?

Reply: It is the opinion of the Committee that for BWR's examination of a minimum of 25% of nozzle

inner radii and nozzle-to-shell welds, including at least one nozzle from each system and nominal pipe size, may be performed for Table IWB-2500-1, Examination Category B-D Item Nos. B3.10, B3.20, B3.90, and B3.100. VT-1 visual examination may be used in lieu of volumetric examination for Item Nos. B3.20 and B3.100. This Case excludes BWR feedwater nozzles and control rod drive return line nozzles. It is a requirement of this Case that the provisions of Appendix VIII in the 1989 Addenda or later Editions and Addenda be used for examinations.

Attachment B

2-ISI-22

SEVEN (7) Sketches

Sketch SK-B2001, Reactor Pressure Vessel Assembly

Sketch SK-B2017, N1, Recirculation Outlet Nozzles

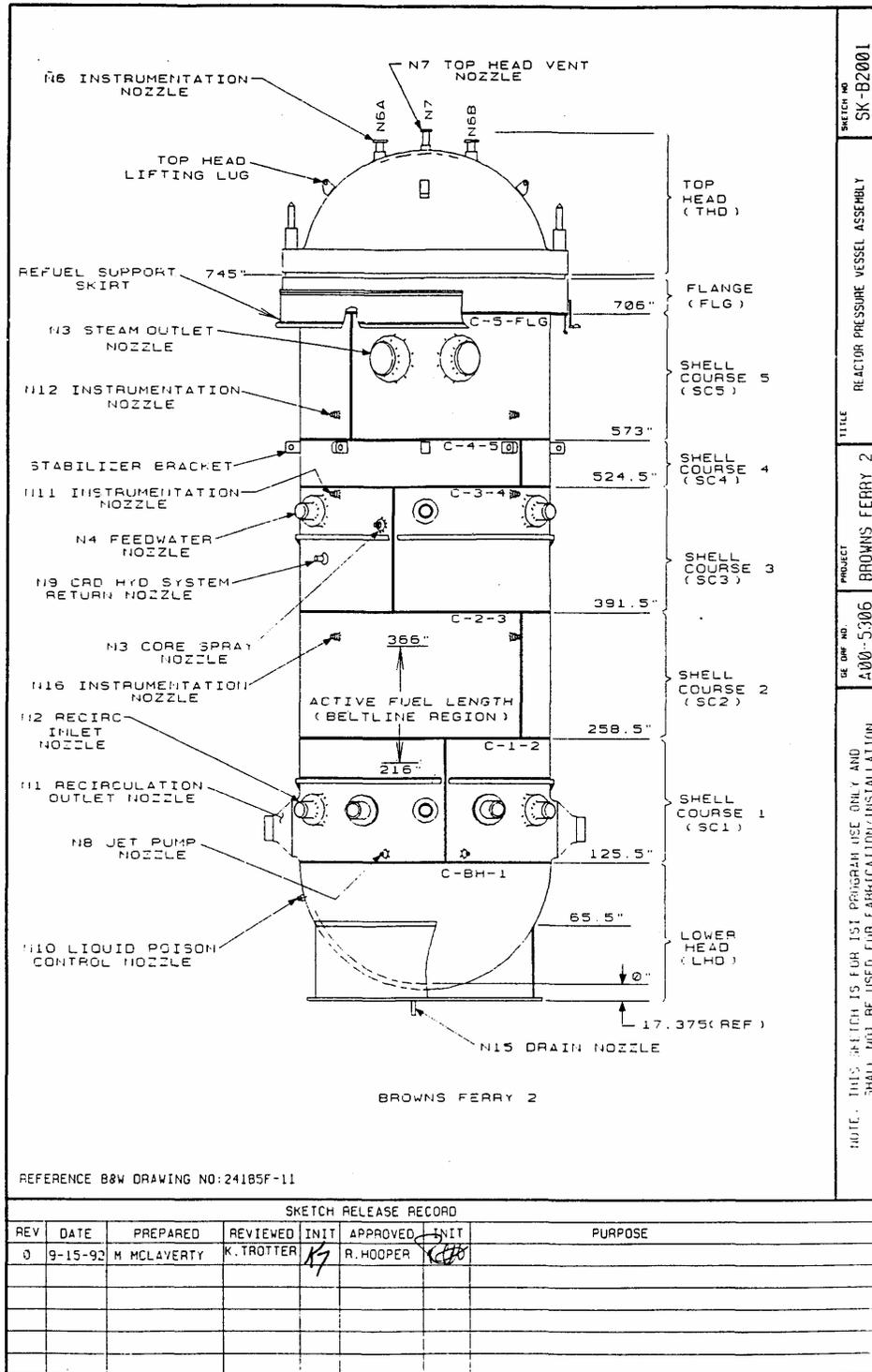
Sketch SK-B2018, N2, Recirculation Inlet Nozzles, N3, Main
Steam Nozzles, and N5, Core Spray Nozzles

Sketch SK-B2016, N6, Reactor Head Spray/Instrumentation Nozzle

Sketch SK-B2015, N7, Reactor Head Vent Nozzle

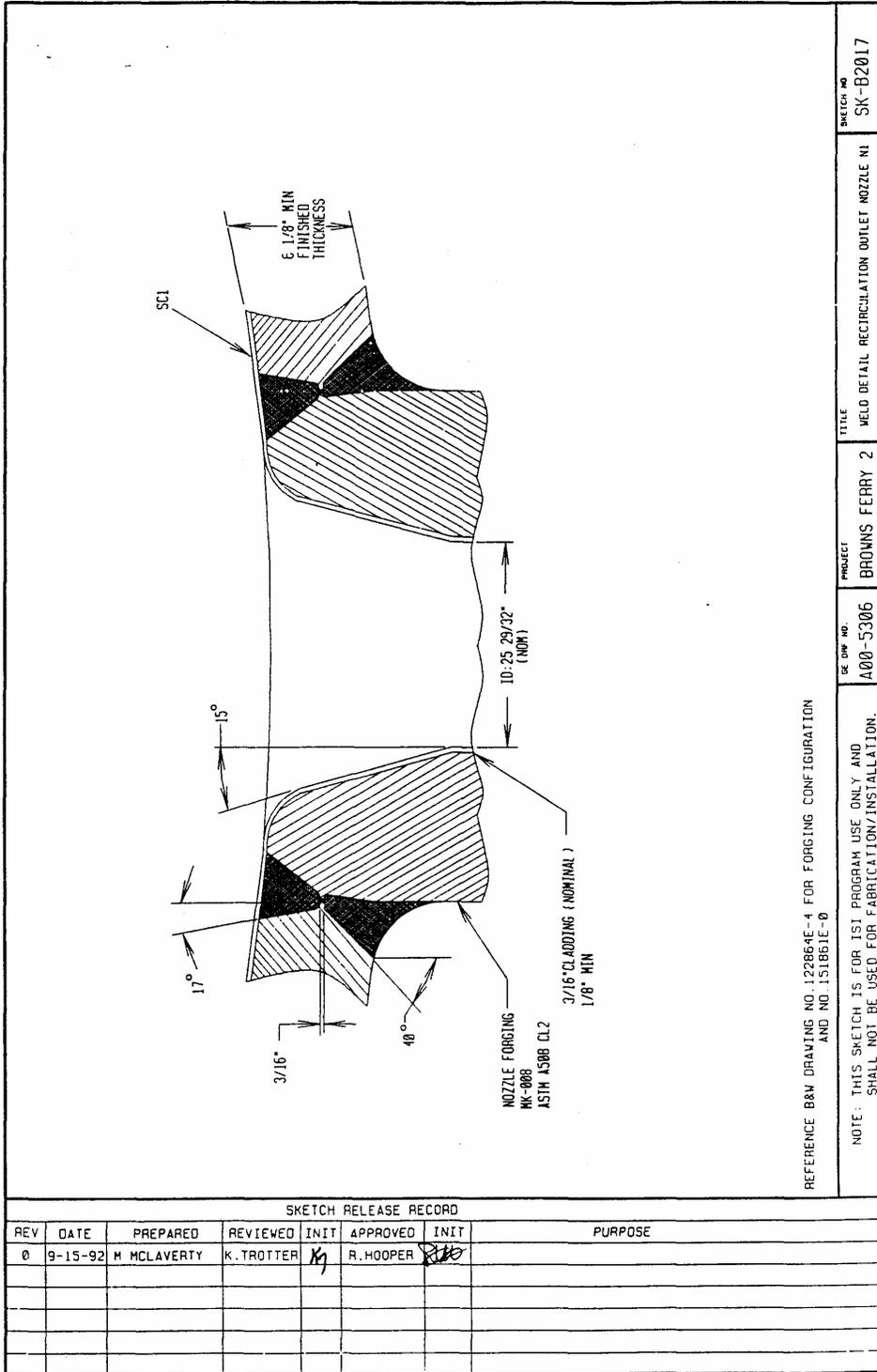
Sketch SK-B2019, N8, Jet Pump Instrumentation Nozzle

Sketch SK-B2022, N10, Differential pressure and Liquid Volume
Control Nozzle



SKETCH NO: SK-B2001
 TITLE: REACTOR PRESSURE VESSEL ASSEMBLY
 PROJECT: BROWNS FERRY 2
 B&W DRAWING NO: A00-5306
 NOTE: THIS SKETCH IS FOR 1ST PROGRAM USE ONLY AND SHALL NOT BE USED FOR FABRICATION/INSTALLATION.

SK-B2001



REFERENCE B&W DRAWING NO. 122864E-4 FOR FORGING CONFIGURATION AND NO. 151861E-0

NOTE: THIS SKETCH IS FOR ISI PROGRAM USE ONLY AND SHALL NOT BE USED FOR FABRICATION/INSTALLATION.

SE DRW. NO.	A00-5306
PROJECT	BROWNS FERRY 2
TITLE	WELD DETAIL RECIRCULATION OUTLET NOZZLE NI
SKETCH NO.	SK-B2017

SKETCH RELEASE RECORD

REV	DATE	PREPARED	REVIEWED	INIT	APPROVED	INIT	PURPOSE
0	9-15-92	M. MCLAVERTY	K. TROTTER	M	R. HOOPER	RHO	

SK-B2017

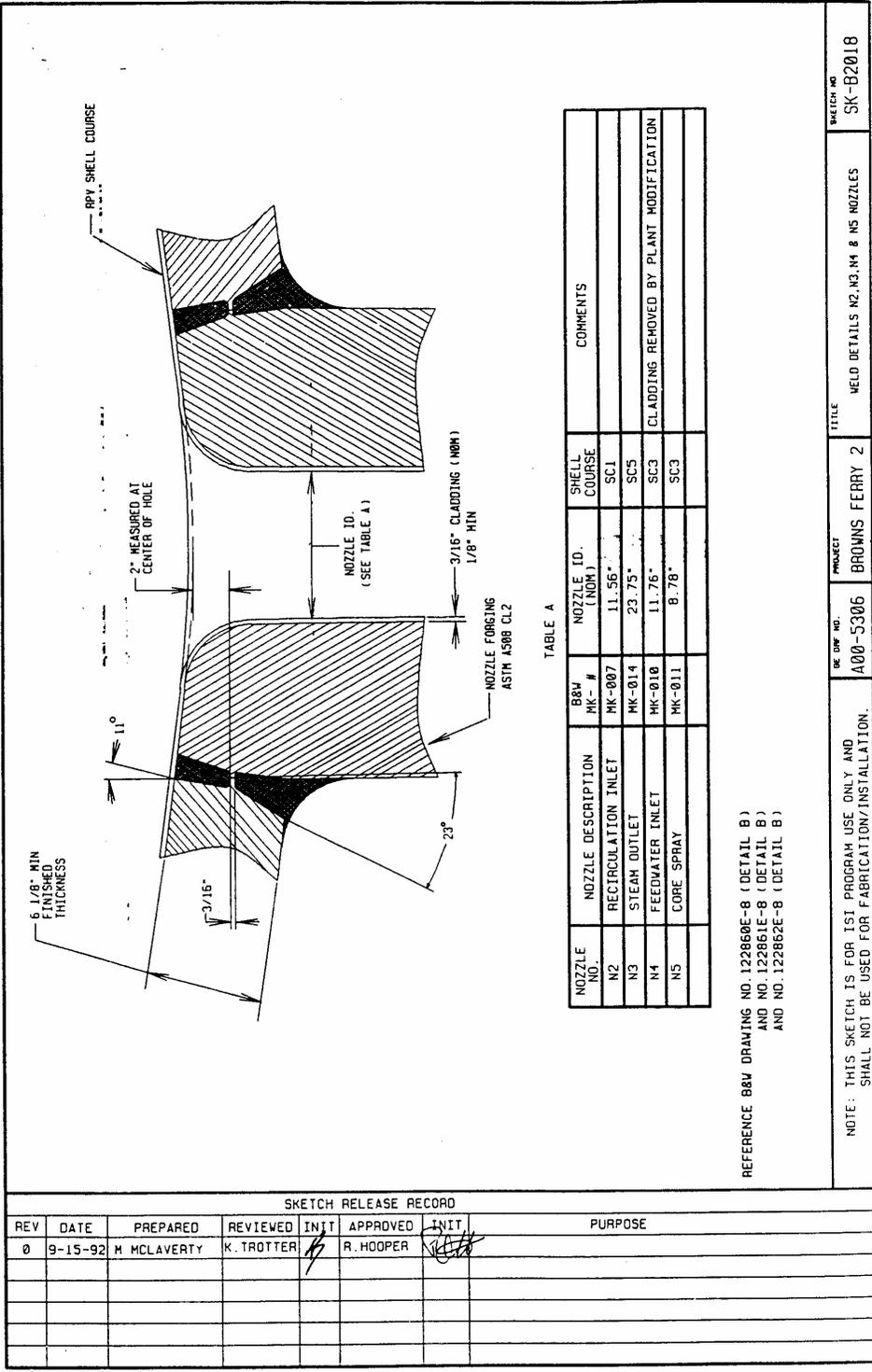


TABLE A

NOZZLE NO.	NOZZLE DESCRIPTION	B&W MK-#	NOZZLE ID. (NOM)	SHELL COURSE	COMMENTS
N2	RECIRCULATION INLET	MK-007	11.56"	SC1	
N3	STEAM OUTLET	MK-014	23.75"	SC5	
N4	FEEDWATER INLET	MK-010	11.76"	SC3	CLADDING REMOVED BY PLANT MODIFICATION
N5	CORE SPRAY	MK-011	8.78"	SC3	

REFERENCE B&W DRAWING NO. 122860E-8 (DETAIL B)
 AND NO. 122861E-8 (DETAIL B)
 AND NO. 122862E-8 (DETAIL B)

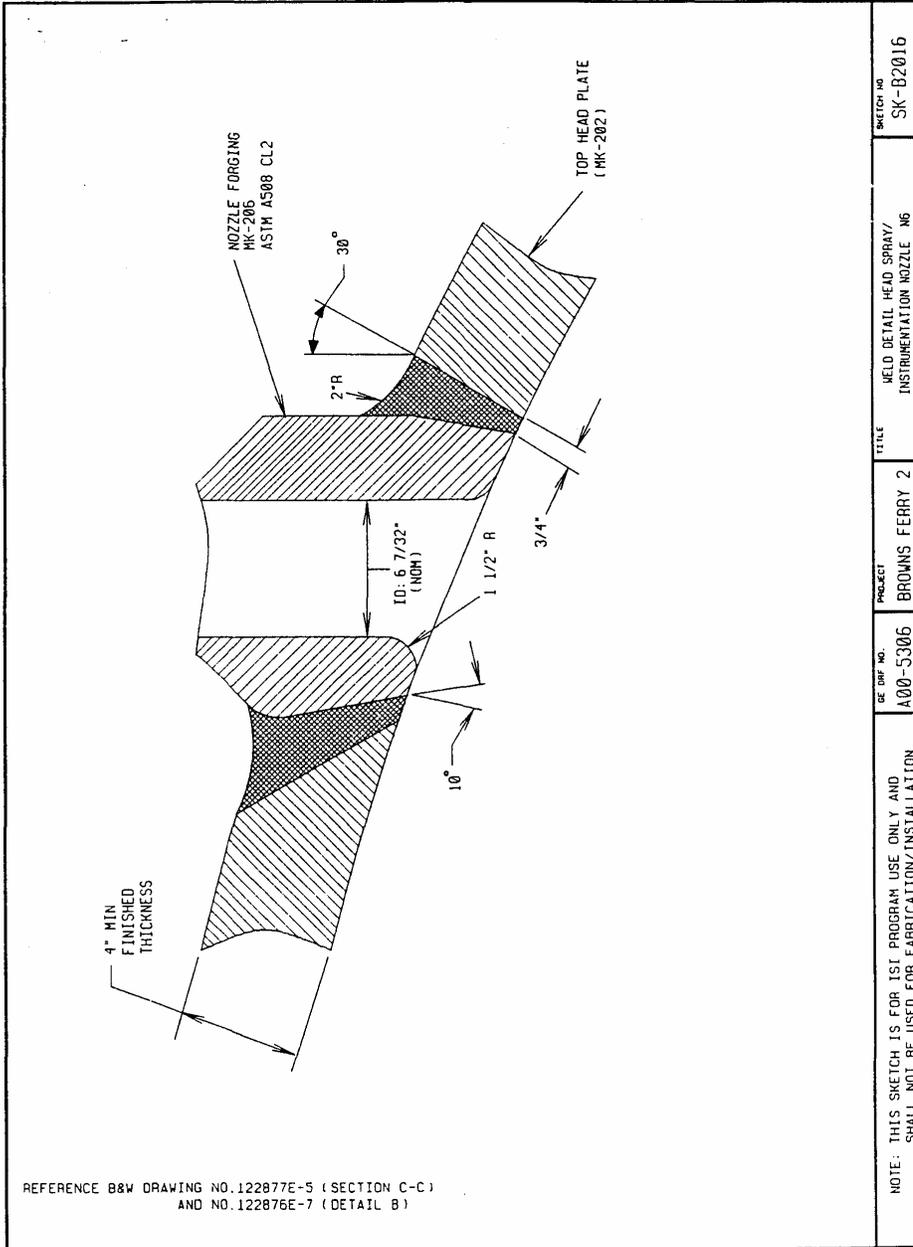
NOTE: THIS SKETCH IS FOR ISI PROGRAM USE ONLY AND SHALL NOT BE USED FOR FABRICATION/INSTALLATION.

SKETCH RELEASE RECORD

REV	DATE	PREPARED	REVIEWED	INIT	APPROVED	INIT	PURPOSE
0	9-15-92	M. MCLAVERTY	K. TROTTER	[Signature]	R. HOOPER	[Signature]	

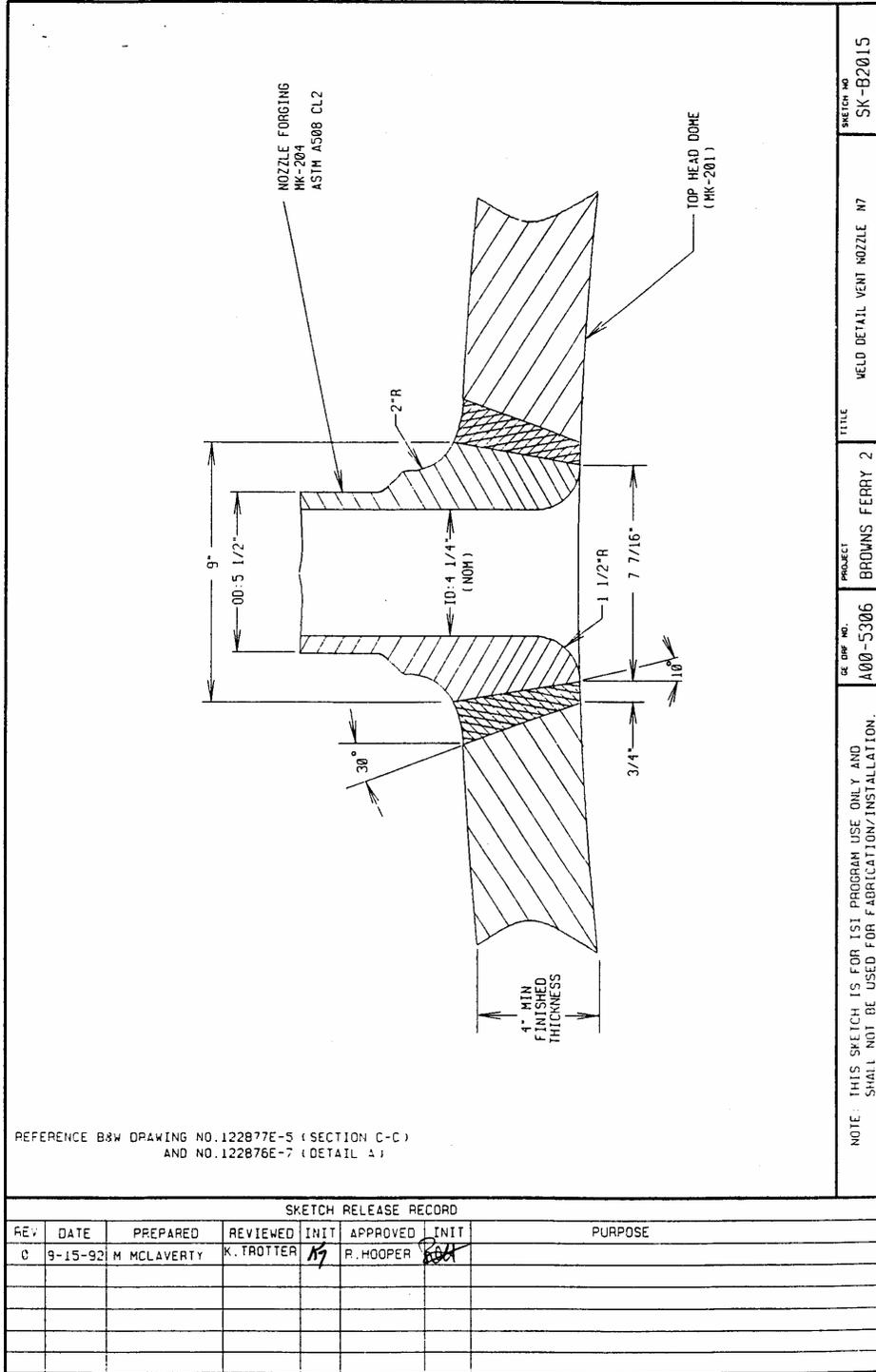
DEW NO. 100-5306 PROJECT BROWNS FERRY 2 TITLE HELD DETAILS N2, N3, N4 & N5 NOZZLES SKETCH NO. SK-B2018

SK-B2018

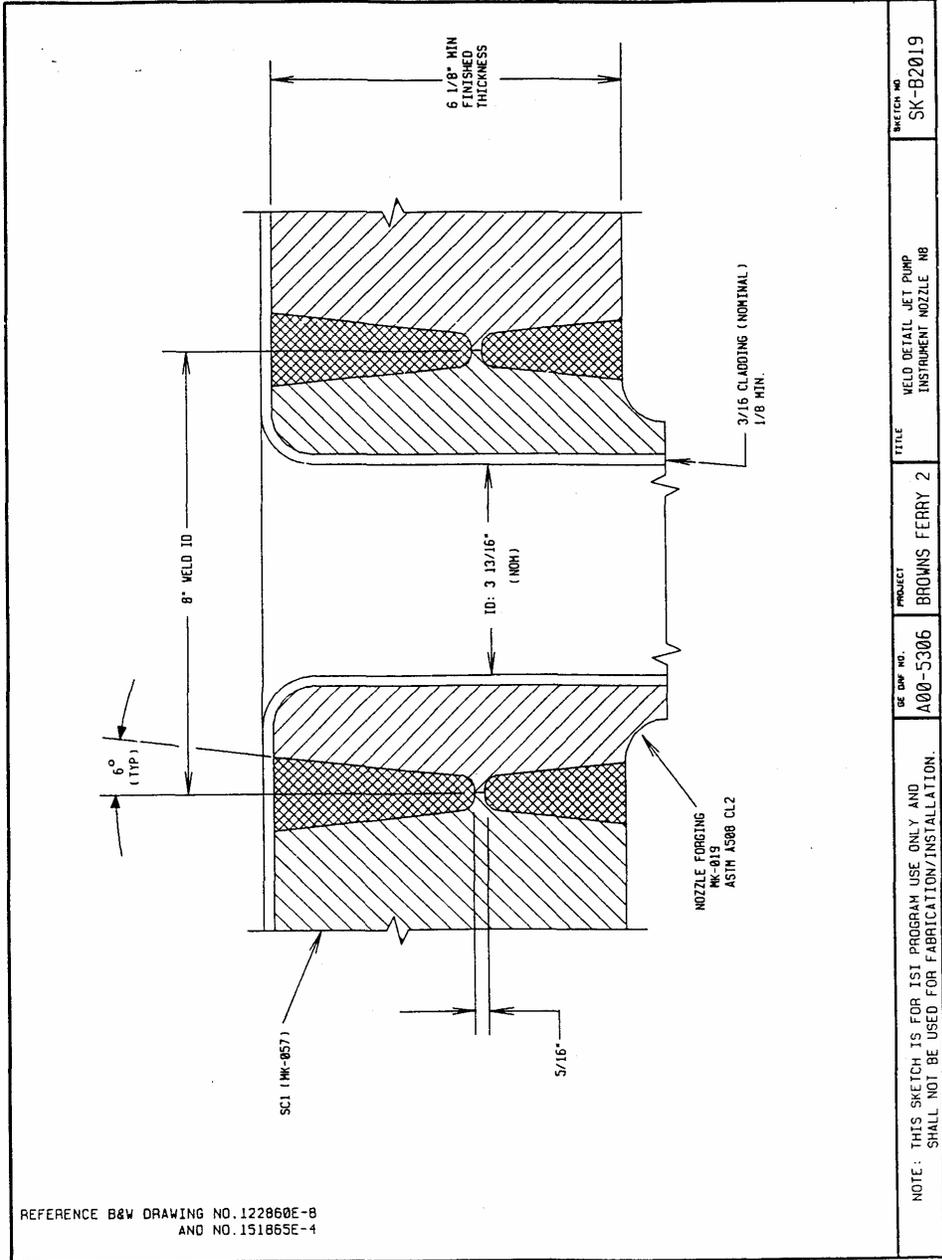


SKETCH RELEASE RECORD							PURPOSE
REV	DATE	PREPARED	REVIEWED	INIT	APPROVED	INIT	
0	9-15-92	M MCLAVERTY	K. TROTTER	<i>KT</i>	R. HOOPER	<i>RH</i>	

SK-B2016



SK-B2015

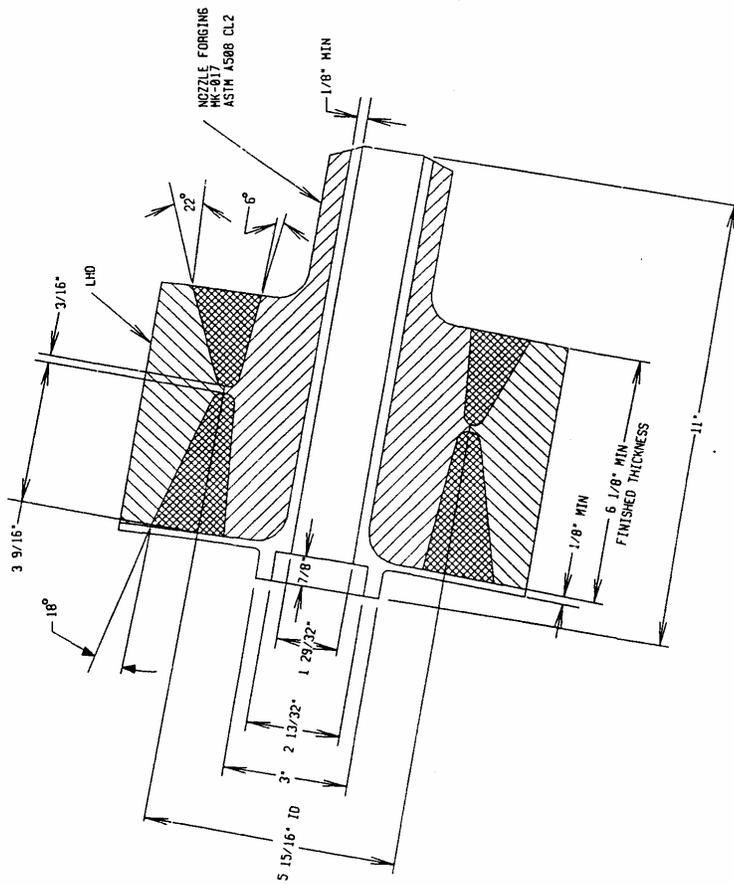


REFERENCE B&W DRAWING NO. 122860E-8
AND NO. 151865E-4

SKETCH NO. SK-B2019	TITLE WELD DETAIL JET PUMP INSTRUMENT NOZZLE NB	PROJECT BROWNS FERRY 2	USE DWG. NO. A00-5306	NOTE: THIS SKETCH IS FOR ISI PROGRAM USE ONLY AND SHALL NOT BE USED FOR FABRICATION/INSTALLATION.
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SKETCH RELEASE RECORD						
REV	DATE	PREPARED	REVIEWED	INIT	APPROVED	PURPOSE
0	11-1-92	M MCLAVERTY	K. TROTTER	<i>KT</i>	R. HOOPER	<i>RH</i>

SK-B2019



REFERENCE B&W DRAWING NO. 122950E-8 (DETAIL B)
AND NO. 151863E-0

SKETCH NO
SK-B2022

TITLE
#CLO DETAIL DIFFERENTIAL PRESSURE
AND LIQUID CONTROL NOZZLE NIB

PROJECT
BROWNS FERRY 2

BE ORF NO.
A00-5306

NOTE: THIS SKETCH IS FOR ISI PROGRAM USE ONLY AND
SHALL NOT BE USED FOR FABRICATION/INSTALLATION.

SKETCH RELEASE RECORD

REV	DATE	PREPARED	REVIEWED	INIT	APPROVED	INIT	PURPOSE
0	9-15-92	M MCLAVERTY	K. TROTTER	[Signature]	R. HOOPER	[Signature]	

SK-B2022

Attachment C

2-ISI-22

**UNIT 2 RPV NOZZLE
EXAMINATIONS SUMMARY**

REQUEST FOR RELIEF 2-ISI-22

UNIT 2 RPV NOZZLE EXAMINATIONS SUMMARY

COMPONENT	CYCLE		DATE		REPORT #		RESULTS		COVERAGE	
									* Note 1	
N1A	3	7	9/24/80	10/11/94	R-065, R-067, R-070	R-1001	A	A	*Note 1	60%
N1A-IR	5B	7	7/20/90	10/6/94	R-1400	R-1002	A	A	*Note 1	100%
N1B	4	9	9/28/82	10/15/97	R-181, R-178, R-195	R-207	A	A	*Note 1	72%
N1B-IR	5B	9	7/20/90	11/3/97	R-1399	R-207A	A	A	*Note 1	100%
N2A	4	9	9/28/82	10/15/97	R-171, R-183, R-199	R-208	A	A	*Note 1	77%
N2A-IR	4	9	9/28/82	11/21/97	R-202	R-208A	A	A	*Note 1	100%
N2B	1/3	7	5/17/78 9/23/80	10/23/94	R-048, R-063	R-1021	A	A	*Note 1	52%
N2B-IR	1	7	5/20/78	10/6/94	R-046	R-1022	A	A	*Note 1	100%
N2C	4	9	9/28/82	10/15/97	R-172, R-182, R-196	R-209	A	A	*Note 1	77%
N2C-IR	4	9	9/28/82	11/21/97	R-200	R-209A	A	A	*Note 1	100%
N2D	5B	11	9/20/86 10/22/87	4/6/01	R-137, R-829, R-832	R-126	A	A	*Note 1	67%
N2D-IR	5B	11	9/25/86	4/6/01	R-193	R-126A	A	A	*Note 1	100%
N2E	5B	11	9/20/86 10/22/87	4/7/01	R-136, R-828, R-833	R-127	A	A	*Note 1	67%
N2E-IR	5B	11	9/25/86	4/7/01	R-192	R-127A	A	A	*Note 1	100%
N2F	4A	7	6/6/81	10/22/94	R-006, R-011, R-013	R-1023	A	A	*Note 1	55%
N2F-IR	4A	7	6/7/81	10/6/94	R-020	R-1024	A	A	*Note 1	100%
N2G	4	9	9/28/82	10/15/97	R-179, R-180, R-198	R-210	A	A	*Note 1	77%
N2G-IR	4	9	9/28/82	11/21/97	R-206	R-210A	A	A	*Note 1	100%
N2H	4	9	9/28/82	10/15/97	R-173, R-184, R-197	R-211	A	A	*Note 1	77%
N2H-IR	4	9	9/29/82	11/21/97	R-207	R-11A	A	A	*Note 1	100%
N2J	4A	7	6/6/81	10/22/94	R-007, R-014, R-015	R-1025	A	A	*Note 1	55%
N2J-IR	4A	7	6/7/81	10/6/94	R-019	R-1026	A	A	*Note 1	100%
N2K	5B	11	9/16/86 10/22/87	10/7/01	R-138, R-830, R-834	R-128	A	A	*Note 1	67%

COMPONENT	CYCLE		DATE		REPORT #		RESULTS		COVERAGE	
N2K-IR	5B	11	9/25/86	10/7/01	R-194	R-128A	A	A	*Note 1	100%
N3A	5B	11	9/27/86 10/21/87	3/31/01	R-198, R-201, R-893	R-129	A	A	*Note 1	61%
N3A-IR	5B	11	9/28/86	3/31/01	R-255	R-129A	A	A	*Note 1	100%
N3B	4	9	9/26/82	10/15/97	R-067, R-074, R-075	R-212	A	A	*Note 1	75%
N3B-IR	4	9	9/21/82	11/21/97	R-142	R-212A	A	A	*Note 1	100%
N3C	5B	11	9/27/86 12/21/86	3/31/01	R-196, R-199, R-892	R-130	A	A	*Note 1	61%
N3C-IR	5B	11	9/28/86	3/31/01	R-254	R-130A	A	A	*Note 1	100%
N3D	1	7	5/17/78	10/13/94	R-047	R-1003	A	A	*Note 1	57%
N3D-IR	1	7	5/20/78	10/6/94	R-045	R-1004	A	A	*Note 1	100%
N4A	3	7	10/9/80	10/7/94	R-107, R-109, R-122	R-1009	A	A	*Note 1	59%
N4A-IR	3	7	10/7/80	10/17/94	R-105	R-1009	A	A	*Note 1	100%
N4B	4	9	9/12/82	10/15/97	R-089, R-091, R-094	R0213	A	A	*Note 1	67%
N4B-IR	4	9	9/21/82	11/21/97	R-140	R-213A	A	A	*Note 1	100%
N4C	4	9	9/12/82	10/15/97	R-088, R-090, R-095, R-103	R-214	A	A	*Note 1	67%
N4C-IR	4	9	9/21/82	11/21/97	R-141	R-214A	A	A	*Note 1	100%
N4D	5B	11	9/20/86 12/22/87	4/5/01	R-128, R-134, R-897	R-131	A	A	*Note 1	69%
N4D-IR	5B	11	9/25/86	4/5/01	R-190	R-131A	A	A	*Note 1	100%
N4E	5B	11	9/20/86 10/22/87	4/5/01	R-126, R-133, R-895	R-132	A	A	*Note 1	69%
N4E-IR	5B	11	9/25/86	4/3/01	R-189	R-132A	A	A	*Note 1	100%
N4F	3	7	10/9/80	10/17/94	R-108, R-110, R-121	R-1005	A	A	*Note 1	54%
N4F-IR	3	7	10/7/80	10/17/94	R-104, R-008, R-010, R-012	R-1007	A	A	*Note 1	100%

COMPONENT	CYCLE		DATE		REPORT #		RESULTS		COVERAGE	
N5A-IR	3	7	10/8/80	10/20/94	R-114	R-1028	A	A	*Note 1	100%
N5B	4	9	9/24/82	10/15/97	R-089, R-105, R-106	R-215	A	A	*Note 1	65%
N5B-IR	4	9	9/21/82	11/21/97	R-138	R-215A	A	A	*Note 1	100%
N6A	3	6	9/18/80	2/13/93	R-050, R-051, R-052	R-064	A	A	*Note 1	100%
N6A-IR	3/5B	6	10/3/80 11/4/88	2/13/93	R-087, R-1111	R-063	A	A	*Note 1	100%
N6B	5B	10	11/16/87	4/25/90	R-859, R-862, R-865	R-353	A	A	*Note 1	100%
N6B-IR	5B	10	11/4/88	4/25/90	R-1110	R-331	A	A	*Note 1	100%
N7	5B	10	11/16/87	4/23/90	R-854, R-857, R-860	R-352	A	A	*Note 1	100%
N7-IR	5B	10	11/4/88	4/25/90	R-1112	R-335	A	A	*Note 1	100%
N8A	3	7	9/24/80	10/17/94	R-061, R-062, R-069	R-1008	A	A	*Note 1	68%
N8A-IR	3	7	10/6/80	10/18/94	R-101	R-1011	A	A	*Note 1	73%
N8B	5B	11	9/20/86 11/16/87	4/3/01	R-139, R-831, R-835	R-133	A	A	*Note 1	72%
N8B-IR	5B	11	9/25/86	4/4/01	R-191	R-133A	A	A	*Note 1	100%
N9	4	9	9/24/82	10/15/97	R-098, R-104, R-161	R-216	A	A	*Note 1	75%
N9-IR	4	9	9/21/82	11/21/97	R-139	R-216A	A	A	*Note 1	100%
N10	-	11	-	4/3/01	-	R-134	-	A		56%

Note 1: The examination method (UT) and techniques utilized in the First Ten-Year ISI Interval were basically the same as used in the Second Ten-Year ISI Interval, therefore the percentage of examination coverage are essentially the same for the RPV Nozzle-To-Vessel Shell Welds and Inner Radius Sections.

Note 2: In results column, "A" refers to acceptable per ASME Section XI, Subarticle IWB-3512 acceptance criteria.

**UNIT 2 RPV NOZZLE EXAMINATIONS
THIRD (CURRENT) INTERVAL, FIRST PERIOD ONLY**

COMPONENT	CYCLE	DATE	REPORT #	RESULTS	COVERAGE
N1A	12	3/4/03	R-160	A	48.8%
N1A-IR	12	3/7/03	R-169	A	100%
N2B	12	3/3/03	R-161	A	51.5%
N2B-IR	12	3/7/03	R-167	A	60%
N2F	12	3/3/03	R-162	A	51.5%
N2F-IR	12	3/7/03	R-169	A	60%
N2J-IR	12	3/7/03	R-169	A	60%
N3D	12	3/1/03	R-164	A	47.3%
N3D-IR	12	3/3/03	R-169	A	100%
N4A	12	3/2/03	R-141	A	45.4%
N4A-IR	12	3/2/03	R-141	A	100%
N4B	12	3/4/03	R-142	A	45.4%
N4B-IR	12	3/4/03	R-142	A	100%
N4C	12	3/1/03	R-143	A	45.4%
N4C-IR	12	3/1/03	R-143	A	100%
N4D	12	3/4/03	R-144	A	45.4%
N4D-IR	12	3/4/03	R-144	A	100%
N4E	12	3/2/03	R-145	A	45.45
N4E-IR	12	3/2/03	R-145	A	100%
N4F	12	3/4/03	R-146	A	45.4%
N4F-IR	12	3/4/03	R-146	A	100%
N6A	12	2/28/03	R-110	A	90.5%
N6A-IR	12	3/1/03	R-106	A	100%
N8A	12	3/5/03	R-165	A	89.5%
N8A-IR	12	3/7/03	R-169	A	60%

Note: In results column, "A" refers to acceptable per ASME Section XI, Subarticle IWB-3512 acceptance criteria.

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 3
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI,
INSERVICE INSPECTION (ISI) PROGRAM
(SECOND TEN-YEAR INSPECTION INTERVAL)

REQUEST FOR RELIEF 3-ISI-18, REVISED TO INCORPORATE
ASME CODE CASE N-702

(SEE ATTACHED)

**TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 3
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI,
INSERVICE INSPECTION (ISI) PROGRAM
(SECOND TEN-YEAR INSPECTION INTERVAL)**

**REQUEST FOR RELIEF 3-ISI-18, REVISED TO INCORPORATE
ASME CODE CASE N-702**

**Executive
Summary:**

In accordance with 10 CFR 50.55a(a)(3)(i), TVA is requesting relief from inservice inspection requirements of the 1989 Edition, no Addenda, Section XI of the ASME Boiler and Pressure Vessel Code for the volumetric examination of Class 1, reactor pressure vessel (RPV) nozzle-to-vessel welds and nozzle inner radius sections. The Code examination requirement is for a volumetric examination of 100 percent of the ASME Section XI, Examination Category B-D, "Full Penetration Welded Nozzles in Vessels," Item No. B3.90, "Reactor Vessel Nozzle to Vessel Welds and Item No. B3.100, "Reactor Vessel Nozzle Inner Radius Section" each 10-year inspection interval.

This request for relief applies to the BFN Unit 3 Reactor Pressure Vessel and RPV Head nozzles, with the exception of the six (N4) feedwater and one (N9) Control Rod Drive Return Line (capped) nozzles. These nozzle-to-vessel welds and inner radius sections will continue to be examined with ultrasonic examination (UT) techniques in accordance with ASME, Section XI, Appendix VIII and the Performance Demonstration Initiative (PDI) Program.

TVA proposes to adopt ASME Code Case N-702, "Alternate Requirements for Boiling Water Reactor (BWR) Nozzle and Inner Radius and Nozzle-To-Shell Welds Section XI, Division 1." This Code Case provides an alternative for BWRs for examination reduction of nozzle-to-shell welds and nozzle inner radius sections from 100 percent to a minimum of 25 percent of the nozzles and nozzle inner radius sections every ten-year inspection interval. The 25 percent coverage refers to 25 percent of the nozzle-to-shell welds for each system and

nominal pipe size (e.g., 1 of 4 Main Steam nozzles) for items listed in ASME Section XI, Table IWB-2500-1, Examination Category B-D, Items Numbers B3.90, and B3.100.

For the reactor pressure vessel nozzle inner radius section, TVA will perform an enhanced remote visual (VT-1) examination, capable of a 1-mil wire resolution.

Note: The change from volumetric (UT) to enhanced visual (VT-1) was submitted as two separate requests for relief, 3-ISI-14 and 3-ISI-15, by TVA letter dated May 9, 2003. TVA's request was approved by NRC letter dated February 11, 2004.

For the RPV head nozzle inner radius, TVA will perform an enhanced direct visual (VT-1) examination, capable of a 1-mil wire resolution, in accordance with ASME Section XI, VT-1 requirements.

Note: The change from volumetric (UT) to enhanced visual (VT-1) was submitted in a request for relief, 3-ISI-11, to NRC by TVA letters dated August 13, 2001, January 9 and February 5, 2002, and approved by NRC letter dated March 13, 2002.

All examinations will be performed with personnel, procedures, and equipment qualified in accordance with the ASME Section XI Code, 1995 Edition, 1996 Addenda, Appendix VIII and the Performance Demonstration Initiative (PDI) Program requirements.

TVA considers the above proposed alternative examinations will provide an acceptable level of quality and safety. The 25 percent examination frequency, is sufficient to identify any aging degradation or failure mechanisms of the BFN RPV nozzles and nozzle inner radius sections. The proposed alternatives will also provide a significant savings in examination resources and radiation exposure.

Unit: Three (3)

ISI Interval: ASME Section XI, Second Ten-Year ISI Interval (November 19, 1996 to November 18, 2005)

**System(s) /
Components:**

Reactor Pressure Vessel (RPV), Nozzle-to-Shell Welds and nozzle Inner Radius Sections (Total of 24 nozzles):

Reactor Recirculation Outlet Nozzles (28-inch diameter), N1A and N1B (Total of 2 nozzles)

Reactor Recirculation Inlet Nozzles (12-inch diameter), N2A, N2B, N2C, N2D, N2E, N2F, N2G, N2H, N2J, and N2K (Total of 10 nozzles)

Main Steam Nozzles (26-inch diameter), N3A, N3B, N3C, and N3D (Total of 4 nozzles)

Core Spray Nozzles (10-inch diameter), N5A and N5B (Total of 2 nozzles)

Reactor Pressure Vessel (RPV) Head Nozzles, N6A, and N6B, (6-inch diameter) and N7 (4-inch diameter) (Total of 3 nozzles)

Jet Pump Instrumentation Nozzles (4-inch diameter), N8A and N8B (Total of 2 nozzles)

Standby Liquid Control Nozzle (1.5-inch diameter), N10 (Total of 1 nozzle)

ASME Code Class:

ASME Code Class 1

**ASME Section XI
Code Edition:**

1989 Edition with no Addenda

Note: The Code of Record for the BFN Unit 3 Second Ten-Year ISI Interval is the 1989 Edition, with no Addenda for component selection. However, TVA has adopted the 1995 Edition with the 1996 addenda (all TVA nuclear sites) for performance of nondestructive examinations.

Code Table:

IWB-2500-1

**Examination
Category:**

B-D, "Full Penetration Welded Nozzles In Vessels"

**Examination Item
Number(s):**

B3.90, "Nozzle-To-Vessel Welds", and B3.100, "Nozzle Inner Radius Sections,"

Code Requirement:

The 1989 Edition with no Addenda, ASME Section XI, Table IWB-2500-1, Examination Category B-D, Item No. B3.90 and Item No. B3.100, requires a volumetric examination of 100 percent of the reactor pressure vessel (RPV) nozzle-to-shell welds and nozzle inner radius sections each ten-year inspection interval.

**Code Requirements
From Which Relief
Is Requested:**

Relief is requested from the 1989 Edition with no Addenda, ASME Section XI, Table IWB-2500-1, Examination Category B-D, Item No. B3.90 and Item No. B3.100, which requires a volumetric examination of 100 percent each ten-year inspection interval of the reactor pressure vessel (RPV) nozzle-to-shell welds and nozzle inner radius section.

**List Of Items
Associated
With The Relief
Request:**

Reactor Pressure Vessel Nozzles, N1A, N1B, N2A, N2B, N2C, N2D, N2E, N2F, N2G, N2H, N2J, N2K, N3A, N3B, N3C, N3D, N5A, N5B, N6A, N6B, N7, N8A, N8B, and N10 (Total of 24 nozzles)

Note: The six Feedwater (N4), and one Control Rod Drive Return Line (N9) (capped) nozzle-to-vessel welds and nozzle inner radius sections will continue to be examined with ultrasonic examination (UT) techniques in accordance with ASME Section XI, Table IWB-2500-1, Appendix VIII, and the Performance Demonstration Initiative (PDI) Program.

**Basis For
Relief Request:**

Pursuant to 10 CFR 50.55a(a)(3)(i) TVA is requesting relief from ASME Section XI requirements to perform the volumetric examinations described above.

TVA proposes to adopt ASME Code Case N-702, "Alternate Requirements for Boiling Water Reactor (BWR) Nozzle Inner Radius and Nozzle-to-Shell Welds, Section XI, Division 1."

This Code Case provides an alternative for BWRs for reduction of the nozzle-to-shell welds and nozzle blend radii examinations from 100 percent to 25 percent of the nozzles each

ten-year inspection interval. The 25 percent examination coverage refers to 25 percent of the nozzles for each nozzle type and nominal pipe size (e.g., 1 of 4 main steam nozzles would be inspected).

The 25 percent examination frequency, is sufficient to identify any aging degradation or failure mechanisms of the BFN RPV nozzles and nozzle inner radius sections. The 25 percent sampling level is similar to industry practice and, in some cases, exceeds current practice. For example:

- ASME Code Section XI, IWB-2500 requires 25 percent of Category B-J (Item No. B9.11) circumferential welds to be inspected each inspection interval.
- ASME Code Case N-560, (Risk Informed Inspection) requires inspection of 10 percent of higher risk Class I Category B-J piping welds.
- ASME Code Case N-578, (Risk Informed Inspection) requires inspection of at least 25 percent of the highest risk, (Risk Category 1, 2, and 3) and
- At least 10 percent of the next highest risk, (Risk Category 4 or 5) Class I piping welds.
- ASME Code Section XI, IWC-2500 (Class II piping) Category C-F-1 and C-F-2 requires inspection of 7.5 percent of welds.
- Generic Letter 88-01 requires 25 percent inspection of Category A piping welds.

The 25 percent sampling alternative also provides a significant cost savings and reduces personnel dose exposure. Several utilities have estimated that the proposed reduction of inspection requirements would result in a savings of up to \$750,000 per ten-year ISI interval not including exposure considerations. The dose savings at BFN Unit 3 would be approximately 6.5 to 7 REM over a ten-year ISI inspection interval.

In the first Unit 3 inspection interval, 30 reactor pressure vessel nozzle-to-shell welds and inner radius sections received a volumetric examination. In the second Unit 3 inspection interval, 24 of the 31 reactor pressure vessel nozzle-to-shell welds and 23 inner radius sections have received a volumetric examination. The examination results met ASME Section XI, IWB-3512 acceptance criteria. One (1) inner radius section received an enhanced visual (EVT-1) examination from the vessel ID. The examination results met ASME Section XI, IWB-3512 acceptance criteria. A summary of these examinations is provided in Attachment C of this enclosure.

TVA considers the above proposed alternative examinations, when considered with the examination history of the BFN RPV nozzles, will provide an acceptable level of quality and safety. The proposed alternatives will also provide a significant savings in examination resources and radiation exposure.

Alternate Examination:

In accordance with 10 CFR 50.55a(a)(3)(i), TVA will adopt ASME Code Case N-702 (See Attachment A of this enclosure) and perform the following alternate examinations:

RPV Nozzle-To-Vessel Welds

For the reactor pressure vessel nozzles, Item No. B3.90, TVA will perform volumetric examinations of 25 percent, in lieu of the Code required 100 percent, each ten-year inspection interval. The 25 percent examination coverage refers to 25 percent of the nozzles for each nozzle type and nominal pipe size (e.g., 1 of 4 main steam nozzles would be inspected).

RPV Nozzle, Inner Radius Section

For the reactor pressure vessel nozzles inner radius section, ASME Section XI Item B3.100, TVA will perform an enhanced remote visual (VT-1) examination of 25 percent of the nozzles, capable of a 1-mil wire resolution in accordance with ASME Section XI, VT-1 requirements. The 25 percent examination coverage refers to 25 percent of the nozzles

for each nozzle type and nominal pipe size (e.g., 1 of 4 main steam nozzles would be inspected).

RPV Head Nozzle, Inner Radius sections

For the RPV head nozzle inner radius sections, TVA will perform an enhanced direct visual (VT-1) examination, capable of a 1-mil wire resolution, in accordance with ASME Section XI, VT-1 requirements. The 25 percent examination coverage refers to 25 percent of the nozzles for each nozzle type and nominal pipe size (e.g., 1 of 4 main steam nozzles would be inspected).

Note: The change from volumetric (UT) to enhanced visual (VT-1) was submitted by requests for relief, 3-ISI-14 and 3-ISI-15, by TVA letter dated May 9, 2003. TVA's request was approved by NRC letter dated February 11, 2004. A request for relief 3-ISI-11 for the RPV Head Nozzles was submitted to NRC by TVA letters dated August 13, 2001, January 9 and February 5, 2002, and approved by NRC letter dated March 13, 2002.

The following nozzles will be examined:
N1 (1 of 2), N2 (3 of 10), N3 (1 of 4), N4 (1 of 2), N6 (1 of 2), N7 (1 of 1), N8 (1 of 1), N9 (1 of 1), and N10 (1 of 1)
(Total of 11 nozzles examined).

All examinations will be performed with personnel, procedures, and equipment qualified in accordance with the ASME Section XI Code, 1995 Edition, 1996 Addenda, Appendix VIII and the Performance Demonstration Initiative (PDI) Program requirements.

**Justification
For The Granting
Of Relief:**

The BFN Unit 3 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. See Attachment C of this enclosure for RPV nozzle and inner radius

section listing, UT examinations performed, examination coverage, and examination results for the Unit 3 first and second 10-year ISI inspection interval.

In the first Unit 3 inspection interval, 30 of 31 reactor pressure vessel nozzle-to-shell welds and inner radius sections received a volumetric examination. The examination results met ASME Section XI, IWB-3512 acceptance criteria.

In the second (current) Unit 3 inspection interval, 20 of 31 reactor pressure vessel nozzle-to-shell welds and 19 inner radius sections have received a volumetric examination, the results were acceptable. One (1) inner radius section received an enhanced visual (EVT-1) examination from the vessel inside diameter in accordance with TVA request for relief 3-ISI-11. The examination results met ASME Section XI, IWB-3512 acceptance criteria.

A significant number of examinations have been performed on units in the BWR fleet that have been operational, for periods up to 30 years, using modern examination techniques capable of detecting significant cracking if it were present. No degradation or failure mechanism has been identified in nozzle-to-vessel or blend radius areas, other than feedwater and CRDM nozzles.

In summary, TVA requests a reduction in RPV nozzle and nozzle inner radius section examinations from 100 percent to 25 percent (of each nozzle type) each 10-year inspection interval. The 25 percent examination frequency is sufficient to identify any aging degradation or failure mechanisms of the BFN RPV nozzles and nozzle inner radius sections. The 25 percent sampling alternative also provides a significant cost savings and reduces personnel dose exposure.

Implementation
Schedule:

This request for relief is applicable to the BFN Unit 3, Second Ten-Year ASME Section XI Inservice Inspection Interval, (November 19, 1996 to November 18, 2005).

Attachments:

Attachment A - ASME Code Case N-702

Attachment B - (7) sketches)

Sketch SK-B3001, Reactor Pressure Vessel Assembly

Sketch SK-B3017, N1, Recirculation Outlet Nozzle

Sketch SK-B3018, N2, Recirculation Inlet Nozzles, N3, Main Steam Nozzles, and N5, Core Spray Nozzles

Sketch SK-B3016, N6, Reactor Head Spray/Instrumentation Nozzle

Sketch SK-B3015, N7, Reactor Head Vent Nozzle

Sketch SK-B3019, N8, Jet Pump Instrumentation Nozzle

Sketch SK-B3022, N10, Differential pressure and Liquid Volume Control Nozzle

Attachment C - Unit 3 RPV Nozzle and Inner Radius Section Examinations

Attachment A

3-ISI-18

ASME Code Case N-702

**CASE
N-702**

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: February 20, 2004

*See Numeric Index for expiration
and any reaffirmation dates.*

**Case N-702
Alternative Requirements for Boiling Water
Reactor (BWR) Nozzle Inner Radius and
Nozzle-to-Shell Welds
Section XI, Division 1**

Inquiry: What alternative to the inservice inspection requirements of Table IWB-2500-1, Examination Category B-D may be used for BWR nozzle inner radii and nozzle-to-shell welds?

Reply: It is the opinion of the Committee that for BWR's examination of a minimum of 25% of nozzle

inner radii and nozzle-to-shell welds, including at least one nozzle from each system and nominal pipe size, may be performed for Table IWB-2500-1, Examination Category B-D Item Nos. B3.10, B3.20, B3.90, and B3.100. VT-1 visual examination may be used in lieu of volumetric examination for Item Nos. B3.20 and B3.100. This Case excludes BWR feedwater nozzles and control rod drive return line nozzles. It is a requirement of this Case that the provisions of Appendix VIII in the 1989 Addenda or later Editions and Addenda be used for examinations.

Attachment B

3-ISI-18

SEVEN (7) Sketches

Sketch SK-B3001, Reactor Pressure Vessel Assembly

Sketch SK-B3017, N1, Recirculation Outlet Nozzles

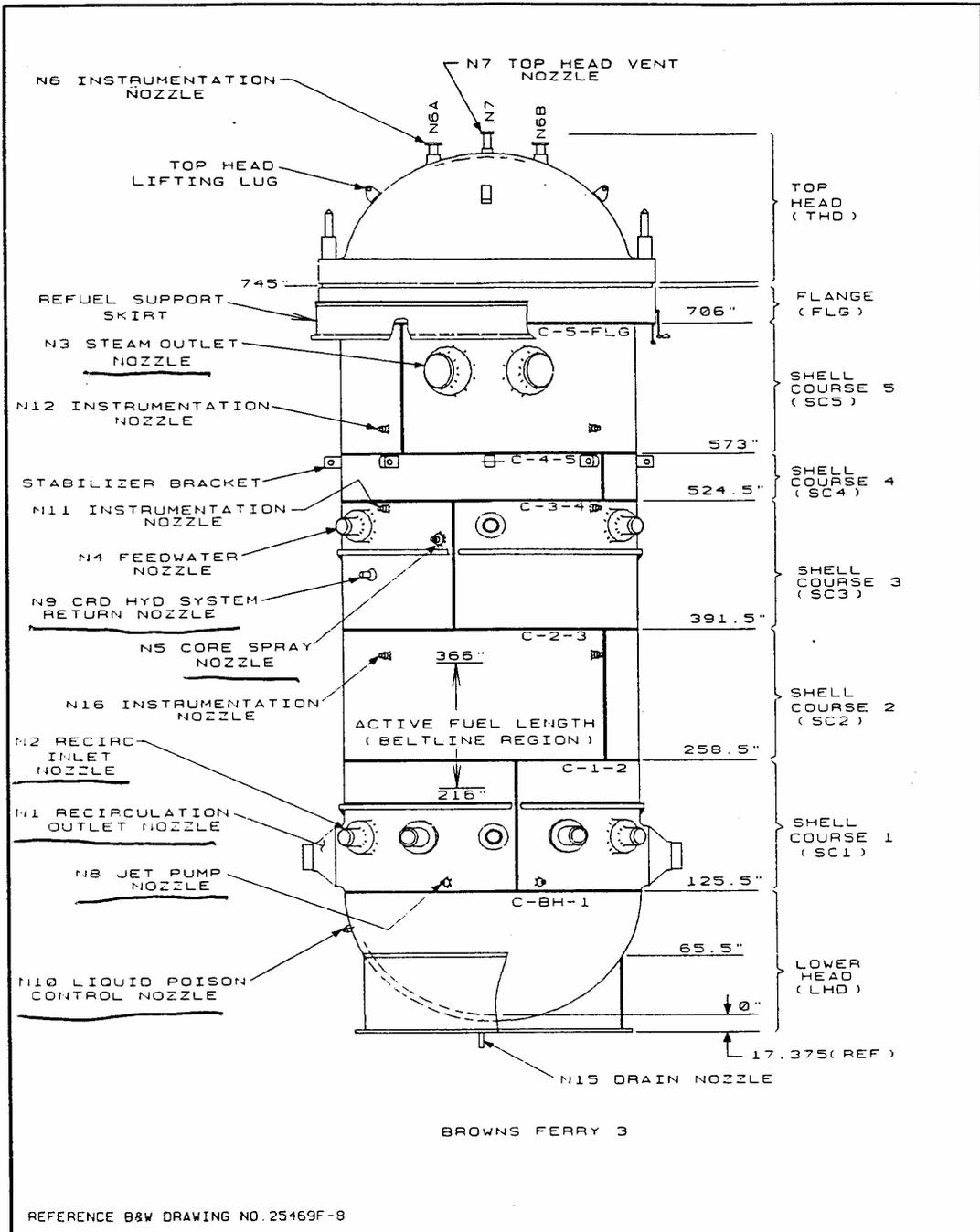
Sketch SK-B3018, N2, Recirculation Inlet Nozzles, N3, Main Steam Nozzles, and N5, Core Spray Nozzles

Sketch SK-B3016, N6, Reactor Head Spray/Instrumentation Nozzles

Sketch SK-B3015, N7, Reactor Head Vent Nozzle

Sketch SK-B3019, N8, Jet Pump Instrumentation Nozzles

Sketch SK-B3022, N10, Differential pressure and Liquid Volume Control Nozzle



SKETCH NO. SK-B3001

TITLE REACTOR PRESSURE VESSEL ASSEMBLY

PROJECT BROWNS FERRY 3

DE DWF NO. A00-5306

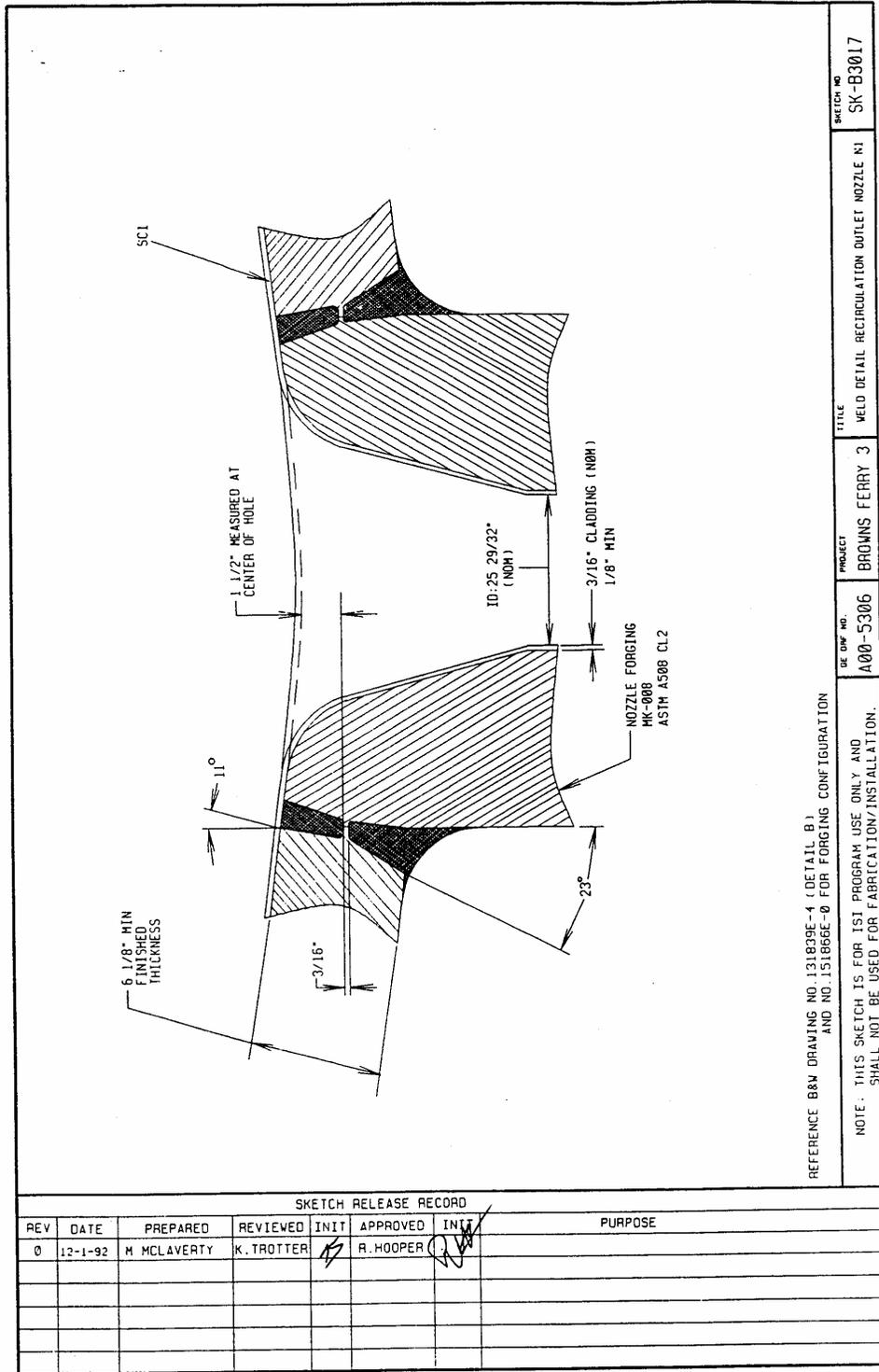
NOTE THIS SKETCH IS FOR 1ST PROGRAM USE ONLY AND SHALL NOT BE USED FOR FABRICATION/INSTALLATION.

REFERENCE B&W DRAWING NO. 25469F-8

SKETCH RELEASE RECORD

REV	DATE	PREPARED	REVIEWED	INIT	APPROVED	INIT	PURPOSE
0	11-30-92	M MCLAVERY	K. TROTTER	K9	R. HOOPER	R9	

SK-B3001



SKETCH NO	SK-B3017
TITLE	WELD DETAIL RECIRCULATION OUTLET NOZZLE N1
PROJECT	BROWNS FERRY 3
DE WIP. NO.	A00-5306

SKETCH RELEASE RECORD

REV	DATE	PREPARED	REVIEWED	INIT	APPROVED	INIT	PURPOSE
0	12-1-92	M MCLAVERTY	K. TROTTER	KT	R. HOOPER	RH	

SK-B3017

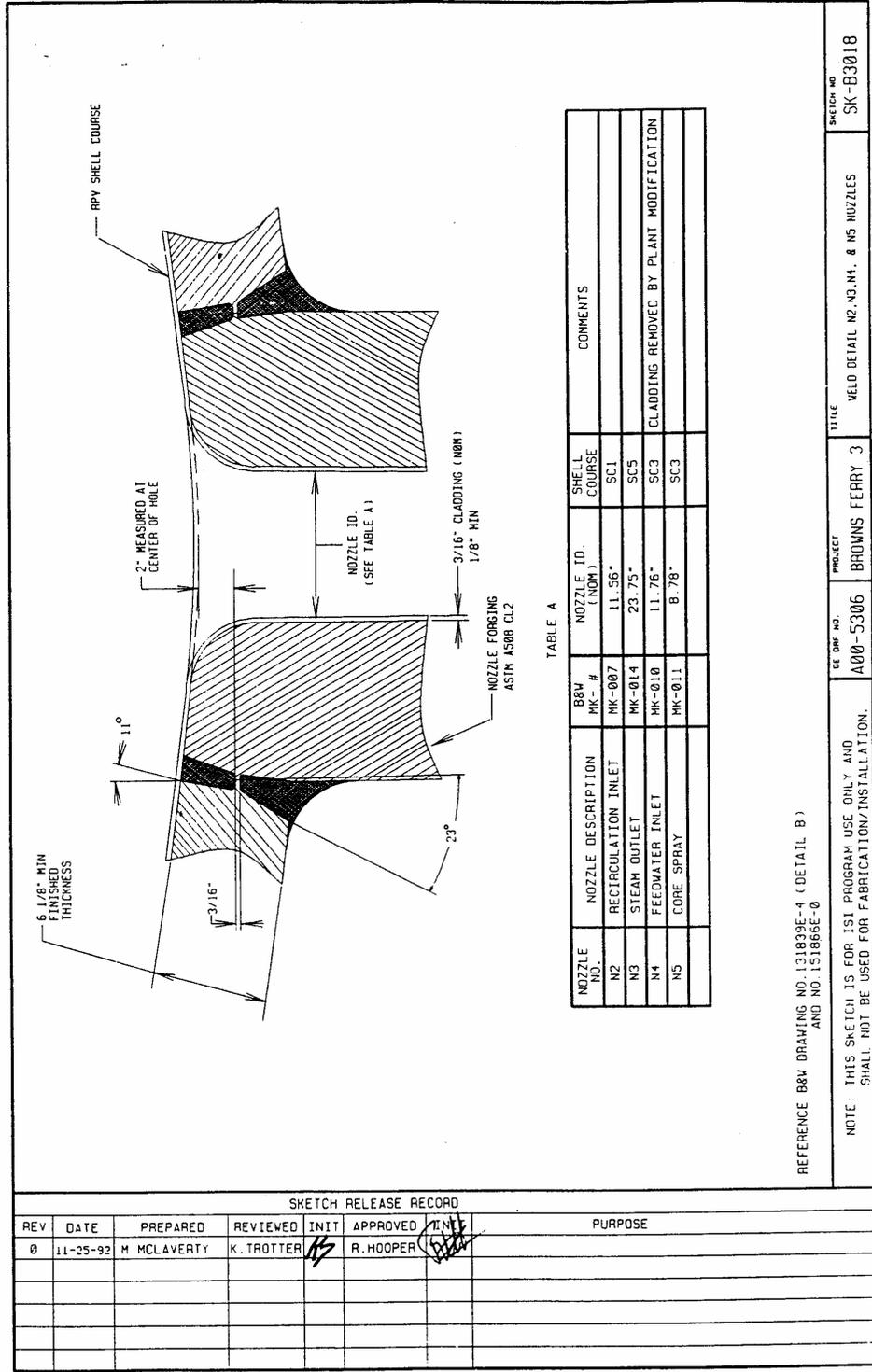


TABLE A

NOZZLE NO.	NOZZLE DESCRIPTION	B&W MK-#	NOZZLE ID. (NOM.)	SHELL COURSE	COMMENTS
N2	RECIRCULATION INLET	MK-007	11.56"	SC1	
N3	STEAM OUTLET	MK-014	23.75"	SC5	
N4	FEEDWATER INLET	MK-010	11.76"	SC3	CLADDING REMOVED BY PLANT MODIFICATION
N5	CORE SPRAY	MK-011	8.78"	SC3	

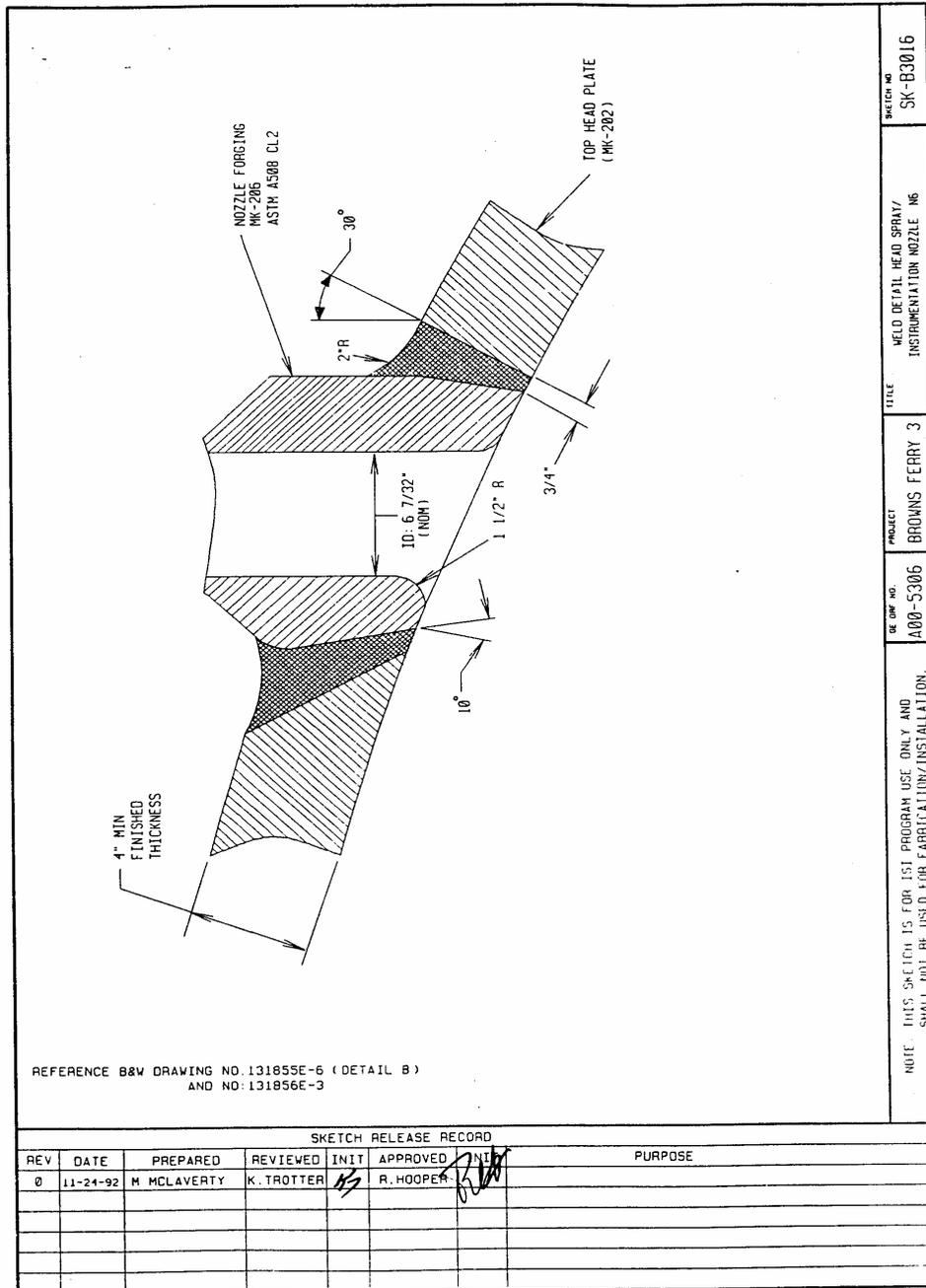
REFERENCE B&W DRAWINGS NO. 131829E-4 (DETAIL B) AND NO. 151866E-0

NOTE: THIS SKETCH IS FOR 1ST PROGRAM USE ONLY AND SHALL NOT BE USED FOR FABRICATION/INSTALLATION.

SKETCH RELEASE RECORD							PURPOSE
REV	DATE	PREPARED	REVIEWED	INIT	APPROVED	INIT	
0	11-25-92	M MCLAVERTY	K. TROTTER	KS	R. HOOPER	RT	

PROJECT: BRONNS FERRY 3
 TITLE: WELD DETAIL H2, H3, H4, & H5 NOZZLES
 SKETCH NO: SK-B3018

SK-B3018

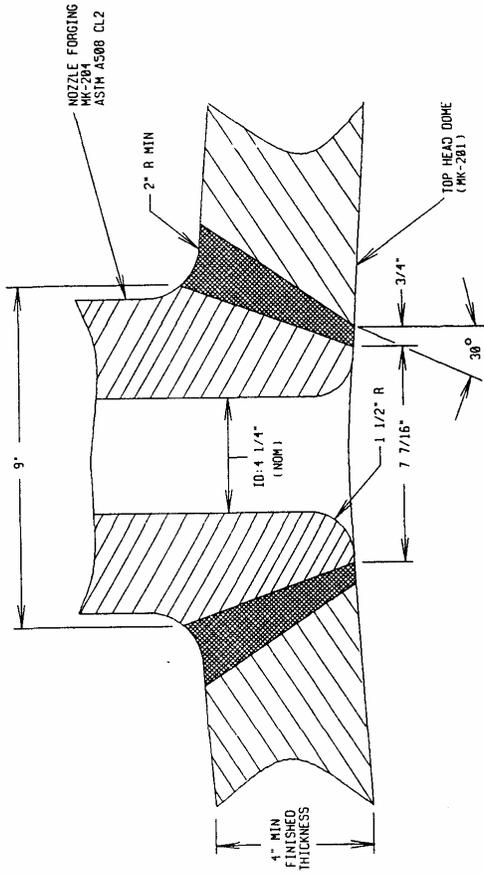


SKETCH NO.	SK-B3016
TITLE	WELD DETAIL HEAD SPRAY/ INSTRUMENTATION NOZZLE NG
PROJECT	BROWNS FERRY 3
DE WIP NO.	400-5306

SKETCH RELEASE RECORD

REV	DATE	PREPARED	REVIEWED	INIT	APPROVED	PURPOSE
0	11-24-92	M. MCLAVERTY	K. TROTTER	KS	R. HOOPER	

SK-B3016

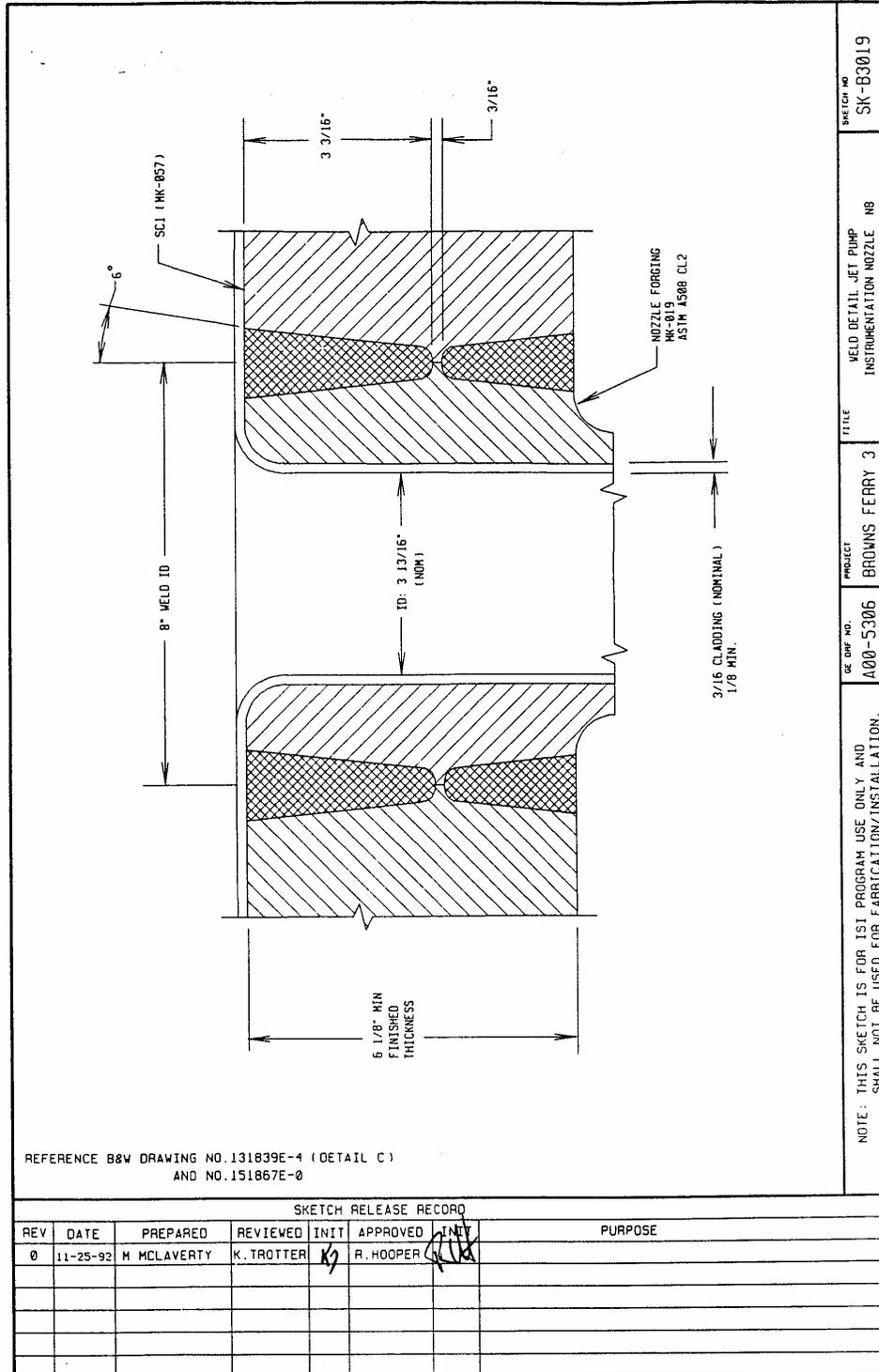


REFERENCE B&W DRAWING NO. 131855E-6 (DETAIL A)

SKETCH NO	SK-B3015
TITLE	WELD DETAIL VENT NOZZLE N7
PROJECT	BROWNS FERRY 3
DC DWP NO.	A00-5306
NOTE: THIS SKETCH IS FOR 1ST PROGRAM USE ONLY AND SHALL NOT BE USED FOR FABRICATION/INSTALLATION.	

SKETCH RELEASE RECORD							PURPOSE
REV	DATE	PREPARED	REVIEWED	INIT	APPROVED		
0	11-24-92	M MCLAVERTY	K. TROTTER	<i>KT</i>	R. HOOPER	<i>RH</i>	

SK-B3015

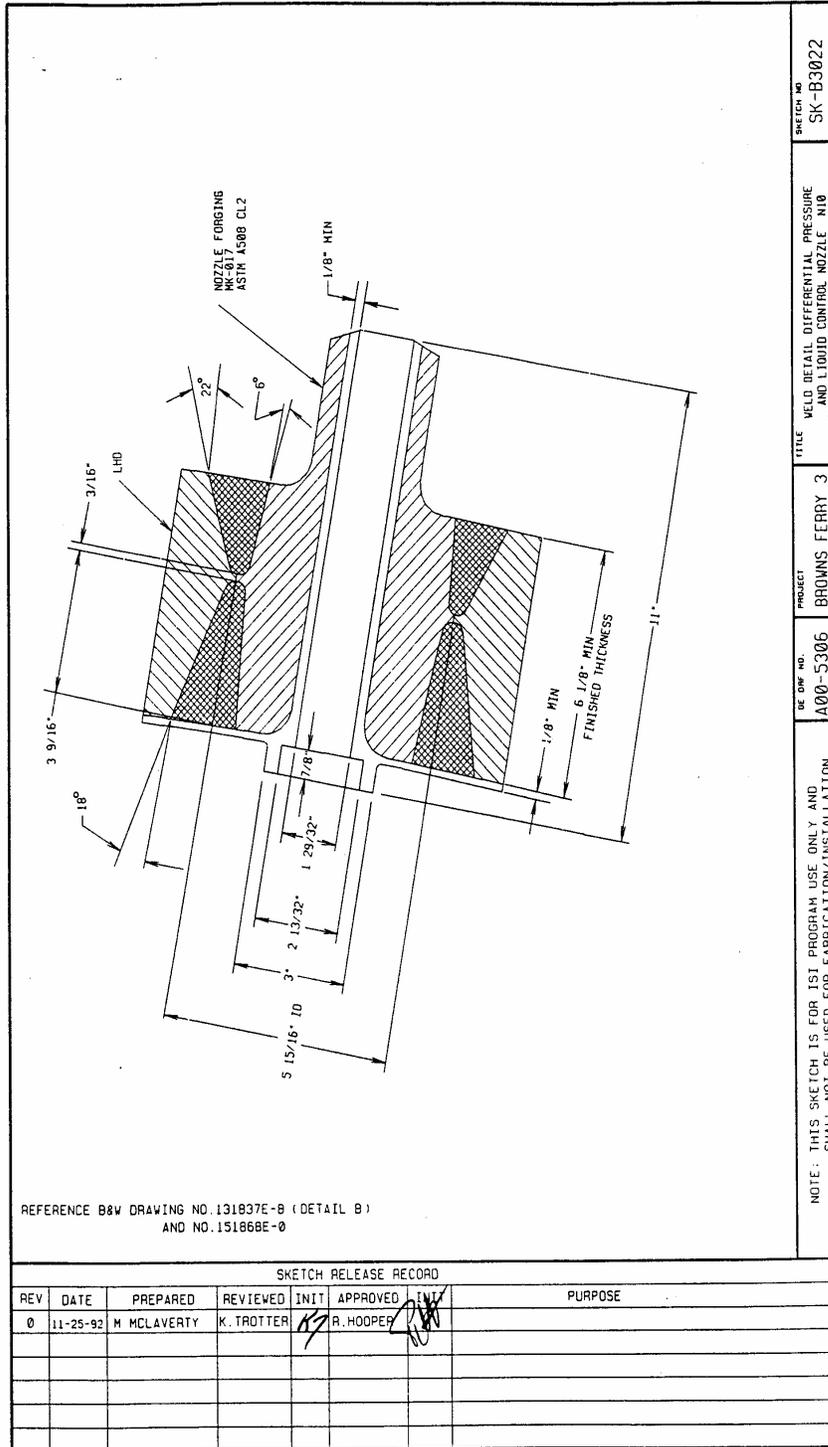


SKETCH NO. SK-B3019
 TITLE WELD DETAIL, JET PUMP INSTRUMENTATION NOZZLE, N8
 PROJECT BROWNS FERRY 3
 SE DWP NO. A00-5306

SKETCH RELEASE RECORD

REV	DATE	PREPARED	REVIEWED	INIT	APPROVED	INIT	PURPOSE
0	11-25-92	M. MCLAVERTY	K. TROTTER	K	R. HOOPER	[Signature]	

SK-B3019



SK-B3022

Attachment C

3-ISI-18

**UNIT 3 RPV NOZZLE
EXAMINATIONS SUMMARY**

REQUEST FOR RELIEF 3-ISI-18
UNIT 3 RPV NOZZLE EXAMINATIONS SUMMARY

COMPONENT	CYCLE		DATE		REPORT #		RESULTS		COVERAGE	
N1A	2	8	10/18/79	10/8/98	R-256/R-272	R-205	A	A	25%	72%
N1A-IR	5B	8	11/16/93	10/8/98	R-1172	R-205A	A	A	100%	100%
N1B	4	10	12/8/81	3/29/02	R-112, R-149, R-157	R-156	A	A	20%	77%
N1B-IR	5B	10	11/16/93	3/29/02	R-1173	R-157	A	A	100%	100%
N2A	4	10	12/7/81	4/1/02	R-109, R-127, R-152	R-158	A	A	20%	77%
N2A-IR	4	10	12/9/81	4/1/02	R-161	R-159	A	A	100%	100%
N2B	2	8	10/19/79	10/8/98	R-238, R-258, R-265	R-206	A	A	25%	77%
N2B-IR	2	8	10/16/79	10/8/98	R-233	R-206A	A	A	100%	100%
N2C	4	10	12/7/81	4/1/02	R-111, R-119, R-153	R-160	A	A	20%	77%
N2C-IR	4	10	12/9/81	4/1/02	R-162	R-161	A	A	100%	100%
N2D	2	8	10/16/79	10/8/98	R-235, R-260, R-266	R-207	A	A	25%	77%
N2D-IR	2	8	10/16/79	10/8/98	R-229	R-207A	A	A	100%	100%
N2E	4	10	12/7/81	4/1/02	R-110, R-150, R-154	R-162	A	A	20%	77%
N2E-IR	4	10	12/9/81	4/1/02	R-163	R-163	A	A	100%	100%
N2F	2	8	10/19/79	10/8/98	R-237, R-261, R-269	R-208	A	A	25%	77%
N2F-IR	2	8	10/16/79	10/8/98	R-231	R-208A	A	A	100%	100%
N2G	4	*11	12/8/81		R-113, R-148, R-158		A		20%	
N2G-IR	4	*11	12/8/81		R-165		A		100%	
N2H	5B	*11	11/13/93		R-1174		A		42%	
N2H-IR	5B	*11	11/12/93		R-1204		A		100%	

COMPONENT	CYCLE		DATE		REPORT #		RESULTS		COVERAGE	
N2J	5B	*11	11/15/93		R-1175		A		42%	
N2J-IR	5B	*11	11/14/93		R-1205		A		100%	
N2K	5B	*11	11/15/93		R-1176		A		42%	
N2K-IR	5B	*11	11/15/93		R-1206		A		100%	
N3A	4	10	11/20/93	3/31/02	R-045, R-047, R-049, R-051, R-052	R-164	A	A	20%	77%
N3A-IR	4	10	11/22/93	3/10/02	R-061	R-165	A	A	100%	100%
N3B	2	8	10/23/79	10/8/98	R-273, R-293, R-253	R-209	A	A	25%	75%
N3B-IR	2	8	10/16/79	10/8/98	R-226	R-209A	A	A	100%	100%
N3C	5B	*11	11/10/93		R-1177		A		28%	
N3C-IR	5B	*11	11/17/93		R-1207		A		100%	
N3D	5B	*11	11/10/93		R-1178		A		28%	
N3D-IR	5B	*11	11/11/93		R-1178		A		100%	
N4A	4	10	11/30/81	3/20/02	R-083, R-084, R-085	R-166	A	A	20%	77%
N4A-IR	4	10	11/23/81	3/20/02	R-067	R-167	A	A	100%	100%
N4B	2	8	10/22/79	10/14/98	R-251, R-270, R-281	R-211	A	A	25%	68%
N4B-IR	2	8	10/15/79	10/9/98	R-221	R-211A	A	A	100%	100%
N4C	2	8	10/22/79	10/14/98	R-250, R-268, R-282	R-212	A	A	25%	68%
N4C-IR	2	8	10/16/79	10/9/98	R-232	R-212A	A	A	100%	100%
N4D	5B	11	11/16/93	3/08/04	R-1182	R-182	A	A	44%	94.37%
N4D-IR	5B	11	11/9/93	3/12/04	R-1208	R-184	A	A	100%	100%
N4E	5B	11	11/16/93	3/08/04	R-1183	R-183	A	A	43%	94.37%
N4E-IR	5B	11	11/12/93	3/12/04	R-1209	R-185	A	A	100%	100%

COMPONENT	CYCLE		DATE		REPORT #		RESULTS		COVERAGE	
N4F	4	10	11/20/81	3/20/02	R-054, R-057, R-068	R-168	A	A	20%	77%
N4F-IR	4	10	11/23/81	3/20/02	R-068	R-169	A	A	100%	100%
N5A	2	8	10/22/79	10/8/98	R-249, R-267, R-284	R-216	A	A	20%	64%
N5A-IR	2	8	10/16/79	10/8/98	R-228	R-216A	A	A	75%	100%
N5B	4	10	12/3/81	4/2/02	R-093, R-101, R-105	R-170	A	A	20%	71%
N5B-IR	4	10	11/24/81	3/31/02	R-081	R-171	A	A	83%	100%
N6A	5B	7	8/1795 9/27/91	3/1/97	R-591, R-591A	R-247	A	A	100%	100%
N6A-IR	5B	7	9/28/91	3/1/97	R-598	R-243	A	A	100%	100%
N6B	5B	11	8/1795 9/27/91	3/06/04	R-592, R-592A	R-186	A	A	100%	93.12%
N6B-IR	5B	11	9/28/91	3/07/04	R-597	R-093	A	A	100%	100%
N7	5B	10	8/1795 9/27/91	3/29/02	R-590, R-590A	R-125	A	A	100%	70%
N7-IR	5B	10	9/28/91	3/30/02	R-599	R-115	A	A	100%	100%
N8A	2	8	10/19/79	10/9/98	R-247, R-259, R-271	R-217	A	A	68%	71%
N8A-IR	2	8	10/16/79	10/9/98	R-230	R-217A	A	A	100%	100%
N8B	5B	*11	11/6/93		R-1185		A		68%	
N8B-IR	5B	*11	11/7/93		R-1185		A		100%	
N9	4	10	12/3/81	4/1/02	R-092, R-103, R-099	R-172	A	A	25%	74%
N9-IR	4	10	1124/81	4/1/02	R-079	R-173	A	A	100%	100%
N10		11		3/04/04		R-187		A		97.31%
N10-IR		11		3/04/04		R-188		A		90%

*Scheduled for examination in Unit 3 Cycle 11 (Spring 2004) Refueling Outage, but deferred to Unit 3 Cycle 12 (Spring 2006) Refueling Outage.

Note: In results column, "A" refers to acceptable per ASME Section XI, Subarticle IWB-3512 acceptance criteria.